

**MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES
AND PENSIONS**

(Department of Personnel and Training)

NOTIFICATION

New Delhi, the 4th February, 2012

RULES

F. No. 13018/20/2011-AIS(I).—The rules for a competitive examination—Civil Services Examination—to be held by the Union Public Service Commission in 2012 for the purpose of filling vacancies in the following services/posts are, with the concurrence of the Ministries concerned and the Comptroller and Auditor General of India in respect of the Indian Audit and Accounts Service, published for general information :—

- (i) The Indian Administrative Service.
- (ii) The Indian Foreign Service.
- (iii) The Indian Police Service.
- (iv) The Indian P&T Accounts and Finance Service, Group 'A'.
- (v) The Indian Audit and Accounts Service, Group 'A'.
- (vi) Indian Revenue Service (Customs & Central Excise) Gr. "A".
- (vii) The Indian Defence Accounts Service, Group 'A'.
- (viii) The Indian Revenue Service, (I.T.) Group 'A'.
- (ix) The Indian Ordnance Factories Service, Group 'A'. (Asstt. Works Manager—Administration).
- (x) The Indian Postal Service, Group 'A'.
- (xi) The Indian Civil Accounts Service, Group 'A'.
- (xii) The Indian Railway Traffic Service, Group 'A'.
- (xiii) The Indian Railway Accounts Service, Group 'A'.
- (xiv) The Indian Railway Personnel Service, Group 'A'.
- (xv) Post of Assistant Security Commissioner, Group 'A' in Railway Protection Force.
- (xvi) The Indian Defence Estates Service, Group 'A'.
- (xvii) The Indian Information Service, Junior Grade Group 'A'.
- (xviii) Indian Trade Service, Group 'A' (Gr. III).
- (xix) Indian Corporate Law Service, Group 'A'.
- (xx) Armed Forces Headquarters Civil Service, Group 'B' (Section Officer's Grade).
- (xxi) Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman & Diu and Dadra & Nagar Haveli Civil Service, Group 'B'.
- (xxii) Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman & Diu and Dadra & Nagar Haveli Police Service, Group 'B'.
- (xxiii) Pondicherry Civil Service, Group 'B'.
- (xxiv) Pondicherry Police Service, Group 'B'.

1. The examination will be conducted by the Union Public Service Commission in the manner prescribed in Appendix I to these rules.

The dates on which and the places at which the Preliminary and Main Examinations will be held shall be fixed by the Commission.

2. A candidate shall be required to indicate in his/her application form for the Main Examination his/her order of preferences for various services/posts for which he/she would like to be considered for appointment in case he/she is recommended for appointment by Union Public Service Commission. No change in preference of services once indicated by a candidate would be permitted.

A candidate who wishes to be considered for IAS/IPS shall be required to indicate in his/her application form for the Main Examination his/her order of preferences for various State cadres for which he/she would like to be considered for allotment in case he/she is appointed to the IAS/IPS. No change in preference of cadre once indicated by a candidate would be permitted.

Note I.—The candidate is advised to be very careful while indicating preferences for various services/posts. In this connection, attention is also invited to rule 19 of the Rules. The candidate is also advised to indicate all the services/posts in the order of preference in his/her application form. In case he/she does not give any preference for any services/posts, it will be assumed that he/she has no specific preference for those services. If he/she is not allotted to any one of the services/posts for which he/she has indicated preference, he/she shall be allotted to any of the remaining services/posts in which there are vacancies after allocation of all the candidates who can be allocated to services/posts in accordance with their preferences.

Note II.—The candidates are advised to visit DOP & T's website www.persmin.nic.in for information/details about service allocation/cadre allotment.

Note III.—"A candidate who wishes to be considered for IAS/IPS shall be very careful while indicating preferences for various cadres. The candidate is advised to indicate all the cadres in the order of preference in his/her Detailed Application form (DAF) [which is to be filled in case of his/her selection for the Civil Services (Main) Examination]. In case he/she does not give any preference for any cadre it will be assumed that he/she does not have a specific preference for any cadre. If he/she is not allotted to any one of the cadres for which he/she has indicated preference, he/she shall be allotted to any of the remaining cadres in which there are vacancies after allocation of all the candidates who can be allocated to those cadres in accordance with their preferences."

3. The number of vacancies to be filled on the result of the examination will be specified in the Notice issued by the Commission.

Reservation will be made for candidates belonging to the Scheduled Castes, Scheduled Tribes, Other Backward

Classes and Physically disabled categories in respect of vacancies as may be fixed by the Government.

4. Every candidate appearing at the examination who is otherwise eligible, shall be permitted four attempts at the examination :

Provided that this restriction on the number of attempts will not apply in the case of Scheduled Castes and Scheduled Tribes candidates who are otherwise eligible :

Provided further that the number of attempts permissible to candidates belonging to Other Backward Classes, who are otherwise eligible, shall be seven. The relaxation will be available to the candidates who are eligible to avail of reservation applicable to such candidates :

Provided further that a physically handicapped will get as many attempts as are available to other non-physically handicapped candidates of his or her community, subject to the condition that a physically handicapped candidate belonging to the General Category shall be eligible for seven attempts. The relaxation will be available to the physically handicapped candidates who are eligible to avail of reservation applicable to such candidates.

Note :—

- (I) An attempt at a Preliminary Examination shall be deemed to be an attempt at the Examination.
- (II) If a candidate actually appears in any one paper in the Preliminary Examination, he/she shall be deemed to have made an attempt at the Examination.
- (III) Notwithstanding the disqualification/cancellation of candidature, the fact of appearance of the candidate at the examination will count as an attempt.

5. (1) For the Indian Administrative Service and Indian Police Service, a candidate must be a citizen of India.

(2) For other Services, a candidate must be either—

- (a) a citizen of India, or
- (b) a subject of Nepal, or
- (c) a subject of Bhutan, or
- (d) a Tibetan refugee who came over to India before the 1st January, 1962 with the intention of permanently settling in India, or
- (e) a person of Indian origin who has migrated from Pakistan, Burma (Myanmar), Sri Lanka, East African countries of Kenya, Uganda, the United Republic of Tanzania, Zambia, Malawi, Zaire and Ethiopia or Vietnam with the intention of permanently settling in India :

Provided that a candidate belonging to categories (b), (c), (d) and (e) shall be a person in whose favour a certificate of eligibility has been issued by the Government of India :

Provided further that candidates belonging to categories (b), (c) and (d) above will not be eligible for appointment to the Indian Foreign Service.

A candidate in whose case a certificate of eligibility is necessary may be admitted to the examination but the offer of appointment may be given only after the necessary eligibility certificate has been issued to him/her by the Government of India.

6. (a) A candidate must have attained the age of 21 years and must not have attained the age of 30 years on the 1st of August, 2012 i.e., he must have been born not earlier than 2nd August, 1982 and not later than 1st August, 1991.

(b) The upper age-limit prescribed above will be relaxable :

- (i) up to a maximum of five years if a candidate belongs to a Scheduled Caste or a Scheduled Tribe;
- (ii) up to a maximum of three years in the case of candidates belonging to Other Backward Classes who are eligible to avail of reservation applicable to such candidates;
- (iii) up to a maximum of five years if a candidate had ordinarily been domiciled in the State of Jammu and Kashmir during the period from the 1st January, 1980 to the 31st day of December, 1989;
- (iv) up to a maximum of three years in the case of Defence Services Personnel, disabled in operations during hostilities with any foreign country or in a disturbed area and released as a consequence thereof;
- (v) up to a maximum of five years in the case of ex-servicemen including Commissioned Officers and ECOs/SSCOs who have rendered at least five years Military Service as on 1st August, 2012 and have been released;
 - (a) on completion of assignment (including those whose assignment is due to be completed within one year from 1st August, 2012) otherwise than by way of dismissal or discharge on account of misconduct or inefficiency; or
 - (b) on account of physical disability attributable to Military Service; or
 - (c) on invalidment.
- (vi) up to a maximum of five years in the case of ECOs/SSCOs who have completed an initial period of assignment of five years of Military Service as on 1st August, 2012 and whose assignment has been extended beyond five years and in whose case the Ministry of Defence issues a certificate that they can apply for civil employment and that they will be released on three months notice on selection from the date of receipt of offer of appointment.
- (vii) up to a maximum of 10 years in the case of blind, deaf-mute and Orthopaedically handicapped persons.

Note I :—Candidates belonging to the Scheduled Castes and the Scheduled Tribes and the Other Backward Classes who are also covered under any other clauses of Rule 6(b) above, viz. those coming under the category of Ex-servicemen, persons domiciled in the State of J & K, blind, deaf-mute and orthopaedically handicapped etc. will be eligible for grant of cumulative age-relaxation under both the categories.

Note II :—The term Ex-servicemen will apply to the persons who are defined as Ex-servicemen in the Ex-servicemen (Re-employment in Civil Services and Posts) Rules, 1979, as amended from time to time.

Note III :—The age concession under Rule 6(b)(v) and (vi) will not be admissible to Ex-servicemen and Commissioned Officers including ECOs/SSCOs, who are released on own request.

Note IV :—Notwithstanding the provision of age-relaxation under Rule 6(b)(vii) above, a physically disabled candidate will be considered to be eligible for appointment only if he/she (after such physical examination as the Government or appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned Services/Posts to be allocated to the physically disabled candidates by the Government.

Save as provided above, the age-limits prescribed can in no case be relaxed.

The date of birth, accepted by the Commission is that entered in the Matriculation or Secondary School Leaving Certificate or in a certificate recognised by an Indian University as equivalent to Matriculation or in an extract from a Register of Matriculates maintained by a University which extract must be certified by the proper authority of the University or in the Higher Secondary or an equivalent examination certificate. These certificates are required to be submitted only at the time of applying for the Civil Services (Main) Examination. No other document relating to age like horoscopes, affidavits, birth extracts from Municipal Corporation, Service records and the like will be accepted.

The expression Matriculation/Higher Secondary Examination Certificate in this part of the Instruction include the alternative certificates mentioned above.

Note 1:—Candidate should note that only the date of birth as recorded in the Matriculation/Secondary Examination certificate or an equivalent certificate on the date of submission of application will be accepted by the Commission, and no subsequent request for its change will be considered or granted.

Note 2:—Candidates should also note that once a date of birth has been claimed by them and entered in the records of the Commission for the purpose of admission to an Examination, no change will be allowed subsequently or at any other Examination of the Commission on any grounds whatsoever.

7. A candidate must hold a degree of any of the Universities incorporated by an Act of the Central or State Legislature in India or other educational institutions established by an Act of Parliament or declared to be deemed as a University under Section 3 of the University Grants Commission Act, 1956 or possess an equivalent qualification.

Note I:—Candidates who have appeared at an examination the passing of which would render them educationally qualified for the Commission's examination but have not been informed of the result as also the candidates who intend to appear at such a qualifying examination will also be eligible for admission to the Preliminary Examination.

All candidates who are declared qualified by the Commission for taking the Civil Services (Main) Examination will be required to produce proof of passing the requisite examination along with their application for the Main Examination failing which such candidates will not be admitted to the Main Examination.

Note II:—In exceptional cases the Union Public Service Commission may treat a candidate who has not any of the foregoing qualification as a qualified candidate provided that he has passed examination conducted by other institution the standard of which in the opinion of the Commission justifies his admission to the examination.

Note III:—Candidates possessing professional and technical qualifications which are recognised by Government as equivalent to professional and technical degree would also be eligible for admission to the examination.

Note IV:—Candidates who have passed the final professional M.B.B.S or any other Medical Examination but have not completed their internship by the time of submission of their applications for the Civil Services (Main) Examination, will be provisionally admitted to the Examination provided they submit along with their application a copy of certificate from the concerned authority of the University/Institution that they had passed the requisite final professional medical examination. In such cases, the candidates will be required to produce at the time of their interview original degree or a certificate from the concerned competent authority of the University/Institution that they had completed all requirements (including completion of internship) for the award of the Degree.

8. A candidate who is appointed to the Indian Administrative Service or the Indian Foreign Service on the results of an earlier examination and continues to be a member of that service will not be eligible to compete at this examination.

In case such a candidate is appointed to the IAS/IFS after the Preliminary Examination of Civil Services Examination, 2012 is over and he/she continues to be a member of that service, he/she shall not be eligible to appear in the Civil Services (Main) Examination, 2011 notwithstanding his/her having qualified in the Preliminary Examination, 2012.

Also provided that if such a candidate is appointed to IAS/IFS after the commencement of the Civil Services (Main) Examination, 2011 but before the result thereof and continues to be a member of that service, he/she shall not be considered for appointment to any service/post on the basis of the result of this examination viz. Civil Services Examination, 2012.

9. Candidates must pay the fees prescribed in the Commission's Notice.

10. All candidates in Government service, whether in a permanent or in temporary capacity or as work charged employee, other than casual or daily rated employees or those serving under Public Enterprises will be required to submit an undertaking that they have informed in writing their Head of Office/Department that they have applied for the Examination. Candidates should note that in case a communication is received from their employer by the Commission withholding permission to the candidates applying for appearing at the examination, their applications will be liable to be rejected/candidature will be liable to be cancelled.

11. The decision of the Commission as to the eligibility or otherwise of a candidate for admission to the examination shall be final.

The candidates applying for the examination should ensure that they fulfil all the eligibility conditions for admission to the Examination. Their admission at all the stages of examination for which they are admitted by the Commission viz. Preliminary Examination, Main (Written) Examination and Interview Test will be purely provisional, subject to their satisfying the prescribed eligibility conditions. If on verification at any time before or after the Preliminary Examination, Main (Written) Examination and interview Test, it is found that they do not fulfil any of the eligibility conditions, their candidature for the examination will be cancelled by the Commission.

12. No candidate will be admitted to the Preliminary/Main Examination unless he holds a certificate of admission for the Examination.

13. No request for withdrawal of candidature received from a candidate after he has submitted his application will be entertained under any circumstances.

14. A candidate who is or has been declared by the Commission to be guilty of:—

- (i) Obtaining support for his candidature by the following means, namely:—
 - (a) offering illegal gratification to; or
 - (b) applying pressure on; or
 - (c) blackmailing, or threatening to blackmail any person connected with the conduct of the examination; or
- (ii) impersonation; or
- (iii) procuring impersonation by any person; or
- (iv) submitting fabricated documents or documents which have been tampered with; or
- (v) making statements which are incorrect or false or suppressing material information; or

(vi) resorting to the following means in connection with his candidature for the examination, namely:—

- (a) obtaining copy of question paper through improper means;
- (b) finding out the particulars of the persons connected with secret work relating to the examination;
- (c) influencing the examiners; or
- (vii) using unfair means during the examination; or
- (viii) writing obscene matter or drawing obscene sketches in the scripts; or
- (ix) misbehaving in the examination hall including tearing of the scripts, provoking fellow examinees to boycott examination, creating a disorderly scene and the like; or
- (x) harassing or doing bodily harm to the staff employed by the Commission for the conduct of their examination; or
- (xi) being in possession of or using any mobile phone, pager or any electronic equipment or device or any other equipment capable of being used as a communication device during the examination; or
- (xii) violating any of the instructions issued to candidates along with their admission certificates permitting them to take the examination; or
- (xiii) attempting to commit or, as the case may be, abetting the commission of all or any of the acts specified in the foregoing clauses;

may in addition to rendering himself liable to criminal prosecution, be liable:—

 - (a) to be disqualified by the Commission from the Examination for which he is a candidate; and/or
 - (b) to be debarred either permanently or for a specified period:—
 - (i) by the Commission, from any examination or selection held by them;
 - (ii) by the Central Government from any employment under them; and
 - (c) if he is already in service under Government to disciplinary action under the appropriate rules:

Provided that no penalty under this rule shall be imposed except after:—

 - (i) giving the candidate an opportunity of making such representation in writing as he may wish to make in that behalf; and
 - (ii) taking the representation, if any, submitted by the candidate within the period allowed to him into consideration.

15. Candidates who obtain such minimum qualifying marks in the Preliminary Examination as may be fixed by the

Commission at their discretion shall be admitted to the Main Examination; and candidates who obtain such minimum qualifying marks in the Main Examination (Written) as may be fixed by the Commission at their discretion shall be summoned by them for an interview for personality test :

Provided that candidates belonging to the Scheduled Castes or Scheduled Tribes or Other Backward Classes may be summoned for an interview for a personality test by the Commission by applying relaxed standards in the Preliminary Examination as well as Main Examination (Written) if the Commission is of the opinion that sufficient number of candidates from these communities are not likely to be summoned for interview for a personality test on the basis of the general standard in order to fill up vacancies reserved for them.

16. (1) After interview, the candidates will be arranged by the Commission in the order of merit as disclosed by the aggregate marks finally awarded to each candidate in the Main Examination. Thereafter, the Commission shall, for the purpose of recommending candidates against unreserved vacancies, fix a qualifying mark (hereinafter referred to as general qualifying standard) with reference to the number of unreserved vacancies to be filled up on the basis of the Main Examination. For the purpose of recommending reserved category candidates belonging to Scheduled Castes, Scheduled Tribes and Other Backward Classes against reserved vacancies, the Commission may relax the general qualifying standard with reference to number of reserved vacancies to be filled up in each of these categories on the basis of the Main Examination :

Provided that the candidates belonging to the Scheduled Castes, Scheduled Tribes and the Other Backward Classes who have not availed themselves of any of the concessions or relaxations in the eligibility or the selection criteria, at any stage of the examination and who after taking into account the general qualifying standards are found fit for recommendation by the Commission shall not be recommended against the vacancies reserved for Scheduled Castes, Scheduled Tribes and the Other Backward Classes.

(2) While making service allocation, the candidates belonging to the Scheduled Castes, the Scheduled Tribes or Other Backward Classes recommended against unreserved vacancies may be adjusted against reserved vacancies by the Govt. If by this process they get a service of higher choice in the order of their preference.

(3) The Commission may further lower the qualifying standards to take care of any shortfall of candidates for appointment against unreserved vacancies and any surplus of candidates against reserved vacancies arising out of the provisions of this rule, the Commission may make the recommendations in the manner prescribed in sub-rules (4) and (5).

(4) While recommending the candidates, the Commission shall, in the first instance, take into account the total number of vacancies in all categories. This total number of recommended candidates shall be reduced by the number

of candidates belonging to the Scheduled Castes, the Scheduled Tribes and Other Backward Classes who acquire the merit at or above the fixed general qualifying standard without availing themselves of any concession or relaxation in the eligibility or selection criteria in terms of the proviso to sub-rule (1). Along with this list of recommended candidates, the Commission shall also maintain a consolidated reserve list of candidates which will include candidates from general and reserved categories ranking in order of merit below the last recommended candidate under each category. The reserve list so maintained shall be treated as confidential till the process of recommendations(s) in terms of sub-rule (5) is finally concluded by the Commission. The number of candidates in each of these categories will be equal to the number of reserved category candidates who were included in the first list without availing of any relaxation or concession in eligibility or selection criteria as per proviso to sub-rule (1). Amongst the reserved categories, the number of candidates from each of the Scheduled Caste, the Scheduled Tribe and Other Backward Class categories in the reserve list will be equal to the respective number of vacancies reduced initially in each category.

5. The candidates recommended in terms of the provisions of sub-rule (4), shall be allocated by the Government to the services and where certain vacancies still remain to be filled up, the Government may forward a requisition to the Commission requiring it to recommend, in order of merit, from the reserve list, the same number of candidates as requisitioned for the purpose of filling up the unfilled vacancies in each category.

17. The minimum qualifying marks as specified under rules 15 and 16 may be relaxable at the discretion of the Commission in favour of physically handicapped candidates in order to fill up the vacancies reserved for them :

Provided that where a physically handicapped candidate obtains the minimum qualifying marks in his own merit in the requisite number for General, or the Scheduled Caste or the Scheduled Tribe or Other Backward Class category candidates, then, the extra physically handicapped candidates, i.e., more than the number of vacancies reserved for them shall be recommended by the Commission on the relaxed standards and consequential amendments in the rules will be notified in due course.

18. The form and manner of communication of the results of the examination to individual candidates shall be decided by the Commission in their discretion and the Commission will not enter into correspondence with them regarding the results.

19. (i) Due consideration will be given at the time of making allocation on the results of the examination to the preferences expressed by a candidate for various services at the time of his application. The appointment to various services will also be governed by the Rules/Regulations in force as applicable to the respective Services at the time of appointment.

(ii) The cadre allotment to candidates' appointment to IAS/IPS will be governed by the policy of cadre allotment in force at the time of allotment of cadre. Due consideration will be given at the time of making allocation on the results of the examination to the preferences expressed by a candidate for various cadres at the time of his application.

20. Success in the examination confers no right to appointment unless Government are satisfied after such enquiry as may be considered necessary that the candidate, having regard to his character and antecedents, is suitable in all respects for appointment to the Service.

21. A candidate must be in good mental and bodily health and free from any physical defect likely to interfere with the discharge of his duties as an officer of the service. A candidate who after such medical examination as Government or the appointing authority, as the case may be, may prescribe, is found not to satisfy these requirements will not be appointed. Any candidate called for the Personality Test by the Commission may be required to undergo medical examination. No fee shall be payable to the Medical Board by the candidate for the medical examination except in the case of appeal :

Provided further that Government may constitute a special Medical Board with experts in the area for conducting the medical examination of physically disabled candidates.

Note :—In order to prevent disappointment, candidates are advised to have themselves examined by a Government Medical Officer of the standing of a Civil Surgeon, before applying for admission to the examination. Particulars of the nature of the medical test to which candidates will be subjected before appointment and of the standards required are given in Appendix III to these Rules. For the disabled ex-Defence Services Personnel, the standards will be relaxed consistent with the requirements of the Service(s).

22. The eligibility for availing reservation against the vacancies reserved for the physically disabled persons shall be the same as prescribed in "The Persons with Disability (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995" :

Provided further that the physically disabled candidates shall also be required to meet special eligibility criteria in terms of physical requirements/functional classification (abilities disabilities) consistent with requirements of the identified service post as may be prescribed by its cadre controlling authority. A list of Services identified suitable for Physically Disabled Category along with the physical requirements and functional classifications is at Annexure-IV.

The physical requirement and functional classification can, for example, be one or more of the following :

CODE PHYSICAL REQUIREMENTS

- MF 1. Work performed by manipulation by fingers.
PP 2. Work performed by pulling and pushing.
L 3. Work performed by lifting.

- KC 4. Work performed by kneeling and crouching.
BN 5. Work performed by bending.
S 6. Work performed by sitting (on bench or chair).
ST 7. Work performed by standing.
W 8. Work performed by walking.
SE 9. Work performed by seeing.
H 10. Work performed by hearing/speaking.
RW 11. Work performed by reading and writing.
C 12. Communication.

CODE FUNCTIONAL CLASSIFICATION

- BL 1. both legs affected but not arms.
BA 2. both arms affected—
a. impaired reach.
b. weakness of grip.
c. ataxic
B.L.A 3. both legs and both arms affected.
OL 4. one leg affected (R or L.)
a. impaired reach.
b. weakness of grip.
c. ataxic.
OA 5. one arm affected (R or L.)
a. impaired reach.
b. weakness of grip.
c. ataxic.
OAL 6. One arm and one leg affected
MW 7. muscular weakness
B 8. Blind.
IV 9. Low Vision
H 10. Hearing

Note : The above list is subject to revision.

23. A candidate will be eligible to get the benefit of community reservation only in case the particular caste to which the candidates belongs is included in the list of reserved communities issued by the Central Government. If a candidate indicates in his/her application form for Civil Services (Preliminary) Examination that he/she belongs to General Category but subsequently writes to the Commission to change his/her category, to a reserved one, such request shall not be entertained by the Commission.

While the above principle will be followed in general, there may be a few cases where there was a little gap (say 2-3 months) between the issuance of a Government Notification enlisting a particular community in the list of any of the reserved communities and the date of submission of the application by the candidate. In such cases the request of change of community from general to reserved may be considered by the Commission on merit.

24. The closing date fixed for the receipt of the application will be treated as the date for determining the OBC status (including that of creamy layer) of the candidates.

25. No person -

- (a) who has entered into or contracted a marriage with a person having a spouse living, or

(b) who, having a spouse living, has entered into or contracted a marriage with any person, shall be eligible for appointment to Service :

Provided that the Central Government may, if satisfied that such marriage is permissible under the personal law applicable to such person and the other party to the marriage and there are other grounds for so doing, exempt any person from the operation of this rule.

26. Candidates are informed that some knowledge of Hindi prior to entry into service would be of advantage in passing departmental examinations which candidates have to take after entry into service.

27. Brief particulars relating to the Services/Posts to which recruitment is being made through this examination are given in Appendix II.

R. K. GUPTA, Director

APPENDIX I SECTION I

PLAN OF EXAMINATION

The competitive examination comprises two successive stages :

- (i) Civil Services Preliminary Examination (Objective Type) for the selection of candidates for Main Examination; and
- (ii) Civil Services (Main) Examination (Written and Interview) for the selection of candidates for the various Services and posts.

2. The preliminary Examination will consist of two papers of Objective type (multiple choice questions) and carry a maximum of 400 marks in the subjects set out in sub-section (A) of Section II. This examination is meant to serve as a screening test only; the marks obtained in the Preliminary Examination by the candidates who are declared qualified for admission to the Main Examination will not be counted for determining their final order of merit. The number of candidates to be admitted to the Main Examination will be about twelve to thirteen times the total approximate number of vacancies to be filled in the year in the various Services and posts. Only those candidates who are declared by the Commission to have qualified in the Preliminary Examination in the year will be eligible for admission to the Main Examination of that year provided they are otherwise eligible for admission, to the Main Examination.

Note I : The Commission will draw a list of candidates to be qualified for Civil Services (Main) Examination based on the total qualifying marks as may be determined by the Commission, of the two papers put together.

Note II : There will be negative marking for incorrect answers (as detailed below) for all questions except some of the questions where the negative marking will be inbuilt in the form of different marks being awarded to the most appropriate and not so appropriate answer for such questions.

(i) There are four alternatives for the answers to every question. For each question for which a wrong answer has been given by the candidate, one-third (0.33) of the marks assigned to that question will be deducted as penalty.

(ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happen to be correct and there will be same penalty as above for that question.

(iii) If a question is left blank i.e. no answer is given by the candidate, there will be no penalty for that question."

3. The Main Examination will consist of written examination and an interview test the written examination will consist of 9 papers of conventional essay type in the subjects set out in sub-section (B) of Section II. Also see Note (ii) under para I of Section II(B).

4. Candidates who obtain such minimum qualifying marks in the written part of the Main Examination as may be fixed by the Commission at their discretion, shall be summoned by them for an interview for a Personality Test vide sub-section 'C' of Section II. However, the papers on Indian languages and English will be of qualifying nature. Also see Note (ii) under para I of Section II(B). The marks obtained in these papers will not be counted for ranking. The number of candidates to be summoned for interview will be about twice the number of vacancies to be filled. The interview will carry 300 marks (with no minimum qualifying marks).

Marks thus obtained by the candidates in the Main Examination (written part as well as interview) would determine their final ranking. Candidates will be allotted to the various Services keeping in view their ranks in the examination and the preferences expressed by them for the various Services and posts.

SECTION II

Scheme and subjects for the Preliminary and Main Examination.

A. PRELIMINARY EXAMINATION :

The Examination shall comprise of two compulsory Papers of 200 marks each.

Note :

- (i) Both the question papers will be of the objective type (multiple choice questions).
- (ii) The question papers will be set both in Hindi and English. However, questions relating to English Language Comprehension skills of Class X level will be tested through passages from English language only without providing Hindi translation thereof in the question paper.
- (iii) Details of the syllabi are indicated in Part A of Section III.
- (iv) Each paper will be of two hours duration. Blind candidates will; however, be allowed an extra time of twenty minutes for each paper.

B. MAIN EXAMINATION :

The written examination will consist of the following papers :--

Paper I—One of the Indian Language to be selected by the candidate from the languages included in the Eighth Schedule to the Constitution.	300 Marks
Paper II—English	300 Marks
Paper III—Essay	200 Marks
Papers—General Studies IV and V	300 Marks for each paper
Papers VI, VII, VIII and IX.—Any two subjects to be selected from the list of the optional subjects set out in para 2 below. Each subject will have two papers.	300 Marks for each paper

Interview Test will carry 300 Marks.

NOTE:

- (i) The papers on Indian Languages and English will be of Matriculation or equivalent standard and will be of qualifying nature. The marks obtained in these papers will not be counted for ranking.
- (ii) Evaluation of the papers, namely, 'Essay', 'General Studies' and Optional Subjects of all the candidates would be done simultaneously along with evaluation of their qualifying papers on 'Indian Languages' and 'English' but the papers on 'Essay', 'General Studies' and Optional Subjects of only such candidates will be taken cognizance of as attain such minimum standard as may be fixed by the Commission at their discretion for the qualifying papers on 'Indian Language' and 'English' and 'therefore, the marks in 'Essay', 'General Studies' and Optional subjects' will not be disclosed to those candidates who fail to obtain such minimum qualifying standard in 'Indian Language' and 'English.'
- (iii) The Paper I on Indian Languages will not, however, be compulsory for candidates hailing from the North-Eastern States of Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland and also for candidates hailing from the State of Sikkim.
- (iv) For the Language papers, the scripts to be used by the candidates will be as under :—

<i>Language</i>	<i>Script</i>
Assamese	Assamese
Bengali	Bengali
Gujarati	Gujarati
Hindi	Devanagari
Kannada	Kannada
Kashmiri	Persian
Konkani	Devanagari
Malayalam	Malayalam
Manipuri	Bengali

Marathi	Devanagari
Nepali	Devanagari
Oriya	Oriya
Punjabi	Gurumukhi
Sanskrit	Devanagari
Sindhi	Devanagari or Arabic
Tamil	Tamil
Telugu	Telugu
Urdu	Persian
Bodo	Devanagari
Dogri	Devanagari
Maithilli	Devanagari
Santali	Devanagari or Olchiki

Note: For Santali language, question paper will be printed in Devanagari script; but candidates will be free to answer either in Devanagari script or in Olchiki.

2. List of optional subjects for Main Examination :

- (i) Agriculture
- (ii) Animal Husbandry and Veterinary Science
- (iii) Anthropology
- (iv) Botany
- (v) Chemistry
- (vi) Civil Engineering
- (vii) Commerce and Accountancy
- (viii) Economics
- (ix) Electrical Engineering
- (x) Geography
- (xi) Geology
- (xii) History
- (xiii) Law
- (xiv) Management
- (xv) Mathematics
- (xvi) Mechanical Engineering
- (xvii) Medical Science
- (xviii) Philosophy
- (xix) Physics
- (xx) Political Science and International Relations
- (xxi) Psychology
- (xxii) Public Administration
- (xxiii) Sociology
- (xxiv) Statistics
- (xxv) Zoology
- (xxvi) Literature of one of the following languages :
Arabic, Assamese, Bengali, Bodo, Chinese, Dogari, English, French, German, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Nepali, Oriya, Pali, Persian, Punjabi, Russian, Sanskrit, Santali, Sindhi, Tamil, Telugu, Urdu.

NOTE:

- (i) Candidates will not be allowed to offer the following combinations of subjects :
- Political Science & International Relations and Public Administration;
 - Commerce & Accountancy and Management;
 - Anthropology and Sociology;
 - Mathematics and Statistics;
 - Agriculture and Animal Husbandry & Veterinary Science;
 - Management and Public Administration;
 - Of the Engineering subjects viz., Civil Engineering, Electrical Engineering and Mechanical Engineering—not more than one subject;
 - Animal Husbandry & Veterinary Science and Medical Science.
- (ii) The question papers for the examination will be of conventional (essay) type.
- (iii) Each paper will be of three hours duration. Blind candidates will, however, be allowed an extra time of thirty minutes at each paper.
- (iv) Candidates will have the option to answer all the question papers, except the language papers, viz., Papers I and II above, in any one of the languages included in the Eighth Schedule to the Constitution or in English.
- (v) Candidates exercising the option to answer Papers III to IX in any one of the languages included in the Eighth Schedule to the Constitution may, if they so desire, give English version within brackets of only the description of the technical terms, if any, in addition to the version in the language opted by them. Candidates should, however, note that if they misuse the above rule, a deduction will be made on this account from the total marks otherwise accruing to them and in extreme cases, their script(s) will not be valued for being in an unauthorised medium.
- (vi) The question papers other than language papers will be set both in Hindi and English.
- (vii) The details of the syllabi are set out in Part B of Section III.

General Instructions (Preliminary as well as Main Examination)

- (i) Candidates must write the papers in their own hand. In no circumstances will they be allowed the help of a scribe to write the answers for them. However, blind candidates will be allowed to write the examination with the help of a scribe.
- (ii) An extra time of twenty minutes per hour shall be permitted for the candidates with locomotor disability and cerebral palsy where dominant (writing) extremity is affected

to the extent of slowing the performance of function (minimum of 40% impairment) in the Civil Services (Main) Examination only. However, no scribe shall be permitted to such candidates.

Note (1) : The eligibility conditions of a scribe, his/her conduct inside the examination hall and the manner in which and extent to which he/she can help the blind candidate in writing the Civil Services Examination shall be governed by the instructions issued by the UPSC in this regard. Violation of all or any of the said instructions shall entail the cancellation of the candidature of the blind candidate in addition to any other action that the UPSC may take against the scribe.

Note (2) : For purpose of these rules the candidate shall be deemed to be a blind candidate if the percentage of visual impairment is Forty per cent (40%) or more. The criteria for determining the percentage of visual impairment shall be as follows :—

	All with corrections		Percentage	
	Better eye	Worse eye		
	1	2	3	4
Category O	6/9—6/18	6/24 to 6/36		20%
Category I	6/18—6/36	6/60 to nil		40%
Category II	6/60—4/60 or field of vision 10—20°	3/60 to nil		75%
Category III	3/60—1/60 or field of vision 10°	F.C. at 1 ft to nil		100%
Category IV	F.C. at 1 ft to nil field of vision 100°	F.C. at 1 ft to nil field of vision 100°		100%
One eyed person	6/6	F.C. at 1 ft to nil		30%

Note (3) : For availing of the concession admissible to a blind candidate, the candidate concerned shall produce a certificate in the prescribed proforma from a Medical Board constituted by the Central/State Governments alongwith their application for the Main Examination.

Note (4) : The concession admissible to blind candidates shall not be admissible to those suffering from Myopia.

(ii) The Commission have discretion to fix qualifying marks in any or all the subjects of the examination.

(iii) If a candidate's handwriting is not easily legible, a deduction will be made on this account from the total marks otherwise accruing to him.

(iv) Marks will not be allotted for mere superficial knowledge.

(v) Credit will be given for orderly, effective, and exact expression combined with due economy of words in all subjects of the examination.

(vi) In the question papers, wherever required, SI units will be used.

(vii) Candidates should use only International form of Indian numerals (i.e. 1, 2, 3, 4, 5, 6 etc.) while answering question papers.

(viii) Candidates will be allowed the use of Scientific (Non-Programmable type) Calculators at the conventional (Essay) type examination of UPSC. Programmable type calculators will however not be allowed and the use of such calculators shall tantamount to resorting to unfair means by the candidates. Loaning or interchanging of calculators in the Examination Hall is not permitted.

It is also important to note that candidates are not permitted to use calculators for answering objective type papers (Test Booklets). They should not therefore bring the same inside the Examination Hall.

C. Interview Test

The candidate will be interviewed by a Board who will have before them a record of his career. He will be asked questions on matters of general interest. The object of the interview is to assess the personal suitability of the candidate for a career in public service by a Board of competent and unbiased observers. The test is intended to judge the mental calibre of a candidate. In broad terms this is really an assessment of not only his intellectual qualities but also social traits and his interest in current affairs. Some of the qualities to be judged are mental alertness, critical powers of assimilation, clear and logical exposition, balance of judgement, variety and depth of interest, ability for social cohesion and leadership, intellectual and moral integrity.

2. The technique of the interview is not that of a strict cross-examination but of a natural, though directed and purposive conversation which is intended to reveal the mental qualities of the candidate.

3. The interview test is not intended to be a test either of the specialised or general knowledge of the candidates which has been already tested through their written papers. Candidates are expected to have taken an intelligent interest not only in their special subjects of academic study but also in the events which are happening around them both within and outside their own State or Country as well as in modern currents of thought and in new discoveries which should rouse the curiosity of well educated youth.

SECTION III

SYLLABI FOR THE EXAMINATION

NOTE : Candidates are advised to go through the Syllabus published in this Section for the Preliminary Examination and the Main Examination, as periodic revision of syllabus has been done in several subjects.

Part A—Preliminary Examination

Paper I - (200 marks) Duration : Two hours

- Current events of national and international importance
- History of India and Indian National Movement
- Indian and World Geography-Physical, Social, Economic

Geography of India and the World.

- Indian Polity and Governance-Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues, etc.
- Economic and Social Development-Sustainable Development, Poverty, Inclusion, Demographics, Social Sector Initiatives, etc.
- General issues on Environmental ecology, Bio-diversity and Climate Change - that do not require subject specialization
- General Science.

Paper II-(200 marks) Duration : Two hours

- Comprehension
- Interpersonal skills including communication skills;
- Logical reasoning and analytical ability
- Decision making and problem solving
- General mental ability
- Basic numeracy (numbers and their relations, orders of magnitude, etc.) (Class X level), Data interpretation (charts, graphs, tables, data sufficiency etc. — Class X level)
- English Language Comprehension skills (Class X level).

Note 1 : Questions relating to English Language Comprehension skills of Class X level (last item in the Syllabus of Paper-II) will be tested through passages from English language only without providing Hindi translation thereof in the question paper.

Note 2 : The questions will be of multiple choice, objective type.

Note 3 : It is mandatory for the candidate to appear in both the Papers of Civil Services (Prelim) Examination for the purpose of evaluation. Therefore a candidate will be disqualified in case he/she does not appear in both the papers of Civil Services (Predlim) Examination.

Part B—Main Examination

The main Examination is intended to assess the overall intellectual traits and depth of understanding of candidates rather than merely the range of their information and memory. Total number of questions in the question papers of optional subjects will be eight. All questions will carry equal marks. Each paper will be divided into two parts, viz. Part A and Part B, each part containing four questions. Out of eight questions, five questions are to be attempted. One questions in each part will be compulsory. Candidates will be required to answer three more questions out of the remaining six questions, taking at least one question from each Part. In this way, at least two questions will be attempted from each Part i.e. one compulsory question plus one more.

The scope of the syllabus for optional subject papers for the examination is broadly of the honours degree level i.e. a level higher than the bachelors degree and lower than the masters degree. In the case of Engineering, Medical Science and law, the level corresponds to the bachelors degree.

COMPULSORY SUBJECTS**English and Indian Languages**

The aim of the paper is to test the candidate's ability to read and understand serious discursive prose, and to express his ideas clearly and correctly, in English and Indian language concerned.

The pattern of questions would be broadly as follows:—

English—

- (i) Comprehension of given passages
- (ii) Precis Writing
- (iii) Usage and Vocabulary
- (iv) Short Essay.

Indian Languages :—

- (i) Comprehension of given passages
- (ii) Precis Writing
- (iii) Usage and Vocabulary
- (iv) Short Essay
- (v) Translation from English to the Indian languages and vice-versa.

Note 1.— The papers on Indian Languages and English will be of Matriculation or Equivalent standard and will be of qualifying nature only. The marks obtained in these papers will not be counted for ranking.

Note 2.— The candidates will have to answer the English and Indian Languages papers in English and the respective Indian Language (except where translation is involved).

ESSAY

Candidates will be required to write an essay on a specific topic. The choice of subjects will be given. They will be expected to keep closely to the subject of the essay to arrange their ideas in orderly fashion, and to write concisely. Credit will be given for effective and exact expression.

GENERAL STUDIES**General Guidelines :**

The nature and standard of questions in the General Studies papers will be such that a well-educated person will be able to answer them without any specialized study. The questions will be such as to test a candidate's general awareness of a variety of subjects, which will have relevance for a career in Civil Services. The questions are likely to test the candidate's basic understanding of all relevant issues, and ability to analyze, and take a view on conflicting socio-economic goals, objectives and demands. The candidates must give relevant, meaningful and succinct answers.

PAPER-I**1. History of Modern India and Indian Culture**

The History of Modern India will cover history of the country from about the middle of the nineteenth century and would also include questions on important personalities who shaped the freedom movement and social reforms. The part relating to Indian Culture will cover all aspects of Indian culture

from the ancient to modern times as well as principal features of literature, arts and architecture.

2. Geography of India

In this part, questions will be on the physical, economic and social geography of India.

3. Constitution of India and Indian Polity

This part will include questions on the Constitution of India, as well as all constitutional, legal, administrative and other issues emerging from the politico-administrative system prevalent in the country.

4. Current National Issues and Topics of Social Relevance

This part is intended to test the Candidate's awareness of current national issues and topics of social relevance in the present-day India, such as the following :

- (i) The Indian economy and issues relating to planning, mobilization of resources, growth, development and employment.
- (ii) Issues arising from the social and economic exclusion of large sections from the benefits of development.
- (iii) Other issues relating to the development and management of human resource.
- (iv) Health issues including the management of Public Health, Health education and ethical concerns regarding health-care, medical research and pharmaceuticals.
- (v) Law enforcement, internal security and related issues such as the preservation of communal harmony.
- (vi) Issues relating to good governance and accountability to the citizens including the maintenance of human rights, and of probity in public life.
- (vii) Environmental issues, ecological preservation, conservation of natural resources and national heritage.

PAPER-II**1. India and the World**

This part will include questions to test candidate's awareness of India's relationship with the world in various spheres such as the following :

- Foreign Affairs with special emphasis on India's relations with neighbouring countries and in the region.
- Security and defence related matters.
- Nuclear policy, issues, and conflicts. The Indian Diaspora and its contribution to India and the world.

2. India's Economic Interaction with the World

In this part, questions will be on economic and trade issues such as foreign trade, foreign investments; economic and diplomacy issues relating to oil, gas and energy flows; the role and functions of I.M.F., World Bank, W.T.O. WIPO etc. which influence India's economic interaction with other countries and international institutions.

3. Developments in the field of Science & Technology, IT and Space

In this part, questions will test the candidate's awareness of the developments in the field of science and technology, information technology, space and basic ideas about computers, robotics, nanotechnology, biotechnology and related issues regarding intellectual property rights.

4. International Affairs and Institutions

This part will include questions on important events in world affairs and on international institutions.

5. Statistical analysis, graphs and diagrams

This part will test the candidate's ability to draw conclusions from information presented in statistical, graphical or diagrammatical form and to interpret them.

AGRICULTURE

PAPER-I

Ecology and its relevance to man, natural resources, their sustainable management and conservation. Physical and social environment as factors of crop distribution and production. Agro ecology; cropping pattern as indicators of environments. Environmental pollution and associated hazards to crops, animals and humans. Climate change—International conventions and global initiatives. Green house effect and global warming. Advance tools for ecosystem analysis—Remote Sensing (RS) and Geographic Information Systems (GIS).

Cropping patterns in different agro-climatic zones of the country. Impact of high-yielding and short-duration varieties on shifts in cropping patterns. Concepts of various cropping, and farming systems. Organic and Precision farming. Package of practices for production of important cereals, pulses, oil seeds, fibres, sugar, commercial and fodder crops.

Important features, and scope of various types of forestry plantations such as social forestry, agro-forestry, and natural forests: Propagation of forest plants. Forest products. Agro-forestry and value addition. Conservation of forest flora and fauna.

Weeds, their characteristics, dissemination and association with various crops; their multiplications: cultural, biological, and chemical control of weeds.

Soil—physical, chemical and biological properties. Processes and factors of soil formation. Soils of India. Mineral and organic constituents of soils and their role in maintaining soil productivity. Essential plant nutrients and other beneficial elements in soils and plants. Principles of soil fertility, soil testing and fertiliser recommendations, integrated nutrient management Biofertilizers. Losses of nitrogen in soil, nitrogen-use efficiency in submerged rice soils, nitrogen fixation in soils. Efficient phosphorus and potassium use. Problem soils and their reclamation. Soil factors affecting green house gas emission.

Soil conservation, integrated watershed management. Soil erosion and its management. Dry land agriculture and its

problems. Technology for stabilising agriculture production in rain fed areas.

Water-use efficiency in relation to crop production, criteria for scheduling irrigations, ways and means of reducing run-off losses of irrigation water. Rainwater harvesting. Drip and sprinkler irrigation. Drainage of water-logged soils, quality of irrigation water, effect of industrial effluents on soil and water pollution. Irrigation projects in India.

Farm management, scope, importance and characteristics, farm planning. Optimum resource use and budgeting. Economics of different types of farming systems. Marketing management strategies for development, market intelligence. Price fluctuations and their cost; role of co-operatives in agricultural economy; types and systems of farming and factors affecting them. Agricultural price policy. Crop Insurance.

Agricultural extension, its importance and role, methods of evaluation of extension programmes, socio-economic survey and status of big, small and marginal farmers and landless agricultural labourers; Training programmes for extension workers. Role of Krishi Vigyan Kendra's (KVK) in dissemination of Agricultural technologies. Non-Government Organisation (NGO) and self-help group approach for rural development.

PAPER-II

Cell structure, function and cell cycle. Synthesis, structure and function of genetic material. Laws of heredity. Chromosome structure, chromosomal aberrations, linkage and cross-over, and their significance in recombination breeding. Polyploidy, euploids and aneuploids. Mutation—and their role in crop improvement. Heritability, sterility and incompatibility, classification and their application in crop improvement. Cytoplasmic inheritance, sex-linked, sex-influenced and sex-limited characters.

History of plant breeding. Modes of reproduction, selfing and crossing techniques. Origin, evolution and domestication of crop plants, center of origin, law of homologous series, crop genetic resources—conservation and utilization. Application of principles of plant breeding, improvement of crop plants. Molecular markers and their application in plant improvement. Pure-line selection, pedigree, mass and recurrent selections, combining ability, its significance in plant breeding. Heterosis and its exploitation. Somatic hybridization. Breeding for disease and pest resistance. Role of interspecific and intergeneric hybridization. Role of genetic engineering and biotechnology in crop improvement Genetically modified crop plants.

Seed production and processing technologies: Seed certification. Seed testing and storage. DNA finger printing and seed registration. Role of public and private sectors in seed production, and marketing. Intellectual Property Rights (IPR) issues, WTO issues and its impact on Agriculture.

Principles of Plant Physiology with reference to plant nutrition, absorption, translocation and metabolism of nutrients. Soil-water-plant relationship.

Enzymes and plant pigments; photosynthesis—modern concepts and factors affecting the process, aerobic and anaerobic respiration; C_3 , C_4 and CAM mechanisms. Carbohydrate, protein and fat metabolism. Growth and development; photoperiodism and vernalization. Plant growth substances and their role in crop production. Physiology of seed development and germination; dormancy. Stress physiology—draught, salt and water stress.

Major fruits, plantation crops, vegetables, spices and flower crops. Package practices of major horticultural crops. Protected cultivation and high tech horticulture. Post-harvest technology and value addition of fruits and vegetables. Landscaping and commercial floriculture. Medicinal and aromatic plants. Role of fruits and vegetables in human nutrition.

Diagnosis of pests and diseases of field crops, vegetables, orchard and plantation crops and their economic importance. Classification of pests and diseases and their management. Intergrated pest and diseases management. Storage pests and their management. Biological control of pests and diseases. Epidemiology and forecasting of major crop pests and diseases. Plant quarantine measures. Pesticides, their formulation and modes of action.

Food production and consumption trends in India. Food security and growing population—vision 2020. Reasons for grain surplus. National and International food policies. Production, procurement, distribution constraints. Availability of foodgrains, per capita expenditure on food. Trends in poverty, Public Distribution System and Below Poverty Line population, Targeted Public Distribution System (PDS), policy implementation in context to globalization. Processing constraints. Relation of food production to National Dietary Guidelines and food consumption pattern. Food based dietary approaches to eliminate hunger. Nutrient deficiency—Micro nutrient deficiency : Protein Energy Malnutrition or Protein Calorie Malnutrition (PEM or PCM), Micro nutrient deficiency and HRD in context of work capacity of women and children. Food grain productivity and food security.

ANIMAL HUSBANDRY AND VETERINARY SCIENCE PAPER-I

1. Animal Nutrition :

- 1.1 Partitioning of food energy within the animal. Direct and indirect calorimetry. Carbon—nitrogen balance and comparative slaughter methods. Systems for expressing energy value of foods in ruminants, pigs and poultry. Energy requirements for maintenance, growth, pregnancy, lactation, egg, wool, and meat production.
- 1.2 Latest advances in protein nutrition. Energy protein inter-relationships. Evaluation of protein quality. Use of NPN compounds in ruminant diets. Protein requirements for maintenance, growth, pregnancy, lactation, egg, wool and meat production.

- 1.3 Major and trace minerals—Their sources, physiological functions and deficiency symptoms. Toxic minerals. Mineral interactions. Role of fat-soluble and water-soluble vitamins in the body, their sources and deficiency symptoms.
- 1.4 Feed additives—methane inhibitors, probiotics, enzymes, antibiotics, hormones, oligosaccharides, antioxidants, emulsifiers, mould inhibitors, buffers etc. Use and abuse of growth promoters like hormones and antibiotics—latest concepts.
- 1.5 Conservation of fodders. Storage of feeds and feed ingredients. Recent advances in feed technology and feed processing. Anti-nutritional and toxic factors present in livestock feeds. Feed analysis and quality control. Digestibility trials—direct, indirect and indicator methods. Predicting feed intake in grazing animals.
- 1.6 Advances in ruminant nutrition. Nutrient requirements. Balanced rations. Feeding of calves, pregnant, work animals and breeding bulls. Strategies for feeding milch animals during different stages of lactation cycle. Effect of feeding on milk composition. Feeding of goats for meat and milk production. Feeding of sheep for meat and wool production.
- 1.7 Swine Nutrition. Nutrient requirements. Creep, starter, grower and finisher rations. Feeding of pigs for lean meat production. Low cost rations for swine.
- 1.8 Poultry nutrition. Special features of poultry nutrition. Nutrient requirements for meat and egg production. Formulation of rations for different classes of layers and broilers.

2. Animal Physiology :

- 2.1 Physiology of blood and its circulation, respiration; excretion. Endocrine glands in health and disease.
- 2.2 Blood constituents.—Properties and functions—blood cell formation—Haemoglobin synthesis and chemistry—plasma proteins production, classification and properties, coagulation of blood; Haemorrhagic disorders—anti-coagulants— blood groups—Blood volume—Plasma expanders—Buffer systems in blood. Biochemical tests and their significance in disease diagnosis.
- 2.3 Circulation.—Physiology of heart, cardiac cycle, heart sounds, heart beat, electrocardiograms. Work and efficiency of heart—effect of ions on heart function—metabolism of cardiac muscle, nervous and chemical regulation of heart, effect of temperature and stress on heart, blood pressure and hypertension, osmotic regulation, arterial pulse, vasomotor regulation of circulation, shock. Coronary and pulmonary circulation, Blood-Brain barrier Cerebrospinal fluid-circulation in birds.
- 2.4 Respiration.—Mechanism of respiration, Transport and exchange of gases—neural control of respiration—Chemo-receptors-hypoxia-respiration in birds.

- 2.5 Excretion.—Structure and function of kidney-formation of urine-methods of studying renal function-renal regulation of acid-base balance : physiological constituents of urine-renal failure-passive venous congestion-Urinary secretion in chicken-Sweat glands and their function. Bio-chemical test for urinary dysfunction.
- 2.6 Endocrine glands.—Functional disorders—their symptoms and diagnosis. Synthesis of hormones, mechanism and control of secretion—hormonal receptors-classification and function.
- 2.7 Growth and Animal Production.—Prenatal and postnatal growth, maturation, growth curves, measures of growth, factors affecting growth, conformation, body composition, meat quality.
- 2.8 Physiology of Milk Production, Reproduction and Digestion.—Current status of hormonal control of mammary development, milk secretion and milk ejection. Male and Female reproductive organs, their components and functions. Digestive organs and their functions.
- 2.9 Environmental Physiology.—Physiological relations and their regulation; mechanisms of adaptation, environmental factors and regulatory mechanisms involved in animal behaviour, climatology—various parameters and their importance. Animal ecology. Physiology of behaviour. Effect of stress on health and production.

3. Animal Reproduction :

Semen quality.—Preservation and Artificial Insemination—Components of semen, composition of spermatozoa, chemical and physical properties of ejaculated semen, factors affecting semen in vivo and in vitro. Factors affecting semen production and quality, preservation, composition of diluents, sperm concentration, transport of diluted semen. Deep freezing techniques in cows, sheep, goats, swine and poultry. Detection of oestrus and time of insemination for better conception. Anoestrus and repeat breeding.

4. Livestock Production and Management :

- 4.1 Commercial Dairy Farming.—Comparison of dairy farming in India with advanced countries. Dairying under mixed farming and as specialized farming, economic dairy farming. Starting of a dairy farm, Capital and land requirement, organization of the dairy farm. Opportunities in dairy farming, factors determining the efficiency of dairy animal. Heard recording, budgeting cost of milk production, pricing policy; Personnel Management. Developing Practical and Economic rations for dairy cattle; supply of greens throughout the year, feed and fodder requirements of Dairy Farm. Feeding regimes for young stock and bulls, heifers and breeding animals; new trends in feeding young and adult stock; Feeding records.

- 4.2 Commercial meat, egg and wool production.—Development of practical and economic rations for sheep, goats, pigs, rabbits and poultry. Supply of greens, fodder, feeding regimes for young and mature stock. New trends in enhancing production and management. Capital and land requirements and socio-economic concept.
- 4.3 Feeding and management of animals under drought, flood and other natural calamities.

5. Genetics and Animal Breeding :

- 5.1 History of animal genetics. Mitosis and Meiosis : Mendelian inheritance; deviations to Mendelian genetics; Expression of genes; Linkage and crossing over; Sex determination, sex influenced and sex limited characters; Blood groups and polymorphism; Chromosome aberrations; Cytoplasmic inheritance, Gene and its structure; DNA as a genetic material; Genetic code and protein synthesis; Recombinant DNA technology. Mutations, types of mutations, methods for detecting mutations and mutation rate, Transgenesis.
- 5.2 Population Genetics applied to Animal Breeding—Quantitative Vs. Qualitative traits; Hardy Weinberg Law; Population Vs. Individual; Gene and genotypic frequency; Forces changing gene frequency; Random drift and small populations; Theory of path coefficient; Inbreeding, methods of estimating inbreeding coefficient, systems of inbreeding; Effective population size; Breeding value, estimation of breeding value, dominance and epistatic deviation; Partitioning of variation; Genotype X environment correlation and genotype X environment interaction; role of multiple measurements; Resemblance between relatives.
- 5.3 Breeding Systems.—Breeds of livestock and Poultry. Heritability, repeatability and genetic and phenotypic correlations, their methods of estimation and precision of estimates; Aids to selection and their relative merits; Individual, pedigree, family and within family selection; Pregnancy testing; Methods of selection; Construction of selection indices and their uses; Comparative evaluation of genetic gains through various selection methods; Indirect selection and correlated response; Inbreeding, out breeding, upgrading, cross-breeding and synthesis of breeds; Crossing of inbred lines for commercial production; Selection for general and specific combining ability; Breeding for threshold characters. Sire index.

6. Extension :

Basic philosophy, objectives, concept and principles of extension. Different Methods adopted to educate farmers under rural conditions. Generation of technology, its transfer and feedback. Problems and constraints in transfer of technology. Animal husbandry programmes for rural development.

PAPER—II

1. Anatomy, Pharmacology and Hygiene :

- 1.1 **Histology and Histological Techniques** : Paraffin embedding technique of tissue processing and H.E. staining - Freezing microtomy—Microscopy Bright field microscope and electron microscope. Cytology-structure of cell organells and inclusions; cell division-cell types—Tissues and their classification-embryonic and adult tissues—Comparative histology of organs—Vascular, Nervous, digestive, respiratory, musculo-skeletal and urogenital systems Endocrine glands—Integuments—sense organs.
- 1.2 **Embryology**.—Embryology of vertebrates with special reference to aves and domestic mammals gametogenesis-fertilization-germ layers-foetal membranes and placentation-types of placenta in domestic mammals-Teratology-twins and twinning-organogenesis-germ layer derivatives-endodermal, mesodermal and ectodermal derivatives.
- 1.3 **Bovine Anatomy**.—Regional Anatomy : Paranasal sinuses of OX -- surface anatomy of salivary glands. Regional anatomy of infraorbital, maxillary, mandibuloalveolar, mental and corneal nerve block. Regional anatomy of paravertebral nerves, pudental nerve, median, ulnar and radial nervestibial, fibular and digital nerves Cranial nerves-structures involved in epidural anaesthesia-superficial lymph nodes-surface anatomy of visceral organs of thoracic, abdominal and pelvic cavities-comparative-features of locomotor apparatus and their application in the biomechanics of mammalian body.
- 1.4 **Anatomy of Fowl**.—Musculo-skeletal system-functional anatomy in relation to respiration and flying, digestion and egg production.
- 1.5 **Pharmacology and therapeutics drugs**.— Cellular level of pharmacodynamics and pharmacokinetics. Drugs acting on fluids and electrolyte balance. Drugs acting on Autonomic nervous system. Modern concepts of anaesthesia and dissociative anaesthetics. Autocoids. Antimicrobials and principles of chemotherapy in microbial infections. Use of hormones in therapeutics—chemotherapy of parasitic infections. Drug and economic concerns in the Edible tissues of animals—chemotherapy of Neoplastic diseases. Toxicity due to "insecticides, plants, metals, non-metals, zootoxins and mycotoxins".
- 1.6 **Veterinary Hygiene with reference to water, air and habitation**.—Assessment of pollution of water, air and soil : Importance of climate in animal health—effect of environment on animal function and performance relationship between industrialisation and animal agriculture—animal housing requirements for specific categories of domestic animals viz. pregnant cows and sows, milking cows, broiler

birds—stress, strain and productivity in relation to animal habitation.

2. Animal Diseases :

- 2.1 Etiology, epidemiology pathogenesis, symptoms, post-mortem lesions, diagnosis, and control of infectious diseases of cattle, sheep and goat, horses, pigs and poultry.
- 2.2 Etiology, epidemiology, symptoms, diagnosis, treatment of production diseases of cattle, horse, pig and poultry.
- 2.3 Deficiency diseases of domestic animals and birds.
- 2.4 Diagnosis and treatment of non-specific conditions like impaction, Bloat, Diarrhoea, Indigestion, dehydration, stroke, poisoning.
- 2.5 Diagnosis and treatment of neurological disorders.
- 2.6 **Principles and methods of immunisation of animals against specific diseases—hard immunity—disease free zones—'zero' disease concept—chcmoprophylaxis.**
- 2.7 **Anaesthesia**.—local, regional and general-prenesthetic medication. Symptoms and surgical interference in fractures and dislocation. Hernia, choking abomassal displacement—Caesarian operations. Rumenotomy. Castrations.
- 2.8 **Disease investigation techniques**.—Materials for laboratory investigation Establishment. Animal Health Centres—Disease free zone.

3. Veterinary Public Health :

- 3.1 **Zoonoses**.—Classification, definition, role of animals and birds in prevalence and transmission of zoonotic diseases—occupational zoonotic diseases.
- 3.2 **Epidemiology**.—Principle, definition of epidemiological terms, application of epidemiological measures in the study of diseases and disease control. Epidemiological features of air, water and food borne infections. OIE regulation, WTO, sanitary and phytosanitary measures.
- 3.3 **Veterinary Jurisprudence**. Rules and Regulations for improvement of animal quality and prevention of animal diseases—State and Central Rules for prevention of animal and animal product borne diseases—S.P. C.A. Veterolegal cases—Certificates—Materials and Methods of collection of samples for veterolegal investigation.

4. Milk and Milk Products Technology :

- 4.1 **Market Milk**.—Quality, testing and grading of raw milk. Processing, packaging, storing, distribution, marketing defects and their control. Preparation of the following milks : Pasteurized, standardized, toned, double toned, sterilized, homogenized, reconstituted, recombined and flavoured milks. Preparation of cultured milks, cultures and their management, yoghurt, Dahi, Lassi and Srikhand. Preparation of

flavoured and sterilized milks. Legal standards. Sanitation requirement for clean and safe milk and for the milk plant equipment.

- 4.2 **Milk Products Technology.**—Selection of raw materials, processing, storing, distributing and marketing milk products such as Cream, Butter, Ghee, Khoa, Channa, Cheese, condensed, evaporated, dried milk and baby food, Ice cream and Kulfi; by-products, whey products, butter milk, lactose and casein. Testing, grading, judging milk products—BIS and Agmark specifications, legal standards, quality control nutritive properties. Packaging processing and operational control. Costing of dairy products.

5. Meat Hygiene and Technology :

5.1 Meat Hygiene

- 5.1.1 Ante mortem care and management of food animals, stunning, slaughter and dressing operations; abattoir requirements and designs; Meat inspection procedures and judgement of carcass meat cuts—grading of carcass meat cuts—duties and functions of Veterinarians in wholesome meat production.

- 5.1.2 **Hygienic methods of handling production of meat.**—Spoilage of meat and control measures—Post-slaughter physicochemical changes in meat and factors that influence them—Quality improvement methods—Adulteration of meat and detection—Regulatory provisions in Meat trade and Industry.

5.2 Meat Technology

- 5.2.1 **Physical and chemical characteristics of meat.**—Meat emulsions—Methods of preservation of meat—Curing, canning, irradiation, packaging of meat and meat products, processing and formulations.

- 5.3 **By-products.**—Slaughter house by-products and their utilisation—Edible and inedible by products—Social and economic implications of proper utilisation of slaughter house by-products—Organ products for food and pharmaceuticals.

- 5.4 **Poultry Products Technology.**—Chemical composition and nutritive value of poultry meat, pre-slaughter care and management. Slaughtering techniques, inspection, preservation of poultry meat and products. Legal and BIS standards.

Structure composition and nutritive value of eggs
Microbial spoilage. Preservation and maintenance.
Marketing of poultry meat, eggs and products.

- 5.5 **Rabbit/Fur Animal farming.**—Rabbit meat production. Disposal and utilization of fur and wool and recycling of waste by products. Grading of wool.

ANTHROPOLOGY

PAPER-I

- 1.1 Meaning, Scope and development of Anthropology.
1.2 Relationships with other disciplines : Social Sciences, behavioural Sciences, Life Sciences, Medical Sciences, Earth Sciences and Humanities.

- 1.3 Main branches of Anthropology, their scope and relevance.

- (a) Social-cultural Anthropology.
- (b) Biological Anthropology.
- (c) Archaeological Anthropology.
- (d) Linguistic Anthropology.

- 1.4 Human Evolution and emergence of Man :

- (a) Biological and Cultural factors in human evolution.
- (b) Theories of Organic Evolution (Pre-Darwinian, Darwinian and Post-Darwinian).
- (c) Synthetic theory of evolution; Brief outline of terms and concepts of evolutionary biology (Doll's rule, Cope's rule, Gause's rule, parallelism, convergence, adaptive radiation, and mosaic evolution).

- 1.5 Characteristics of Primates; Evolutionary Trend and Primate Taxonomy; Primate Adaptations; (Arboreal and Terrestrial) Primate Taxonomy; Primate Behaviour; Tertiary and Quaternary fossil primates; Living Major Primates; Comparative Anatomy of Man and Apes; Skeletal changes due to erect posture and its implications.

- 1.6 Phylogenetic status, characteristics and geographical distribution of the following :

- (a) Plio-preistocene hominids in South and East Africa—Australopithecines.
- (b) *Homo erectus* : Africa (*Paranthropus*), Europe (*Homo erectus heidelbergensis*), Asia (*Homo erectus javanicus*, *Homo erectus pekinensis*).
- (c) Neanderthal man—La-chapelle-aux-saints (Classical type), Mt. Carmel (Progressive type).
- (d) Rhodesian man.
- (e) *Homo saoiens*—Cromagnon, Grimaldi and Chancelade.

- 1.7 The biological basis of Life : The Cell, DNA structure and replication, Protein Synthesis, Gene, Mutation, Chromosomes, and Cell Division.

- 1.8 (a) Principles of Prehistoric Archaeology. Chronology : Relative and Absolute Dating methods.

- (b) Cultural Evolution—Broad Outlines of Prehistoric cultures :

- (i) Paleolithic
- (ii) Mesolithic
- (iii) Neolithic
- (iv) Chalcolithic
- (v) Copper-Bronze Age
- (vi) Iron Age

- 2.1 **The Nature of Culture** : The concept and Characteristics of culture and civilization; Ethnocentrism vis-a-vis cultural Relativism.

- 2.2 **The Nature of Society** : Concept of Society; Society and Culture; Social Institution; Social groups; and Social stratification.
- 2.3 **Marriage** : Definition and universality; Laws of marriage (endogamy, exogamy, hypergamy, hypogamy, incest taboo); Type of marriage (monogamy, polygamy, polyandry, group marriage). Functions of marriage; Marriage regulations (preferential, prescriptive and proscriptive); Marriage payments (bride wealth and dowry).
- 2.4 **Family** : Definition and universality; Family, household and domestic groups; functions of family; Types of family (from the perspectives of structure, blood relation, marriage, residence and succession); Impact of urbanization, industrialization and feminist movements on family.
- 2.5 **Kinship** : Consanguinity and Affinity; Principles and types of descent (Unilineal, Double, Bilateral Ambilineal); Forms of descent groups (lineage, clan, phratry, moiety and kindred); Kinship terminology (descriptive and classificatory); Descent, Filiation and Complimentary Filiation; Decent and Alliance.
3. **Economic Organization** : Meaning, scope and relevance of economic anthropology; Formalist and Substantivist debate; Principles governing production, distribution and exchange (reciprocity, redistribution and market), in communities, subsisting on hunting and gathering, fishing, swiddening, pastoralism, horticulture, and agriculture; globalization and indigenous economic systems.
4. **Political Organization and Social Control** : Band, tribe, chiefdom, kingdom and state; concepts of power, authority and legitimacy; social control, law and justice in simple societies.
5. **Religion** : Anthropological approaches to the study of religion (evolutionary, psychological and functional); monotheism and polytheism; sacred and profane; myths and rituals; forms of religion in tribal and peasant societies (animism, animatism, fetishism, naturism and totemism); religion, magic and science distinguished; magico-religious functionaries (priest, shaman, medicine man, sorcerer and witch).
6. **Anthropological theories** :
- Classical evolutionism (Tylor, Morgan and Frazer)
 - Historical particularism (Boas) Diffusionism (British, German and American)
 - Functionalism (Malinowski); Structural—Functionalism (Radcliffe-Brown)
 - Structuralism (L'evi-Strauss and E. Leach)
 - Culture and personality (Benedict, Mead, Linton, Kardiner and Cora-du Bois)
 - Neo—evolutionism (Childe, White, Steward, Sahlins and Service)
 - Cultural materialism (Harris)
 - Symbolic and interpretive theories (Turner, Schneider and Geertz)
 - Cognitive theories (Tyler, Conklin)
 - Post-modernism in anthropology.
7. **Culture, language and communication** : Nature, origin and characteristics of language; verbal and non-verbal communication; social context of language use.
8. **Research methods in anthropology** :
- Fieldwork tradition in anthropology
 - Distinction between technique, method and methodology
 - Tools of data collection : observation, interview, schedules, questionnaire, case study, genealogy, life-history, oral history, secondary sources of information, participatory methods.
 - Analysis, interpretation and presentation of data.
- 9.1 **Human Genetics** : Methods and Application : Methods for study of genetic principles in man-family study (pedigree analysis, twin study, foster child, co-twin method, cytogenetic method, chromosomal and karyo-type analysis), biochemical methods, immunological methods, D.N.A. technology and recombinant technologies.
- 9.2 Mendelian genetics in man-family study, single factor, multifactor, lethal, sub-lethal and polygenic inheritance in man.
- 9.3 Concept of genetic polymorphism and selection, Mendelian population, Hardy-Weinberg law; causes and changes which bring down frequency-mutation, isolation, migration, selection, inbreeding and genetic drift. Consanguineous and non-consanguineous mating, genetic load, genetic effect of consanguineous and cousin marriages.
- 9.4 Chromosomes and chromosomal aberrations in man, methodology.
- Numerical and structural aberrations (disorders).
 - Sex chromosomal aberration- Klinefelter (XXY), Turner (XO), Super female (XXX), intersex and other syndromic disorders.
 - Autosomal aberrations- Down syndrome, Patau, Edward and Cri-du-chat syndromes.
 - Genetic imprints in human disease, genetic screening, genetic counseling, human DNA profiling, gene mapping and genome study.
- 9.5 Race and racism, biological basis of morphological variation of non-metric and characters. Racial criteria, racial traits in relation to heredity and environment; biological basis of racial classification, racial differentiation and race crossing in man.
- 9.6 **Age, sex and population variation as genetic marker** : ABO, Rh blood groups, HLA Hp. transferring, Gm,

- blood enzymes. Physiological characteristics—Hb level, body fat, pulse rate, respiratory functions and sensory perceptions in different cultural and socio-economic groups.
- 9.7 **Concepts and methods of Ecological Anthropology :** Bio-cultural Adaptations—Genetic and Non-genetic factors. Man's physiological responses to environmental stresses: hot desert, cold, high altitude climate.
- 9.8 **Epidemiological Anthropology : Health and disease.** Infectious and non-infectious diseases, Nutritional deficiency related diseases.
10. **Concept of human growth and development :** Stages of growth—pre-natal, natal, infant, childhood, adolescence, maturity, senescence.
—Factors affecting growth and development genetic, environmental, biochemical, nutritional, cultural and socio-economic.
—Ageing and senescence. Theories and observations
— Biological and chronological longevity. Human physique and somatotypes. Methodologies for growth studies.
- 11.1 Relevance of menarche, menopause and other bioevents to fertility. Fertility patterns and differentials.
- 11.2 Demographic theories—biological, social and cultural.
- 11.3 Biological and socio-ecological factors influencing fecundity, fertility, natality and mortality.
12. **Applications of Anthropology :** Anthropology of sports, Nutritional anthropology, Anthropology in designing of defence and other equipments, Forensic Anthropology, Methods and principles of personal identification and reconstruction, Applied human genetics—Paternity diagnosis, genetic counselling and eugenics, DNA technology in diseases and medicine, serogenetics and cytogenetics in reproductive biology.
- PAPER-II**
- 1.1 **Evolution of the Indian Culture and Civilization—** Prehistoric (Palaeolithic, Mesolithic, Neolithic and Neolithic-Chalcolithic), Protohistoric (Indus Civilization). Pre-Harappan, Harappan and post-Harappan cultures. Contributions of the tribal cultures to Indian civilization.
- 1.2 **Palaeo—**Anthropological evidences from India with special reference to Siwaliks and Narmada basin (*Ramapithecus, Sivapithecus and Narmada Man*).
- 1.3 **Ethno-archaeology in India:** The concept of ethno-archaeology; Survivals and Parallels among the hunting, foraging, fishing, pastoral and peasant communities including arts and crafts producing communities.
2. **Demographic profile of India—**Ethnic and linguistic elements in the Indian population and their distribution. Indian population factors influencing its structure and growth.
- 3.1 The structure and nature of traditional Indian social system—Varnashram, Purushartha, Karma, Rina and Rebirth.
- 3.2 **Caste system in India—**Structure and characteristics Varna and caste, Theories of origin of caste system, Dominant caste, Caste mobility, Future of caste system, Jajmani system. Tribe-caste continuum.
- 3.3 Sacred Complex and Nature-Man-Spirit Complex.
- 3.4. **Impact of Buddhism, Jainism, Islam and Christianity** of Indian society.
4. Emergence, growth and development in India—Contributions of the 18th, 19th and early 20th Century scholar-administrators. Contributions of Indian anthropologists to tribal and caste studies.
- 5.1 **Indian Village—**Significance of village study in India; Indian village as a social system; Traditional and changing patterns of settlement and inter-caste relations; Agrarian relations in Indian villages; Impact of globalization on Indian villages.
- 5.2 Linguistic and religious minorities and their social, political and economic status.
- 5.3 Indigenous and exogenous processes of socio-cultural change in Indian society: Sanskritization, Westernization, Modernization; Inter-play of little and great traditions; Panchayati Raj and social change; Media and Social change.
- 6.1 **Tribal situation in India—**Bio-genetic variability, linguistic and socio-economic characteristics of the tribal populations and their distribution.
- 6.2 **Problems of the tribal Communities—**Land alienation, poverty, indebtedness, low literacy, poor educational facilities, unemployment, under-employment, health and nutrition.
- 6.3 Developmental projects and their impact on tribal displacement and problems of rehabilitation. Development of forest policy and tribals. Impact of urbanisation and industrialization on tribal populations.
- 7.1 Problems of exploitation and deprivation of Scheduled Castes, Scheduled Tribes and Other Backward Classes. Constitutional safeguards for Scheduled Tribes and Scheduled Castes.
- 7.2 Social change and contemporary tribal societies : Impact of modern, democratic institutions, development programmes and welfare measures on tribals and weaker sections.
- 7.3 The concept of ethnicity; Ethnic conflicts and political developments; Unrest among tribal communities; Regionalism and demand for

- autonomy; Pseudo-tribalism. Social change among the tribes during colonial and post-Independent India.
- 8.1 Impact of Hinduism, Buddhism, Christianity, Islam and other religions on tribal societies.
 - 8.2 Tribe and nation state—a comparative study of tribal communities in India and other countries.
 - 9.1 History of administration of tribal areas, tribal policies, plans, programmes of tribal development and their implementation. The concept of PTGs (Primitive Tribal Groups), their distribution, special programmes for their development. Role of N.G.O.s in tribal development.
 - 9.2 Role of anthropology in tribal and rural development.
 - 9.3 Contributions of anthropology to the understanding of regionalism, communalism and ethnic and political movements.

BOTANY

PAPER-I

1. Microbiology and Plant Pathology :

Structure and reproduction/multiplication of viruses, viroids, bacteria, fungi and mycoplasma; Applications of microbiology in agriculture, industry, medicine and in control of soil and water pollution; Prion and Prion hypothesis.

Important crop diseases caused by viruses, bacteria, mycoplasma, fungi and nematodes; Modes of infection and dissemination; Molecular basis of infection and disease resistance/defence; Physiology of parasitism and control measures. Fungal toxins. Modelling and disease forecasting; Plant quarantine.

2. Cryptogams :

Algae, fungi, lichens, bryophytes, pteridophytes—structure and reproduction from evolutionary viewpoint; Distribution of Cryptogams in India and their ecological and economic importance.

3. Phanerogams :

Gymnosperms : Concept of Progymnosperms. Classification and distribution of gymnosperms. Salient features of Cycadales, Ginkgoales, Coniferales and Gnetales, their structure and reproduction. General account of Cycadofilicales, Bennettitales and Cordaitales; Geological time scale; Type of fossils and their study techniques.

Angiosperms : Systematics, anatomy, embryology, palynology and phylogeny.

Taxonomic hierarchy; International Code of Botanical Nomenclature; Numerical taxonomy and chemotaxonomy; Evidence from anatomy, embryology and palynology.

Origin and evolution of angiosperms; Comparative account of various systems of classification of angiosperms; Study of angiospermic families—

Magnoliaceae, Ranunculaceae, Brassicaceae, Rosaceae, Fabaceae, Euphorbiaceae, Malvaceae, Dipterocarpaceae, Apiaceae, Asclepiadaceae, Verbenaceae, Solanaceae, Rubiaceae, Cucurbitaceae, Asteraceae, Poaceae, Arecaceae, Liliaceae, Musaceae and Orchidaceae.

Stomata and their types; Glandular and non-glandular trichomes; Unusual secondary growth; Anatomy of C_3 and C_4 plants; Xylem and phloem differentiation; Wood anatomy.

Development of male and female gametophytes, pollination, fertilization; Endosperm—its development and function. Patterns of embryo development; Polyembryony, apomixes; Applications of palynology; Experimental embryology including pollen storage and test-tube fertilization.

4. Plant Resource Development :

Domestication and introduction of plants; Origin of cultivated plants. Vavilov's centres of origin. Plants as sources for food, fodder, fibres, spices, beverages, edible oils, drugs, narcotics, insecticides, timber, gums, resins and dyes; latex, cellulose, starch and its products; Perfumery; Importance of Ethnobotany in Indian context; Energy plantations; Botanical Gardens and Herbaria.

5. Morphogenesis :

Totipotency, polarity, symmetry and differentiation; Cell, tissue, organ and protoplast culture. Somatic hybrids and Cybrids; Micropropagation; Somaclonal variation and its applications; Pollen haploids, embryo rescue methods and their applications.

PAPER-II

1. Cell Biology :

Techniques of cell biology. Prokaryotic and eukaryotic cells—structural and ultrastructural details; Structure and function of extracellular matrix (cell wall) and membranes—cell adhesion, membrane transport and vesicular transport; Structure and function of cell organelles (chloroplasts, mitochondria, ER, dictyosomes, ribosomes, endosomes, lysosomes, peroxisomes; Cytoskeleton and microtubules; Nucleus, nucleolus, nuclear pore complex; Chromatin and nucleosome; Cell signalling and cell receptors; Signal transduction. Mitosis and meiosis; molecular basis of cell cycle. Numerical and structural variations in chromosomes and their significance; Chromatin organization and packaging of genome; Polytene chromosomes; B-chromosomes—structure, behaviour and significance.

2. Genetics, Molecular Biology and Evolution :

Development of genetics, and gene versus allele concepts (Pseudoalleles); Quantitative genetics and

multiple factors; Incomplete dominance, polygenic inheritance, multiple alleles; Linkage and crossing over of gene mapping including molecular maps (idea of mapping, function); Sex chromosomes and sex-linked inheritance; sex determination and molecular basis of sex differentiation; Mutations (biochemical and molecular basis); Cytoplasmic inheritance and cytoplasmic genes (including genetics of male sterility).

Structure and synthesis of nucleic acids and proteins; Genetic code and regulation of gene expression; Gene silencing; Multigene families; Organic evolution-evidences, mechanism and theories.

Role of RNA in origin and evolution.

3. **Plant Breeding, Biotechnology and Biostatistics :**

Methods of plant breeding—introduction, selection and hybridization (pedigree, backcross, mass selection, bulk method); Mutation, polyploidy, male sterility and heterosis breeding. Use of apomixes in plant breeding; DNA sequencing; Genetic engineering—methods of transfer of genes; Transgenic crops and biosafety aspects; Development and use of molecular markers in plant breeding; Tools and techniques—probe, southern blotting, DNA fingerprinting, PCR and FISH. Standard deviation and coefficient of variation (CV). Tests of significance (Z-test, t-test and chi-square tests). Probability and distributions (normal, binomial and Poisson). Correlation and regression.

4. **Physiology and Biochemistry :**

Water relations, mineral nutrition and ion transport, mineral deficiencies. Photosynthesis—photochemical reactions, photophosphorylation and carbon fixation pathways; C₃, C₄ and CAM pathways; Mechanism of phloem transport, Respiration (anaerobic and aerobic, including fermentation)—electron transport chain and oxidative phosphorylation; Photorespiration; Chemiosmotic theory and ATP synthesis; Lipid metabolism; Nitrogen fixation and nitrogen metabolism. Enzymes, coenzymes; Energy transfer and energy conservation. Importance of secondary metabolites. Pigments as photoreceptors (plastidial pigments and phytochrome). Plant movements; Photoperiodism and flowering, vernalization, senescence; Growth substances—their chemical nature, role and applications in agriculture; growth indices, growth movements. Stress physiology (heat, water, salinity, metal); Fruit and seed physiology. Dormancy, storage and germination of seed. Fruit ripening—its molecular basis and manipulation.

5. **Ecology and Plant Geography :**

Concept of ecosystem; Ecological factors. Concepts and dynamics of community; Plant succession.

Concepts of biosphere; Ecosystems; Conservation; Pollution and its control (including phytoremediation); Plant indicators; Environment (Protection) Act.

Forest types of India—Ecological and economic importance of forests, afforestation, deforestation and social forestry; Endangered plants, endemism IUCN categories, Red Data Books; Biodiversity and its conservation; Protected Area Network; Convention of Biological Diversity, Farmers' Rights; and Intellectual Property Rights; Concept of Sustainable Development; Biogeochemical cycles. Global warming and climatic change; Invasive species; Environmental Impact Assessment; Phytogeographical regions of India.

CHEMISTRY

PAPER-I

1. **Atomic Structure :**

Heisenberg's uncertainty principle Schrodinger wave equation (time independent); Interpretation of wave function, particle in one-dimensional box, quantum numbers, hydrogen atom wave functions; Shapes of s, p and d orbitals.

2. **Chemical bonding :**

Ionic bond, characteristics of ionic compounds, lattice energy, Born-Haber cycle; covalent bond and its general characteristics, polarities of bonds in molecules and their dipole moments; Valence bond theory, concept of resonance and resonance energy; Molecular orbital theory (LCAO method); bonding H₂, He₂, He, Ne, NO, CO, HF, CN. Comparison of valence bond and molecular orbital theories, bond order, bond strength and bond length.

3. **Solid State :**

Crystal systems; Designation of crystal faces, lattice structures and unit cell; Bragg's law; X-ray diffraction by crystals; Close packing, radius ratio rules, calculation of some limiting radius ratio values; Structures of NaCl, ZnS, CsCl, CaF₂; Stoichiometric and nonstoichiometric defects, impurity defects, semi-conductors.

4. **The Gaseous State and Transport Phenomenon :**

Equation of state for real gases, intermolecular interactions, and critical phenomena and liquefaction of gases; Maxwell's distribution of speeds, intermolecular collisions, collisions on the wall and effusion; Thermal conductivity and viscosity of ideal gases.

5. **Liquid State :**

Kelvin equation; Surface tension and surface energy, wetting and contact angle, interfacial tension and capillary action.

6. **Thermodynamics :**

Work, heat and internal energy; first law of thermodynamics.

Second law of thermodynamics; entropy as a state function, entropy changes in various processes, entropy-reversibility and irreversibility, Free energy functions; Thermodynamic equation of state; Maxwell relations; Temperature, volume and pressure dependence of U , H , A , G , C_p and C_v , α and β ; J-T effect and inversion temperature; criteria for equilibrium, relation between equilibrium constant and thermodynamic quantities; Nernst heat theorem, introductory idea of third law of thermodynamics.

7. Phase Equilibria and Solutions :

Clausius-Clapeyron equation; phase diagram for a pure substance; phase equilibria in binary systems, partially miscible liquids—upper and lower critical solution temperatures; partial molar quantities, their significance and determination; excess thermodynamic functions and their determination.

8. Electrochemistry :

Debye-Huckel theory of strong electrolytes and Debye-Hückel limiting Law for various equilibrium and transport properties.

Galvanic cells, concentration cells; electrochemical series, measurement of e.m.f. of cells and its applications fuel cells and batteries.

Processes at electrodes; double layer at the interface; rate of charge transfer, current density; overpotential; electroanalytical techniques : amperometry, ion selective electrodes and their use.

9. Chemical Kinetics:

Differential and integral rate equations for zeroth, first, second and fractional order reactions; Rate equations involving reverse, parallel, consecutive and chain reactions; Branching chain and explosions; effect of temperature and pressure on rate constant. Study of fast reactions by stop-flow and relaxation methods. Collisions and transition state theories.

10. Photochemistry:

Absorption of light; decay of excited state by different routes; photochemical reactions between hydrogen and halogens and their quantum yields.

11. Surface Phenomena and Catalysis:

Adsorption from gases and solutions on solid adsorbents; Langmuir and B.E.T. adsorption isotherms; determination of surface area, characteristics and mechanism of reaction on heterogeneous catalysts.

12. Bio-inorganic Chemistry:

Metal ions in biological systems and their role in ion-transport across the membranes (molecular mechanism), oxygen-uptake proteins, cytochromes and ferredoxins.

13. Coordination Chemistry

(i) Bonding in transition of metal complexes. Valence bond theory, crystal field theory and its modifications; applications of theories in the explanation of magnetism and electronic spectra of metal complexes.

(ii) Isomerism in coordination compounds; IUPAC nomenclature of coordination compounds; stereochemistry of complexes with 4 and 6 coordination numbers; chelate effect and polynuclear complexes; trans effect and its theories; kinetics of substitution reactions in square-planar complexes; thermodynamic and kinetic stability of complexes.

(iii) EAN rule, Synthesis structure and reactivity of metal carbonyls; carboxylate anions, carbonyl hydrides and metal nitrosyl compounds.

(iv) Complexes with aromatic systems, synthesis, structure and bonding in metal olefin complexes, alkyne complexes and cyclopentadienyl complexes; coordinative unsaturation, oxidative addition reactions, insertion reactions, fluxional molecules and their characterization; Compounds with metal—metal bonds and metal atom clusters.

14. Main Group Chemistry:

Boranes, borazines, phosphazenes and cyclic phosphazene, silicates and silicones, Interhalogen compounds; Sulphur—nitrogen compounds, noble gas compounds.

15. General Chemistry of 'f' Block Element:

Lanthanides and actinides: separation, oxidation states, magnetic and spectral properties; lanthanide contraction.

PAPER-II

1. Delocalised Covalent Bonding :

Aromaticity, anti-aromaticity; annulenes, azulenes, tropolones, fulvenes, sydnones.

2. (i) Reaction mechanisms : General methods (both kinetic and non-kinetic) of study of mechanisms or organic reactions : isotopies, method cross-over experiment, intermediate trapping, stereochemistry; energy of activation; thermodynamic control and kinetic control of reactions.

(ii) Reactive intermediates : Generation, geometry, stability and reactions of carbonium ions and carbanions, free radicals, carbenes, benzynes and nitrenes.

(iii) Substitution reactions :— S_N1 , S_N2 , and S_Ni , mechanisms ; neighbouring group participation; electrophilic and nucleophilic reactions of aromatic compounds including heterocyclic compounds—pyrrole, furan, thiophene and indole.

- (iv) **Elimination reactions** :—E1, E2 and E1cb mechanisms; orientation in E2 reactions—Saytzeff and Hoffmann; pyrolytic *syn* elimination—acetate pyrolysis, Chugaev and Cope eliminations.
- (v) **Addition reactions** :—Electrophilic addition to C=C and C≡C; nucleophilic addition to C=O, C≡N, conjugated olefins and carbonyls.
- (vi) **Reactions and Rearrangements** :—(a) Pinacol-pinacolone, Hoffmann, Beckmann, Baeyer-Villiger, Favorskii, Fries, Claisen, Cope, Stevens and Wagner—Meerwein rearrangements.
- (b) Aldol condensation, Claisen condensation, Dieckmann, Perkin, Knoevenagel, Witting, Clemmensen, Wolff-Kishner, Cannizzaro and von Richter reactions; Stobbe, benzoin and acyloin condensations; Fischer indole synthesis, Skraup synthesis, Bischler-Napieralski, Sandmeyer, Reimer-Tiemann and Reformatsky reactions.
3. **Pericyclic reactions** :—Classification and examples; Woodward-Hoffmann rules—electrocyclic reactions, cycloaddition reactions [2+2 and 4+2] and sigmatropic shifts [1, 3; 3, 3 and 1, 5], FMO approach.
4. (i) **Preparation and Properties of Polymers**: Organic polymers polyethylene, polystyrene, polyvinyl chloride, teflon, nylon, terylene, synthetic and natural rubber.
- (ii) **Biopolymers**: Structure of proteins, DNA and RNA.
5. **Synthetic Uses of Reagents**: OsO₄, HIO₄, CrO₃, Pb(OAc)₄, SeO₂, NBS, B₂H₆, Na-Liquid NH₃, LiAlH₄, NaBH₄, *n*-BuLi, MCPBA.
6. **Photochemistry** :—Photochemical reactions of simple organic compounds, excited and ground states, singlet and triplet states, Norrish-Type I and Type II reactions.
7. **Spectroscopy**: Principle and applications in structure elucidation :—
- (i) **Rotational**—Diatomic molecules; isotopic substitution and rotational constants.
- (ii) **Vibrational**—Diatomic molecules, linear triatomic molecules, specific frequencies of functional groups in polyatomic molecules.
- (iii) **Electronic**—Singlet and triplet states. $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$ transitions; application to conjugated double bonds and conjugated carbonyls Woodward-Fieser rules; Charge transfer spectra.
- (iv) **Nuclear Magnetic Resonance (¹H NMR)** : Basic principle; chemical shift and spin-spin interaction and coupling constants.
- (v) **Mass Spectrometry** :—Parent peak, base peak, metastable peak, McLafferty rearrangement.

CIVIL ENGINEERING

PAPER-I

1. Engineering Mechanics, Strength of Materials and Structural Analysis.

1.1 Engineering Mechanics :

Units and Dimensions, SI Units, Vectors, Concept of Force, Concept of particle and rigid body. Concurrent, Non-Concurrent and parallel forces in a plane, moment of force free body diagram, conditions of equilibrium, Principle of virtual work, equivalent force system.

First and Second Moment of area, Mass moment of Inertia.

Static Friction.

Kinematics and Kinetics:

Kinematics in cartesian Co-ordinates, motion under uniform and non-uniform acceleration, motion under gravity. Kinetics of particle : Momentum and Energy principles, collision of elastic bodies, rotation of rigid bodies.

1.2 Strength of Materials :

Simple Stress and Strain, Elastic constants, axially loaded compression members, Shear force and bending moment, theory of simple bending, Shear Stress distribution across cross sections, Beams of uniform strength.

Deflection of beams: Mecaulay's method, Mohr's Moment area method, Conjugate beam method, unit load method. Torsion of Shafts, Elastic stability of columns, Euler's, Rankine's and Secant formulae.

1.3 Structural Analysis :

Castigliano's theorems I and II, unit load method, of consistent deformation applied to beams and pin jointed trusses. Slope-deflection, moment distribution.

Rolling loads and Influences lines : Influences lines for Shear Force and Bending moment at a section of a beam. Criteria for maximum shear force and bending Moment in beams traversed by a system of moving loads. Influences lines for simply supported plane pin jointed trusses.

Arches : Three hinged, two hinged and fixed arches, rib shortening and temperature effects.

Matrix methods of analysis : Force method and displacement method of analysis of indeterminate beams and rigid frames.

Plastic Analysis of beams and frames : Theory of plastic bending, plastic analysis, statical method, Mechanism method.

Unsymmetrical bending : Moment of inertia, product of inertia, position of Neutral Axis and Principal axes, calculation of bending stresses.

2. Design of Structures : Steel, Concrete and Masonry Structures.

2.1 Structural Steel Design :

Structural steel : Factors of safety and load factors. Riveted, bolted and welded joints and connections. Design of tension and compression members, beams of built up sections, riveted and welded plate girders, gantry girders, stanchions with battens and lagings.

2.2 Design of Concrete and Masonry Structures :

Concept of mix design. Reinforced Concrete : Working Stress and Limit State method of design—Recommendations of I. S. codes. Design of one way and two way slabs, stair-case slabs, simple and continuous beams of rectangular, T and L sections. Compression members under direct load with or without eccentricity. Cantilever and column for type retaining walls. Water tanks : Design requirements for Rectangular and circular tanks resting on ground.

Prestressed Concrete Methods and systems of prestressing, anchorages. Analysis and design of sections for flexure based on working stress, loss of prestress. Design of brick masonry as per I. S. Codes

3. Fluid Mechanics—Open Channel Flow and Hydraulic Machines :

3.1 Fluid Mechanics :

Fluid properties and their role in fluid motion, fluid statics including forces acting on plane and curve surfaces.

Kinematics and Dynamics of Fluid flow : Velocity and accelerations, stream lines, equation of continuity, irrotational and rotational flow, velocity potential and stream functions.

Continuity, momentum, energy equation, Navier Stokes equation, Euler's equations of motion, application to fluid flow problems, pipe flow, sluice gates, weirs.

3.2 Dimensional Analysis and Similitude :

Buckingham's Pi theorem, dimensionless parameters.

3.3 Laminar Flow :

Laminar flow between parallel, stationary and moving plates, flow through tube.

3.4 Boundary Layer :

Laminar and turbulent boundary layer on a flat plate, laminar sub-layer, smooth and rough boundaries, drag and lift.

Turbulent flow through pipes : Characteristics of turbulent flow, velocity distribution and variation of pipe friction factor, hydraulic grade line and total energy line.

3.5 Open Channel Flow :

Uniform and non-uniform flows, momentum and energy correction factors, specific energy and specific force, critical depth, rapidly varied flow, hydraulic jump, gradually varied flow, classification of surface profiles, control section, step method of integration of varied flow equation.

3.6 Hydraulic Machines and Hydropower :

Hydraulic turbines, types classification, Choice of turbines—performance parameters, controls, characteristics, specific speed. Principles of hydropower development.

4. Geotechnical Engineering :

Soil Type and Structure gradation and particle size distribution—consistency limits.

Water in soil—capillary and structural—effective stress and pore water pressure—permeability concept—field and laboratory determination of permeability—Seepage pressure—quick sand conditions—Shear strength determination—Mohr Coulomb concept.

Compaction of soil—Laboratory and field test. Compressibility and consolidation concept—

consolidation theory—consolidation settlement analysis.

Earth pressure theory and analysis for retaining walls, Application for sheet piles and Braced excavation.

Bearing capacity of soil—approaches for analysis- Filed tests—settlement analysis—

stability of slope of earth wall. Subsurface exploration of soils—methods

Foundation—Type and selection criteria for foundation of structures. Design criteria for

foundation—Analysis of distribution of stress for footings and pile pile group action—pile load test.

Ground improvement techniques.

PAPER—II

1. Construction Technology, Equipment, Planning and Management

1.1 Construction Technology Engineering Materials

Physical properties of construction materials with respect to their use in construction—Stones, Bricks and Tiles; Lime, Cement, different types of Mortars and Concrete.

Specific use of ferro cement, fibre reinforced C. C., High strength concrete.

Timber; Properties defects—common preservation treatments.

Use and selection of materials for specific use like

Low Cost Housing, Mass Housing, High Rise Buildings.

1.2 Construction :

Masonry principles using Brick, stone, Blocks—construction detailing and strength characteristics.

Types of plastering, pointing, flooring, roofing and construction features.

Common repairs in buildings.

Principle of functional planning of building for residents and specific use—Building code provisions.

Basic principles of detailed and approximate estimating—specification writing and rate analysis—principles of valuation of real property.

Machinery for earthwork, concreting and their specific uses—Factors affecting selection of equipments—operating cost of equipments.

1.3 CONSTRUCTION PLANNING AND MANAGEMENT:

Construction activity—schedules—organization for construction industry—Quality assurance principles.

Use Basic principle of network—analysis in form of CPM and PERT—their use in construction monitoring, Cost optimization and resource allocation.

Basic principles of Economic analysis and methods.

Project profitability—Basic principles of Boot approach to financial planning—simple toll fixation criterions.

2. Surveying and Transportation Engineering

2.1 Surveying : Common methods and instruments for distance and angle measurement for CE work—their use in plane table, traverse survey, levelling work, triangulation, contouring and topographical map.

Basic principles of photogrammetry and remote sensing.

2.2 Railways Engineering : Permanent way—components, types and their function—Functions and Design constituents of turn and crossing—Necessity of geometric design of track—Design of station and yards.

2.3 Highway Engineering :

Principles of Highway alignments—classification and geometrical design elements and standards for Roads.

Pavement structure for flexible and rigid pavements—Design principles and methodology of pavements.

Typical construction methods and standards of materials for stabilized soil, WBM, Bituminous works and CC roads.

Surface and sub-surface drainage arrangements for roads—culvert structures.

Pavement distresses and strengthening by overlays.

Traffic surveys and their application in traffic planning—Typical design features for channelized, intersection rotary etc.—signal designs—standard Traffic signs and markings.

3. Hydrology, Water Resources and Engineering :

3.1 Hydrology :

Hydrological cycle, precipitation, evaporation, transpiration, infiltration, overland flow, hydrograph, flood frequency analyses, flood routing through a reservoir, channel flow routing—Muskingam method.

3.2 Ground Water flow :

Specific yield, storage coefficient, coefficient of permeability, confined and unconfined aquifers, aquifers, aquitards, radial flow into a well under confined and unconfined conditions.

3.3 Water Resources Engineering :

Ground and surface water resources, single and multipurpose projects, storage capacity of reservoirs, reservoir losses, reservoir sedimentation.

3.4 Irrigation Engineering :

- (i) Water requirements of crops : consumptive use, duty and delta, irrigation methods and their efficiencies.
- (ii) Canals : Distribution systems for canal irrigation, canal capacity, canal losses, alignment of main and distributory canals, most efficient section, lined canals, their design, regime theory, critical shear stress, bed load.
- (iii) Water logging : causes and control, salinity.
- (iv) Canal structures : Design of head regulators, canal falls, aqueducts, metering flumes and canal outlets.
- (v) Diversion head work : Principles and design of weirs on permeable and impermeable foundation, Khosla's theory, energy dissipation.
- (vi) Storage works : Types of dams, design, principles of rigid gravity stability analysis.
- (vii) Spillways : Spillway types, energy dissipation.
- (viii) River training : Objectives of river training, methods of river training.

4. **Environmental Engineering**
 - 4.1 **Water Supply :**
Predicting demand for water, impurities of water and their significance, physical, chemical and bacteriological analysis, waterborne diseases, standards for potable water.
 - 4.2 **Intake of Water :**
Water treatment: principles of coagulation, flocculation and sedimentation; slow-, rapid-, pressure-, filters; chlorination, softening, removal of taste, odour and salinity.
 - 4.3 **Sewerage Systems :**
Domestic and industrial wastes, store sewage—separate and combined systems, flow through sewers, design of sewers.
 - 4.4 **Sewage Characterisation :**
BOD, COD, solids, dissolved oxygen, nitrogen and TOC. Standards of disposal in normal water course and on land.
 - 4.5 **Sewage Treatment :**
Working principles, units, chambers, sedimentation tank, trickling filters, oxidation ponds, activated sludge process, septic tank, disposal of sludge, recycling of waste water.
 - 4.6 **Solid waste :**
Collection and disposal in rural and urban contexts, management of long-term ill-effects.
5. **Environmental pollution :**
Sustainable development. Radioactive wastes and disposal. Environmental impact assessment for thermal power plants, mines, river valley projects. Air pollution. Pollution control acts.

COMMERCE AND ACCOUNTANCY

PAPER I

Accounting and Finance

Accounting, Taxation & Auditing

1. Financing Accounting :

Accounting as a financial information system; Impact of behavioural sciences. Accounting Standards e.g., Accounting for Depreciation, Inventories, Research and Development Costs, Long-term Construction Contracts, Revenue Recognition, Fixed Assets, Contingencies, Foreign Exchange Transactions, Investments and Government Grants, Cash Flow Statement, Earnings per Share.

Accounting for Share Capital Transactions including Bonus Shares, Right Shares.

Employees Stock Option and Buy-Back of Securities.

Preparation and Presentation of Company Final Accounts.

Amalgamations, Absorption and Reconstruction of companies.

2. Cost Accounting :

Nature and functions of cost accounting. Installation of Cost Accounting System. Cost Concepts related to Income Measurement, Profit Planning, Cost Control and Decision Making.

Methods of Costing: Job Costing, Process Costing, Activity Based Costing.

Volume-cost-Profit Relationship as a tool of Profit Planning.

Incremental Analysis/Differential Costing as a Tool of Pricing Decisions, Product Decisions, Make or Buy Decisions, Shut-Down Decisions etc.

Techniques of Cost Control and Cost Reduction : Budgeting as a Tool of Planning and Control. Standard Costing and Variance Analysis.

Responsibility Accounting and Divisional Performance Measurement.

3. Taxation :

Income Tax: Definitions. Basis of charge; Incomes which do not form part of total income. Simple problems of Computation of Income (of individuals only) under various heads, i.e., Salaries, Income from House Property, Profits and Gains from Business or Profession, Capital Gains, Income from other sources, Income of other Persons included in Assessee's Total Income.

Set-off and Carry forward of Loss.

Deductions from Gross Total Income.

Salient Features/Provisions Related to VAT and Services Tax.

4. Auditing :

Company Audit: Audit related to Divisible Profits, Dividends, Special investigations, Tax audit.

Audit of Banking, Insurance, Non-Profit Organization and Charitable Societies/Trusts/Organizations.

Financial Management, Financial Institutions and Markets

1. Financial Management :

Finance Function : Nature: Scope and Objectives of Financial Management. Risk and Return Relationship.

Tools of Financial Analysis: Ratio Analysis, Funds-Flow and Cash-Flow Statement.

Capital Budgeting Decisions: Process, Procedures and Appraisal Methods. Risk and Uncertainty Analysis and Methods.

Cost of Capital : Concept, Computation of Specific Costs and Weighted Average Cost of Capital. CAPM as a Tool of Determining Cost of Equity Capital.

Financing Decisions: Theories of Capital Structure—Net Income (NI) Approach.

Net Operating Income (NOI) Approach, MM Approach and Traditional Approach. Designing of Capital structure: Types of Leverages (Operating, Financial and Combined), EBIT-EPS Analysis, and other Factors.

Dividend Decisions and Valuation of Firm : Walter's Model, MM Thesis, Gordon's Model Lintner's Model. Factors Affecting Dividend Policy.

Working Capital Management: Planning of Working Capital. Determinants of Working Capital. Components of Working Capital—Cash, Inventory and Receivables.

Corporate Restructuring with focus on Mergers and Acquisitions (Financial aspect only).

2. Financial Markets and Institutions :

Indian financial System: An Overview

Money Markets: Participants, Structure and Instruments. Commercial Banks. Reforms in Banking sector. Monetary and Credit Policy of RBI. RBI as a Regulator.

Capital Market : Primary and Secondary Market. Financial Market Instruments and Innovative Debt Instruments; SEBI as a Regulator.

Financial Services : Mutual Funds, Venture Capital, Credit Rating Agencies, Insurance and IRDA.

PAPER-II

Organisation Theory and Behaviours, Human Resource Management and Industrial Relations

Organisation Theory and Behaviour

1. Organisation Theory :

Nature and concept of Organisation; External Environment of Organisation—Technological, Social, Political, Economical and Legal; Organizational Goals Primary and Secondary Goals, Single and Multiple Goals; Management by Objectives.

Evolution of Organisation theory : Classical Neo-classical and System Approach.

Modern Concepts of Organisation Theory : Organisational Design, Organisations Structure and Organisational Culture.

Organisational Design—Basic Challenges; Differentiation and Intergration Process; Centralization and Decentralization Process; Standardization/Formalization and Mutual Adjustment. Coordinating Formal and Informal Organizations. Mechanistic and Organic Structures.

Designing Organizational structures—Authority and Control; Line and Staff Functions, Specialization and Coordination. Types of Organization Structure—Functional. Matrix Structure, Project Structure. Nature and Basis of Power, Sources of Power, Power Structure and Politics. Impact of Information Technology on Organizational Design and Structure.

Managing Organizational Culture.

2. Organisation Behaviour :

Meaning and Concept; Individual in organization: Personality, Theories, and Determinants; Perception Meaning and Process.

Motivation : Concepts, Theories and Applications. Leadership—Theories and Styles. Quality of Work Life (QWL): Meaning and its impact on Performance, Ways of its Enhancement. Quality Circles (QC)—Meaning and their Importance. Management of Conflicts in Organizations. Transactional Analysis, Organizational Effectiveness, Management of Change.

Human Resources Management and Industrial Relations

1. Human Resources Management (HRM) :

Meaning Nature and Scope of HRM, Human Resource Planning, Job Analysis, Job Description, Job Specification, Recruitment Process, Selection Process, Orientational and Placement, Training and Development Process, Performance Appraisal and 360° Feed Back, Salary and Wage Administration, Job Evaluation, Employee Welfare, Promotions, Transfers and Separations.

2. Industrial Relations (IR) :

Meaning, Nature, Importance and Scope of IR, Formation of Trade Union, Trade Union Legislation, Trade Union Movement in India. Recognition of Trade Unions, Problems of Trade Unions in India. Impact of Liberalization on Trade Union Movement.

Nature of Industrial Disputes: Strikes and Lockouts, Causes of Disputes, Prevention and Settlement of Disputes.

Worker's Participation in Management: Philosophy, Rationale, Present Day Status and Future Prospects.

Adjudication and Collective Bargaining.

Industrial Relations in Public Enterprises Absenteeism and Labour Turnover in Indian Industries and their Causes and Remedies.

ILO and its Functions.

ECONOMICS**PAPER—I****1. Advanced Micro Economics :**

- (a) Marshallian and Varrasiam Approaches to Price determination.
- (b) Alternative Distribution Theories; Ricardo, Kaldor, Kaleeki.
- (c) Markets Structure : Monopolistic Competition, Duopoly, Oligopoly.
- (d) Modern Welfare Criteria : Pareto Hicks and Scitovsky, Arrow's Impossibility Theorem, A. K. Sen's Social Welfare Function.

2. Advance Macro Economics :

Approaches to Employment Income and Interest Rate determination : Classical, Keynes (IS)-LM curve, Neo classical synthesis and New classical, Theories of Interest Rate determination and Interest Rate Structure.

3. Money-Banking and Finance :

- (a) Demand for and Supply of Money : Money Multiplier Quantity Theory of Money (Fisher, Pique and Friedman) and Keyne's Theory on Demand for Money, Goals and Instruments of Monetary Management in Closed and Open Economies. Relation between the Central Bank and the Treasury. Proposal for ceiling on growth rate of money.
- (b) Public Finance and its Role in market Economy : In stabilisation of supply, allocative, of resources and in distribution and development. Sources of Government revenue, forms of Taxes and Subsidies, their incidence and effects. Limits to taxation, loans, crowding-out effects and limits to borrowings. Public expenditure and its effects.

4. International Economics :

- (a) Old and New theories of International Trade.
 - (i) Comparative advantage,
 - (ii) Terms of Trade and Offer Curve.
 - (iii) Product Cycle and Strategic Trade Theories.
 - (iv) Trade as an engine of growth and theories of underdevelopment in an open economy.
- (b) Forms of Protection : Tariff and quota.
- (c) Balance of Payments Adjustment : Alternative Approaches.
 - (i) Price versus income, income adjustments under fixed exchange rates.
 - (ii) Theories of Policy Mix.
 - (iii) Exchange rate adjustments under capital mobility.

- (iv) Floating Rates and their Implications for Developing Countries : Currency Boards.
- (v) Trade Policy and Developing Countries.
- (vi) BOP, adjustments and Policy Coordination in open economy macromodel.
- (vii) Speculative attacks.
- (viii) Trade Blocks and Monetary Unions.
- (ix) WTO : TRIMS, TRIPS, Domestic Measures, Different Rounds of WTO talks.

5. Growth and Development :

- (a)(i) Theories of growth : Harrod's model;
 - (ii) Lewis model of development with surplus labour.
 - (iii) Balanced Unbalanced growth.
 - (iv) Human Capitals and Econmic growth.
 - (v) Research and Development and Economic Growth.
- (b) Process of Economic Development of less developed countries : Myrdal and Kuzments on economic development and structural change : Role of Agriculture in Economic Development of less developed countries.
- (c) Economic development and International Trade and Investment, Role of Multinationals.
- (d) Planning and Economic development : changing role of Markets and Planning, Private-Public Partnership.
- (e) Welfare indicators and measures of growth—Human Development Indices. The basic needs approach.
- (f) Development and Environmental Sustainability—Renewable and Non-renewable Resources, Environmental Degradation, Intergenerational equity development.

PAPER II**Indian Economics in Post-Independence Era :**

Land System and its changes, Commercialization of agriculture Drain theory, Laissez faire theory and critique. Manufacture and Transport : Jute, Cotton, Railways, Money and Credit.

Indian Economy after Independence :**A. The Pre-Liberalization Era :**

- (i) Contribution of Vakil, Gadgil and V.K.R.V. Rao.
- (ii) Agriculture : Land Reforms and land tenure system, Green Revolution and capital formation in agriculture.
- (iii) Industry Trends in composition and growth, Role of public and private sector, small scale and cottage industries.
- (iv) National and Per capita income : Patterns, trends, aggregate and sectoral composition and changes therein.

- (v) Broad factors determining National Income and distribution, Measures of poverty, Trends in poverty and inequality.

B. The Post-Liberalization Era :

- (i) New Economic Reform and Agriculture : Agriculture and WTO, Food processing, subsidies, Agricultural prices and public distribution system, Impact of public expenditure on agricultural growth.
- (ii) New Economic Policy and Industry : Strategy of industrialization, Privatization, Disinvestments, Role of foreign direct investment and multinationals.
- (iii) New Economic Policy and Trade : Intellectual property rights : Implications of TRIPS, TRIMS, GATS and new EXIM policy.
- (iv) New Exchange Rate Regime : Partial and full convertibility, Capital account convertibility.
- (v) New Economic Policy and public finance : Fiscal Responsibility Act, Twelfth Finance Commission and Fiscal Federalism and Fiscal Consolidation.
- (vi) New Economic Policy and Monetary system. Role of RBI under the new regime.
- (vii) Planning : From central Planning to indicative planning, Relation between planning and markets for growth and decentralized planning : 73rd and 74th Constitutional amendments.
- (viii) New Economic Policy and Employment : Employment and poverty, Rural wages, Employment Generation, Poverty alleviation schemes, New Rural, Employment Guarantee Scheme.

ELECTRICAL ENGINEERING

PAPER I

1. Circuits—Theory :

Circuit components; network graphs; KCL, KVL; Circuit analysis methods : nodal analysis, mesh analysis; basic network theorems and applications; transient analysis : RL, RC and RLC circuits; sinusoidal steady state analysis; resonant circuits; coupled circuits; balanced 3-phase circuits. Two-port networks.

2. Signals and Systems :

Representation of continuous-time and discrete-time signals and systems; LTI systems; convolution; impulse response; time-domain analysis of LTI systems based on convolution and differential/difference equations. Fourier transform, Laplace transform, Z-transform, Transfer function. Sampling and recovery of signals DFT, FFT Processing of analog signals through discrete-time systems.

3. E.M. Theory :

Maxwell's equations, wave propagation in bounded media. Boundary conditions, reflection and refraction of plane

waves. Transmission lines : travelling and standing waves, impedance matching, Smith chart.

4. Analog Electronics :

Characteristics and equivalent circuits (large and small-signal) of Diode, BJT, JFET and MOSFET. Diode circuits : Clipping, clamping, rectifier. Biasing and bias stability. FET amplifiers. Current mirror; Amplifiers : single and multi-stage, differential, operational feedback and power. Analysis of amplifiers; frequency-response of amplifiers. OPAMP circuits. Filters; sinusoidal oscillators : criterion for oscillation; single-transistor and OPAMP configurations. Function generators and wave-shaping circuits. Linear and switching power supplies.

5. Digital Electronics :

Boolean algebra; minimisation of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinational circuits : arithmetic circuits, code converters, multiplexers and decoders. Sequential circuits: latches and flip-flops, counters and shift-registers. Comparators, timers, multivibrators. Sample and hold circuits, ADCs and DACs. Semiconductor memories. Logic implementation using programmable devices (ROM, PLA, FPGA).

6. Energy Conversion :

Principles of electromechanical energy conversion : Torque and emf in rotating machines. DC machines : characteristics and performance analysis; starting and speed control of motors. Transformers : principles of operation and analysis; regulation, efficiency; 3-phase transformers. 3-phase induction machines and synchronous machines : characteristics and performance analysis; speed control.

7. Power Electronics and Electric Drives :

Semi-conductor power devices : diode, transistor, thyristor, triac, GTO and MOSFET-static characteristics and principles of operation; triggering circuits; phase control rectifiers; bridge converters : fully-controlled and half-controlled; principles of thyristor choppers and inverters; DC-DC converters; Switch mode inverter; basic concepts of speed control of dc and ac motor drives applications of variable-speed drives.

8. Analog Communication :

Random variables : continuous, discrete; probability, probability functions. Statistical averages; probability models; Random signals and noise : white noise, noise equivalent bandwidth; signal transmission with noise; signal to noise ratio. Linear CW modulation : Amplitude modulation : DSB, DSB-SC and SSB. Modulators and Demodulators; Phase and Frequency modulation : PM & FM signals; narrow band FM; generation & detection of FM and PM, Deemphasis, Preemphasis. CW modulation system : Superhetrodyne receivers, AM receivers, communication receivers, FM receivers, phase locked loop, SSB receiver Signal to noise ratio calculation or AM and FM receivers.

PAPER II**1. Control Systems :**

Elements of control systems; block-diagram representations; open-loop & closed-loop systems; principles and applications of feed-back. Control system components. LTI systems : time-domain and transform-domain analysis. Stability : Routh Hurwitz criterion, root-loci, Bode-plots and polar plots, Nyquist's criterion; Design of lead-lag compensators. Proportional, PI, PID controllers. State-variable representation and analysis of control systems.

2. Microprocessors and Microcomputers :

PC organisation; CPU, instruction set, register setting diagram, programming, interrupts, memory interfacing, I/O interfacing, programmable peripheral devices.

3. Measurement and Instrumentation :

Error analysis; measurement of current voltage, power, energy, power-factor, resistance, inductance, capacitance and frequency; bridge measurements. Signal conditioning circuit; Electronic measuring instruments : multimeter, CRO, digital voltmeter, frequency counter, Q-meter, spectrum-analyser, distortion-meter. Transducers : thermocouple, thermistor, LVDT, strain-gauge, piezo-electric crystal.

4. Power Systems: Analysis and Control :

Steady-state performance of overhead transmission lines and cables; principles of active and reactive power transfer and distribution; per-unit quantities; bus admittance and impedance matrices; load flow; voltage control and power factor correction; economic operation; symmetrical components, analysis of symmetrical and unsymmetrical faults. Concepts of system stability : swing curves and equal area criterion. Static VAR system. Basic concepts of HVDC transmission.

5. Power System Protection :

Principles of overcurrent, differential and distance protection. Concept of solid state relays. Circuit breakers. Computer aided protection : introduction; line, bus, generator, transformer protection; numeric relays and application of DSP to protection.

6. Digital Communication :

Pulse code modulation (PCM), differential pulse code modulation (DPCM), delta modulation (DM), Digital modulation and demodulation schemes : amplitude, phase and frequency keying schemes (ASK, PSK, FSK). Error control coding : error detection and correction, linear block codes, convolution codes. Information measure and source coding. Data networks, 7-layer architecture.

GEOGRAPHY**PAPER I****PRINCIPLES OF GEOGRAPHY****Physical Geography :**

- 1. Geomorphology :** Factors controlling landform development; endogenetic and exogenetic forces; Origin and evolution of the earth's crusts; Fundamentals of geomagnetism; Physical conditions of the earth's interior; Geosynclines; Continental drift; Isostasy; Plate tectonics; Recent views on mountain building; Volcanicity; Earthquakes and Tsunamis; Concepts of geomorphic cycles and Land scape development; Denudation chronology; Channel morphology; Erosion surfaces; Slope development; Applied Geomorphology; Geomorphology, economic geology and environment.
- 2. Climatology :** Temperature and pressure belts of the world; Heat budget of the earth; Atmospheric circulation; Atmospheric stability and instability. Planetary and local winds; Monsoons and jet streams; Air masses and fronts; Temperate and tropical cyclones; Types and distribution of precipitation; Weather and Climate; Koppen's Thornthwaite's and Trewartha's classification of world climate; Hydrological cycle; Global climatic change, and role and response of man in climatic changes Applied climatology and Urban climate.
- 3. Oceanography :** Bottom topography of the Atlantic, Indian and Pacific Oceans; Temperature and salinity of the oceans; Heat and salt budgets, Ocean deposits; Waves, currents and tides; Marine resources; biotic, mineral and energy resources; Coral reefs coral bleaching; Sea-level changes; Law of the sea and marine pollution.
- 4. Biogeography :** Genesis of soils; Classification and distribution of soils; Soil profile; Soil erosion, Degradation and conservation; Factors influencing world distribution of plants and animals; Problems of deforestation and conservation measures; Social forestry, agro-forestry; Wild life; Major gene pool centres.
- 5. Environmental Geography :** Principle ecology; Human ecological adaptations; Influence of man on ecology and environment; Global and regional ecological changes and imbalances; Ecosystem their management and conservation; Environmental degradation, management and conservation; Biodiversity and sustainable development; Environmental policy; Environmental hazards and remedial measures; Environmental education and legislation.

Human Geography :

- 1. Perspectives in Human Geography :** Areal differentiation; Regional synthesis; Dichotomy and

- dualism; Environmentalism; Quantitative revolution and locational analysis; Radical, behavioural, human and welfare approaches; Languages, religions and secularisation; Cultural regions of the world; Human development index.
2. **Economic Geography** : World economic development: measurement and problems; World resources and their distribution; Energy crisis; the limits to growth; World agriculture: typology of agricultural regions; Agricultural inputs and productivity; Food and nutrition problems; Food security; famine: causes, effects and remedies; World industries: location patterns and problems; Patterns of world trade.
 3. **Population and Settlement Geography** : Growth and distribution of world population; Demographic attributes; Causes and consequences of migration; Concepts of over-under-and optimum population; Population theories, world population problems and policies, Social well-being and quality of life; Population as social capital.
Types and patterns of rural settlements; Environmental issues in rural settlements; Hierarchy of urban settlements; Urban morphology; Concept of primate city and rank-size rule; Functional classification of towns; Sphere of urban influence; Rural-urban fringe; Satellite towns; Problems and remedies of urbanization; Sustainable development of cities.
 4. **Regional Planning** : Concept of a region; Types of regions and methods of regionalisation; Growth centres and growth poles; Regional imbalances; Regional development strategies; Environmental issues in regional planning; Planning for sustainable development.
 5. **Models, Theories and Laws in Human Geography** : System analysis in Human geography; Malthusian, Marxian and demographic transition models; Central Place theories of Christaller and Losch; Perroux and Boudeville; Von Thunen's model of agricultural location; Weber's model of industrial location; Ostov's model of stages of growth. Heart-land and Rimland theories; Laws of international boundaries and frontiers.
 2. **Resources** : Land, surface and ground water, energy, minerals, biotic and marine resources, Forest and wild life resources and their conservation; Energy crisis.
 3. **Agriculture** : Infrastructure: irrigation, seeds, fertilizers, power; Institutional factors; land holdings, land tenure and land reforms; Cropping pattern, agricultural productivity, agricultural intensity, crop combination, land capability; Agro and social-forestry; Green revolution and its socio-economic and ecological implications; Significance of dry farming; Livestock resources and white revolution; Aqua-culture; Sericulture, Agriculture and poultry; Agricultural regionalisation; Agro-climatic zones; Agro-ecological regions.
 4. **Industry** : Evolution of industries; Locational factors of cotton, jute, textile, iron and steel, aluminium, fertiliser, paper, chemical and pharmaceutical, automobile, cottage and agro-based industries; Industrial houses and complexes including public sector underkings; Industrial regionalisation; New industrial policy; Multinationals and liberalisation; Special Economic Zones; Tourism including ecotourism.
 5. **Transport, Communication and Trade** : Road, railway, waterway, airway and pipeline net works and their complementary roles in regional development; Growing importance of ports on national and foreign trade; Trade balance; Trade Policy; Export processing zones; Developments in communication and information technology and their impacts on economy and society; Indian space programme.
 6. **Cultural Setting** : Historical Perspective of Indian Society; Racial linguistic and ethnic diversities; religious minorities; Major tribes, tribal areas and their problems; Cultural regions; Growth, distribution and density of population; Demographic attributes: sex-ratio, age structure, literacy rate, work-force, dependency ratio, longevity; migration (inter-regional, interaregional and international) and associated problems; Population problems and policies; Health indicators.
 7. **Settlements** : Types, patterns and morphology of rural settlements; Urban developments; Morphology of Indian cities; Functional classification of Indian cities; Conurbations and metropolitan regions; Urban sprawl; Slums and associated problems; Town planning; Problems of urbanisation and remedies.
 8. **Regional Development and Planning**: Experience of regional planning in India; Five Year Plans; Integrated rural development programmes; Panchayati Raj and decentralised planning; Command area development; Watershed management; Planning for backward area, desert, drought-prone, hill tribal area

PAPER II

GEOGRAPHY OF INDIA

1. **Physical Setting** : Space relationship of India with neighbouring countries; Structure and relief; Drainage system and watersheds; Physiographic regions; Mechanism of Indian monsoons and rainfall patterns; Tropical cyclones and western disturbances; Floods and droughts; Climatic regions; Natural vegetation, Soil types and their distributions.

- development; Multi-level planning; Regional planning and development of island territories.
9. **Political Aspects :** Geographical basis of Indian federalism; State reorganisation; Emergence of new states; Regional consciousness and inter state issues; International boundary of India and related issues; Cross border terrorism; India's role in world affairs; Geopolitics of South Asia and Indian Ocean realm.
10. **Contemporary Issues :** Ecological issues: Environmental hazards: landslides, earthquakes, Tsunamis, floods and droughts, epidemics; Issues related to environmental pollution; Changes in patterns of land use; Principles of environmental impact assessment and environmental management; Population explosion and food security; Environmental degradation; Deforestation, desertification and soil erosion; Problems of agrarian and industrial unrest; Regional disparities in economic development; Concept of sustainable growth and development; Environmental awareness; Linkage of rivers; Globalisation and Indian economy.

NOTE : Candidates will be required to answer one compulsory map question pertinent to subjects covered by this paper.

GEOLOGY

PAPER I

1. General Geology :

The Solar System, meteorites, origin and interior of the earth and age of earth; Volcanoes—causes and products, Volcanic belts. Earthquakes—causes, effects, seismic zone of India; Island arcs, trenches and mid-ocean ridges; Continental drift; Seafloor spreading, plate tectonics. Isostasy.

2. Geomorphology and Remote Sensing :

Basic concepts of geomorphology. Weathering and soil formations; Landforms, slopes and drainage. Geomorphic cycles and their interpretation. Morphology and its relation to structures and lithology; Coastal geomorphology; Applications of geomorphology in mineral prospecting, civil engineering; hydrology and environmental studies; Geomorphology of Indian sub-continent.

Aerial photographs and their interpretation—merits and limitations; The Electromagnetic spectrum. Orbiting Satellites and Sensor Systems. Indian Remote Sensing Satellites. Satellite data products; Applications of remote sensing in geology; The Geographic Information System (GIS) and Global Positioning System (GPS)—its applications.

3. Structural Geology :

Principles of geologic mapping and map reading, projection diagrams, Stress and strain ellipsoid and stress-strain relationships of elastic, plastic and viscous materials;

Strain markers in deformed rocks. Behaviour of minerals and rocks under deformation conditions. Folds and faults classification and mechanics; Structural analysis of folds, foliations, lineations, joints and faults, unconformities; Time-relationship between crystallization and deformation.

4. Paleontology :

Species—definition and nomenclature; Megafossils and Microfossils. Modes of preservation of fossils; Different kinds of microfossils; Application of microfossils in correlation, petroleum exploration, paleoclimatic and paleoceanographic studies; Evolutionary trend in Hominidae, Equidae and Proboscidae. Siwalik fauna.

Gondwana flora and fauna and its importance; Index fossils and their significance.

5. Indian Stratigraphy :

Classification of stratigraphic sequences: lithostratigraphic, biostratigraphic, chrono-stratigraphic and magnetostratigraphic and their interrelationships; Distribution and classification of Precambrian rocks of India; Study of stratigraphic distribution and lithology of Phanerozoic rocks of India with reference to fauna, flora and economic importance. Major boundary problems—Cambrian/Precambrian, Permian/Triassic, Cretaceous/Tertiary and Pliocene/Pleistocene; Study of climatic conditions, paleogeography and igneous activity in the Indian subcontinent in the geological past. Tectonic framework of India. Evolution of the Himalayas.

6. Hydrogeology and Engineering Geology :

Hydrologic cycle and genetic classification of water; Movement of subsurface water; Springs; Porosity, permeability, hydraulic conductivity, transmissivity and storage coefficient, classification of aquifers; Water-bearing characteristics of rocks; Groundwater chemistry. Salt water intrusion. Types of wells. Drainage basin morphometry; Exploration for groundwater; Groundwater recharge; Problems and management of groundwater; Rainwater harvesting; Engineering properties of rocks; Geological investigations for dams, tunnels highways, railway and bridges; Rock as construction material; Landslides causes, prevention and rehabilitation; Earthquake-resistant structures.

PAPER II

1. Mineralogy :

Classification of crystals into systems and classes of symmetry; International system of crystallographic notation; Use of projection diagrams to represent crystal symmetry; Elements of X-ray crystallography.

Physical and chemical characters of rock forming silicate mineral groups; Structural classification of silicates; Common minerals of igneous and metamorphic rocks; Minerals of the carbonate, phosphate, sulphide and halide groups; Clay minerals.

Optical properties of common rock forming minerals; Pleochroism, extinction angle, double refraction, birefringence, twinning and dispersion in minerals.

2. Igneous and Metamorphic Petrology :

Generation and crystallisation of magmas. Crystallisation of albite—anorthite, diopside—anorthite and diopside—wollastonite—silica systems. Bowen's Reaction Principle; Magmatic differentiation and assimilation. Petrogenetic significance of the textures and structures of igneous rocks. Petrography and petrogenesis of granite, syenite, diorite, basic and ultrabasic groups, charnockite, anorthosite and alkaline rocks. Carbonatites. Deccan volcanic province.

Types and agents of metamorphism. Metamorphic grades and zones; Phase rule. Facies of regional and contact metamorphism; ACF and AKF diagrams; Textures and structures of metamorphic rocks. Metamorphism of arenaceous, argillaceous and basic rocks; Minerals assemblages. Retrograde metamorphism; Metasomatism and granitisation, migmatites. Granulite terrains of India.

3. Sedimentary Petrology :

Sediments and Sedimentary rocks: Processes of formation; diagenesis and lithification; Clastic and non-clastic rocks—their classification, petrography and depositional environment; Sedimentary facies and provenance. Sedimentary structures and their significance. Heavy minerals and their significance. Sedimentary basins of India.

4. Economic Geology :

Ore, ore mineral and gangue, tenor of ore. Classification of ore deposits; Processes of formation of mineral deposits; Controls of ore localisation; Ore textures and structures; Metallogenic epochs and provinces; Geology of the important Indian deposits of aluminium, chromium, copper, gold, iron, lead, zinc, manganese, titanium, uranium and thorium and industrial minerals; Deposits of coal and petroleum in India, National Mineral Policy; Conservation and utilization of mineral resources. Marine mineral resources and Law of Sea.

5. Mining Geology :

Methods of prospecting—geological, geophysical, geochemical and geobotanical; Techniques of sampling. Estimation of reserves of ore; Methods of exploration and mining—metallic ores, industrial minerals, marine mineral resources and building stones. Mineral beneficiation and ore dressing.

6. Geochemistry and Environmental Geology :

Cosmic abundance of elements. Composition of the planets and meteorites. Structure and composition of earth and distribution of elements. Trace elements. Elements of crystal chemistry—types of chemical bonds, coordination number. Isomorphism and polymorphism. Elementary thermodynamics.

Natural hazards—floods, mass wasting, costal hazards, earthquakes and volcanic activity and mitigation; Environmental impact of urbanization, mining, industrial and radioactive waste disposal, use of fertilizers, dumping of mine waste and fly-ash. Pollution of ground and surface water, marine pollution. Environment protection—legislative measures in India; Sea level changes: causes and impact.

HISTORY

PAPER I

1. Sources

Archaeological sources :

Exploration, excavation, epigraphy, numismatics, monuments

Literary sources:

Indigenous: Primary and secondary; poetry, scientific literature, literature, literature in regional languages, religious literature.

Foreign account: Greek, Chinese and Arab writers.

2. Pre-history and Proto-history :

Geographical factors; hunting and gathering (paleolithic and mesolithic); Beginning of agriculture (neolithic and chalcolithic).

3. Indus Valley Civilization :

Origin, date, extent, characteristics—decline, survival and significance, art and architecture.

4. Megalithic Cultures :

Distribution of pastoral and farming cultures outside the Indus, Development of community life, Settlements, Development of agriculture, Crafts, Pottery, and Iron industry.

5. Aryans and Vedic Period :

Expansions of Aryans in India :

Vedic Period: Religious and philosophic literature; Transformation from Rig Vedic period to the later Vedic period; Political, social and economical life; Significance of the Vedic Age; Evolution of Monarchy and Varna system.

6. Period of Mahajanapadas :

Formation of States (Mahajanapada): Republics and monarchies; Rise of urban centres; Trade routes; Economic growth; Introduction of coinage; Spread of Jainism and Buddhism; Rise of Magadha and Nandas.

Iranian and Mecedonian invasions and their impact.

7. Mauryan Empire :

Foundation of the Mauryan Empire, Chandragupta, Kautilya and Arthashastra; Ashoka; Concept of Dharma; Edicts; Polity, Administration, Economy; Art, architecture and sculpture; External contacts; Religion; Spread of religion; Literature.

Disintegration of the empire; Sungas and Kanvas.

8. Post-Mauryan Period (Indo-Greeks, Sakas, Kushanas, Western Kshatrapas) :

Contact with outside world; growth of urban centres, economy, coinage, development of religions, Mahayana, social conditions, art, architecture, culture, literature and science.

9. Early State and Society in Eastern India, Deccan and South India:

Kharavela, The Satavahanas, Tamil States of the Sangam Age; Administration, Economy, land grants, coinage, trade guilds and urban centres; Buddhist centres; Sangam literature and culture; Art and architecture.

10. Guptas, Vakatakas and Vardhanas:

Polity and administration, Economic conditions, Coinage of the Guptas, Land grants, Decline of urban centres, Indian feudalism, Caste system, Position of women, Education and educational institutions; Nalanda, Vikramshila and Vallabhi, Literature, scientific literature, art and architecture.

11. Regional States during Gupta Era:

The Kadambas, Pallavas, Chalukyas of Badami; Polity and Administration, Trade guilds, Literature; growth of Vaishnava and Saiva religions. Tamil Bhakti movement, Shankaracharya; Vedanta; Institutions of temple and temple architecture; Palas, Senas, Rashtrakutas, Paramaras, Polity and administration; Cultural aspects. Arab conquest of Sind; Alberuni, The Chalukya as of Kalyana, Cholas, Hoysalas, Pandyas; Polity and Administration; Local Government; Growth of art and architecture, religious sects, Institution of temple and Mathas, Agraharas, education and literature, economy and society.

12. Themes in Early Indian Cultural History:

Languages and texts, major stages in the evolution of art and architecture, major philosophical thinkers and schools, ideas in Science and Mathematics.

13. Early Medieval India, 750-1200:

- Polity: Major political developments in Northern India and the peninsula, origin and the rise of Rajputs
- The Cholas: administration, village economy and society "Indian Feudalism"
- Agrarian economy and urban settlements
- Trade and commerce
- Society: the status of the Brahman and the new social order
- Condition of women
- Indian science and technology.

14. Cultural Traditions in India, 750-1200:

- Philosophy: Shankaracharya and Vedanta, Ramanuja and Vishishtadvaita, Madhva and Brahma-Mimansa
- Religion: Forms and features of religion, Tamil devotional cult, growth of Bhakti, Islam and its arrival in India, Sufism.
- Literature: Literature in Sanskrit, growth of Tamil literature, literature in the newly developing languages, Kalhan's Rajtarangini, Alberuni's India
- Art and Architecture: Temple architecture, sculpture, painting

15. The Thirteenth Century:

- Establishment of the Delhi Sultanate: The Ghurian invasions - factors behind Ghurian success
- Economic, Social and cultural consequences
- Foundation of Delhi Sultanate and early Turkish Sultans
- Consolidation: The rule of Iltutmish and Balban.

16. The Fourteenth Century:

- "The Khalji Revolution"
- Alauddin Khalji: Conquests and territorial expansion, agrarian and economic measure.
- Muhammad Tughluq: Major projects, agrarian measures, bureaucracy of Muhammad Tughluq.
- Firuz Tughluq: Agrarian measures, achievements in civil engineering and public works, decline of the Sultanate, foreign contacts and Ibn Battuta's account.

17. Society, Culture and Economy in the Thirteenth and Fourteenth Centuries:

- Society: composition of rural society, ruling classes, town dwellers, women, religious classes, caste and slavery under the Sultanate, Bhakti movement, Sufi movement
- Culture: Persian literature, literature in the regional languages of North India, literature in the languages of South India, Sultanate architecture and new structural forms, painting, evolution of a composite culture.
- Economy: Agricultural Production, rise of urban economy and non-agricultural production, trade and commerce.

18. The Fifteenth and Early Sixteenth Century-Political Developments and Economy:

- Rise of Provincial Dynasties : Bengal, Kashmir (Zainul Abedin), Gujarat,
- Malwa, Bahmanids.
- The Vijayanagara Empire.
- Lodis.
- Mughal Empire, first phase : Babur, Humayun.
- The Sur Empire : Sher Shah's administration.
- Portuguese colonial enterprise, Bhakti and Sufi Movements

19. The Fifteenth and Early Sixteenth Century- Society and culture:

- Regional cultures specificities
- Literary traditions
- Provincial architectural
- Society, culture, literature and the arts in Vijayanagara Empire.

20. Akbar:

- Conquests and consolidation of empire.
- Establishment of *jagir* and *mansab* systems.
- Rajput policy.
- Evolution of religious and social outlook. Theory of *Sulh-i-kul* and religious policy.
- Court patronage of art and technology.

21. Mughal Empire in the Seventeenth Century:

- Major administrative policies of Jahangir, Shahjahan and Aurangzeb.
- The Empire and the Zamindars.
- Religious policies of Jahangir, Shahjahan and Aurangzeb.
- Nature of the Mughal state.
- Late Seventeenth Century crisis and the revolts.
- The Ahom kingdom.
- Shivaji and the early Maratha Kingdom.

22. Economy and society, in the 16th and 17th Centuries:

- Population. Agricultural and craft production.
- Towns, commerce with Europe through Dutch, English and French companies : a trade revolution.
- Indian mercantile classes. Banking, insurance and credit systems.
- Conditions of peasants. Condition of Women.
- Evolution of the Sikh community and the Khalsa Panth

23. Culture during Mughal Empire:

- Persian histories and other literature
- Hindi and religious literatures.
- Mughal architecture.
- Mughal painting.
- Provincial architecture and painting.
- Classical music.
- Science and technology.

24. The Eighteenth Century:

- Factors for the decline of the Mughal Empire.
- The regional principalities: Nizam's Deccan, Bengal, Awadh.
- Maratha ascendancy under the Peshwas.
- The Maratha fiscal and financial system.
- Emergence of Afghan power Battle of Panipat, 1761.
- State of, political, cultural and economic, on eve of the British conquest.

PAPER-II**1. European Penetration into India:**

The Early European Settlements; The Portuguese and the Dutch; The English and the French East India Companies; Their struggle for supremacy; Carnatic Wars; Bengal-The conflict between the English and the Nawabs of Bengal; Siraj and the English; The Battle of Plassey; Significance of Plassey.

2. British Expansion in India:

Bengal-Mir Jafar and Mir Kasim; The Battle of Buxar; Mysore; The Marathas; The three Anglo-Maratha Wars; The Punjab.

3. Early Structure of the British Raj:

The Early administrative structure; From diarchy to direct control; The Regulating Act (1773); The Pitt's India Act (1784); The Charter Act (1833); The Voice of free trade and the changing character of British colonial rule; The English utilitarian and India.

4. Economic Impact of British Colonial Rule:

- (a) Land revenue settlements in British India; The Permanent Settlement; Ryotwari Settlement; Mahalwari Settlement; Economic impact of the revenue arrangements; Commercialization of agriculture; Rise of landless agrarian labourers; Impoverishment of the rural society.
- (b) Dislocation of traditional trade and commerce; De-industrialisation; Decline of traditional crafts; Drain of wealth; Economic transformation of India; Railroad and communication network including telegraph and postal services; Famine and poverty in the rural interior; European business enterprise and its limitations.

5. Social and Cultural Developments:

The state of indigenous education, its dislocation; Orientalist-Anglicist controversy, The introduction of western education in India; The rise of press, literature and public opinion; The rise of modern vernacular literature; Progress of science; Christian missionary activities in India.

6. Social and Religious Reform Movements in Bengal and Other Areas:

Ram Mohan Roy, The Brahmo Movement; Devendranath Tagore; Iswarchandra Vidyasagar; The Young Bengal Movement; Dayanada Saraswati; The social reform movements in India including Sati, widow remarriage, child marriage etc.; The contribution of Indian renaissance to the growth of modern India; Islamic revivalism-the Feraizi and Wahabi Movements.

7. Indian Response to British Rule:

- Peasant movement and tribal uprisings in the 18th and 19th centuries including the Rangpur Dhing (1783), the Kol Rebellion (1832), the Mopla Rebellion in Malabar (1841-1920), the Santal Hul (1855), Indigo Rebellion (1859-60), Deccan Uprising (1875) and the Munda Ulgulan (1899-1900); The Great Revolt of 1857—Origin, character, casuses of failure, the consequences; The shift in the character of peasant uprisings in the post-1857 period; the peasant movements of the 1920s and 1930s.
8. Factors leading to the birth of Indian Nationalism; Politics of Association; The Foundation of the Indian National Congress; The Safety-valve thesis relating to the birth of the Congress; Programme and objectives of Early Congress; the social composition of early Congress leadership; the Moderates and Extremists; The Partition of Bengal (1905); The Swadeshi Movement in Bengal; the economic and political aspects of Swadeshi Movement; The beginning of revolutionary extremism in India.
9. Rise of Gandhi; Character of Gandhian nationalism; Gandhi's popular appeal; Rowlatt Satyagraha; the Khilafat Movement; the Non-cooperation Movement; National politics from the end of the Non-cooperation movement to the beginning of the Civil Disobedience Movement; the two phases of the Civil Disobedience Movement; Simon Commission; The Nehru Report; the Round Table Conferences; Nationalism and the Peasant Movements; Nationalism and Working class movements; Women and Indian youth and students in Indian politics (1885-1947); the election of 1937 and the formation of ministries; Cripps Mission; the Quit India Movement; the Wavell Plan; The Cabinet Mission.
10. Constitutional Developments in the Colonial India between 1858 and 1935.
11. Other strands in the National Movement.
The Revolutionaries: Bengal, the Punjab, Maharashtra, U.P. the Madras Presidency, Outside India.
The Left; The Left within the Congress: Jawaharlal Nehru, Subhas Chandra Bose, the Congress Socialist Party; the Communist Party of India, other left parties.
12. Politics of Separatism; the Muslim League; the Hindu Mahasabha; Communalism and the politics of partition; Transfer of power; Independence.
13. Consolidation as a Nation; Nehru's Foreign Policy; India and her neighbours (1947-1964); The linguistic reorganisation of States (1935-1947); Regionalism and regional inequality; Integration of Princely States; Princes in electoral politics; the Question of National Language.

14. Caste and Ethnicity after 1947; Backward castes and tribes in post-colonial electoral politics; Dalit movements.

15. Economic development and political change; Land reforms; the politics of planning and rural reconstruction; Ecology and environmental policy in post-colonial India; Progress of science.

16. Enlightenment and Modern ideas:

- (i) Major Ideas of Enlightenment : Kant, Rousseau.
- (ii) Spread of Enlightenment in the colonies.
- (iii) Rise of socialist ideas (up to Marx); spread of Marxian Socialism.

17. Origins of Modern Politics :

- (i) European States System
- (ii) American Revolution and the Constitution
- (iii) French Revolution and Aftermath, 1789-1815
- (iv) American Civil War with reference to Abraham Lincoln and the abolition of slavery.
- (v) British Democratic politics, 1815-1850 : Parliamentary Reformers, Free Traders, Chartists.

18. Industrialization :

- (i) English Industrial Revolution : Causes and Impact on Society.
- (ii) Industrialization in other countries : USA, Germany, Russia, Japan.
- (iii) Industrialization and Globalization.

19. Nation-State System :

- (i) Rise of Nationalism in 19th century.
- (ii) Nationalism : State-building in Germany and Italy.
- (iii) Disintegration of Empires in the face of the emergence of nationalities across the world.

20. Imperialism and Colonialism :

- (i) South and South-East Asia.
- (ii) Latin America and South Africa.
- (iii) Australia.
- (iv) Imperialism and free trade: Rise of neo-imperialism.

21. Revolution and Counter-Revolution :

- (i) 19th Century European revolutions.
- (ii) The Russian Revolution of 1917-1921.
- (iii) Fascist Counter-Revolution, Italy and Germany.
- (iv) The Chinese Revolution of 1949.

22. World Wars :

- (i) 1st and 2nd World Wars as Total Wars : Societal implications.
- (ii) World War I : Causes and Consequences.
- (iii) World War II : Causes and Consequences.

23. The World after World War II:

- (i) Emergence of Two power blocs.
- (ii) Emergence of Third World and non-alignment
- (iii) UNO and the global disputes.

24. Liberation from Colonial Rule :

- (i) Latin America-Bolivar.
- (ii) Arab World-Egypt.
- (iii) Africa-Apartheid to Democracy.
- (iv) South-East Asia-Vietnam.

25. Decolonization and Underdevelopment :

- (i) Factors constraining Development ; Latin America, Africa.

26. Unification of Europe :

- (i) Post War Foundations ; NATO and European Community.
- (ii) Consolidation and Expansion of European Community
- (iii) European Union.

27. Disintegration of Soviet Union and the Rise of the Unipolar World :

- (i) Factors leading to the collapse of Soviet Communism and Soviet Union, 1985-1991.
- (ii) Political Changes in East Europe 1989-2001.
- (iii) End of the Cold War and US Ascendancy in the World as the lone superpower.

LAW**PAPER-I****Constitutional and administrative Law :**

1. Constitution and Constitutionalism: The distinctive features of the Constitution.
2. Fundamental Rights—Public interest litigation; Legal Aid; Legal services authority.
3. Relationship between Fundamental rights, Directive principles and Fundamental duties.
4. Constitutional Position of the President and relation with the Council of Ministers.
5. Governor and his powers.
6. Supreme Court and the High Courts:
 - (a) Appointments and transfer.
 - (b) Powers, functions and jurisdiction.
7. Centre, States and local bodies:
 - (a) Distribution of legislative powers between the Union and the States.
 - (b) Local Bodies.
 - (c) Administrative relationship among Union, State and Local Bodies.
 - (d) Eminent domain-State property-common property-community property.
8. Legislative powers, privileges and immunities.

9. Services under the Union and the States:

(a) Recruitment and conditions of services; Constitutional safeguards; Administrative tribunals.

(b) Union Public Service Commission and State Public Service Commissions—Power and functions.

(c) Election Commission Power and functions.

10. Emergency provisions.

11. Amendment of the Constitution.

12. Principle of Natural Justice Emerging trends and judicial approach.

13. Delegated legislation and its constitutionality

14. Separation of powers and constitutional governance.

15. Judicial review of administrative action.

16. Ombudsman: Lokayukta, Lokpal etc.

International Law :

1. Nature and Definition of International Law.

2. Relationship between International Law and Municipal Law.

3. State Recognition and State Succession.

4. **Law of the sea:** Inland Waters, Territorial Sea, Contiguous Zone, Continental Shelf, Exclusive Economic Zone and High Seas.

5. **Individuals:** Nationality, statelessness; Human Rights and procedures available for their enforcement.

6. Territorial jurisdiction of States, Extradition and Asylum.

7. **Treaties :** Formation, application, termination and reservation.

8. **United Nations :** Its principal organs, powers and functions and reform.

9. Peaceful settlement of disputes different modes.

10. Lawful recourse to force : aggressions, self-defence, intervention.

11. Fundamental principles of international humanitarian law—International conventions and contemporary developments.

12. Legality of the use of nuclear weapons; ban on testing of nuclear weapons; Nuclear non-proliferation treaty, CTBT.

13. International Terrorism, State sponsored terrorism, Hijacking, International Criminal Court.

14. New International Economic Order and Monetary Law: WTO, TRIPS, GATT, IMF, World Bank.

15. Protection and Improvement of the Human Environment : International Efforts.

PAPER II**Law of Crimes :—**

1. General principles of Criminal liability : mens rea and actus reus, mens rea in statutory offences.
2. Kinds of punishment and emerging trends as to abolition of capital punishment.
3. Preparations and criminal attempt.
4. General exceptions.
5. Joint and constructive liability.
6. Abetment.
7. Criminal conspiracy.
8. Offences against the State.
9. Offences against public tranquility.
10. Offences against human body.
11. Offences against property.
12. Offences against women.
13. Defamation.
14. Prevention of Corruption Act, 1988.
15. Protection of Civil Rights Act, 1955 and subsequent legislative developments.
16. Plea bargaining.

Law of Torts

1. Nature and definition.
2. Liability based upon fault and strict liability; Absolute liability.
3. Vicarious liability including State Liability.
4. General defences.
5. Joint tort fessors.
6. Remedies.
7. Negligence.
8. Defamation.
9. Nuisance.
10. Conspiracy.
11. False imprisonment.
12. Malicious prosecution.
13. Consumer Protection Act, 1986.

Law of Contracts and Mercantile Law

1. Nature and formation of contract/E-contract.
2. Factors vitiating free consent.
3. Void, voidable, illegal and unenforceable agreements.
4. Performance and discharge of contracts.
5. Quasi-contracts.
6. Consequences of breach of contract.
7. Contract of indemnity, guarantee and insurance.
8. Contract of agency.
9. Sale of goods and hire purchase.
10. Formation and dissolution of partnership.
11. Negotiable Instruments Act, 1881.
12. Arbitration and Conciliation Act, 1996.
13. Standard form contracts.

Contemporary Legal Developments

1. Public Interest Litigation.
2. Intellectual property rights - Concept, types/prospects.
3. Information Technology Law including Cyber Laws—Concept, purpose/prospects.
4. Competition Law—Concept, purpose/prospects.
5. Alternate Dispute Resolution -Concept, types/prospects.
6. Major statutes concerning environmental law.
7. Right to Information Act.
8. Trial by media.

Literature of the following languages :

NOTE (i).—A candidate may be required to answer some or all the Questions in the language concerned.

NOTE (ii).—In regard to the languages included in the Eighth Schedule to Constitution, the scripts will be the same as indicated in Section II (B) of Appendix I relating to the Main Examination.

NOTE (iii).—Candidates should note that the questions not required to be answered in a specific language will have to be answered in the language medium indicated by them for answering papers on Essay, General Studies and Optional Subjects.

ARABIC**PAPER I**

[Answer must be written in Arabic]

Section A

1. (a) Origin and development of the language an outline.
- (b) Significant features of the grammar of the language. Rhetorics, Prosody.
- (c) Short Essay in Arabic.

Section B

2. Literary History and Literary Criticism : Socio-Cultural background, Classical literature, literary movements, modern trends, origin and development of modern prose: drama, novel, short story, essay.

PAPER II

This paper will require first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability. Answers must be written in Arabic.

SECTION-A**POETS:**

1. Imraul Qais : Qifa Nabke Min Zikra Habibin Wa Manzilli (Complete)
Al Muallaqatus Saba
2. Hassan Bin Thabit : Lillahi Darru Isabatin Nadamtuhum (complete)
Diwan Hassan Bin Thabit
3. Jarir : Hayyu Umamata Wazkuru Ahdan Mada

- To
Jalbas Sifahi Wa Damiatin Biklla
Nukhbatul Adab : Deptt. of Arabic,
A.M.U. Aligarh
4. Farzdaq : Hazal Lazi Tariful Batha-o-watatuhu
(complete)
Majmuatun Minan Nazm-i-Wan Nasr,
Jamia Salafiah, Varanasi.
5. Al Mutanabbi :—Ya Ukhta Khair-e-Akhin Ya Binta
Khair-e-Abin
To
Aqamahul Fikru Baina Ljz-e-
Wattaabi
Nukhbatul Adab, Deptt. of Arabic,
A.M.U. Alig.
6. Abul Ala Al-Maarri :—Ala Fi Sabil Majdi Ma Ana
Faailu
To
Wa Ya Nafsu Jiddi Inna Dahraki
Hazilu.
Majmuatul Minan Nazm-i-Wan Nasr,
Jamia Salafia, Varanasi.
7. Shauqi :—Wulidal Huda Falkainatu Diau.
To
Makhtara Iila Dinakal Fuqarau
Salamun Neeli Ya Ghandi.
(complete)
Shauqiat
8. Hafiz Ibrahim :—Rajatu Linafsi Fattahamtu Hasati
(complete)
Nukhbatul Adab
9. Ilya Abu Madi :—Damatun Kharso (complete)
Mukhtarat Minal Sher Al Arabi Al
Hadith, M.M. Badwi

SECTION-B**(a) AUTHORS**

AUTHORS	BOOKS	LESSONS
1. Ibnul Muqaffa	Kalilah Wa Dimnah	Al Asad Wal Thaur
2. Al-Jahiz	Mukhtarat Min Adabi Arab Part II By : S.A. Hasan Ali Nadwi	Bakhilum Hakim (complete)
3. Ibn Khaldun	Muqaddamah	Araun Fit Talim (complete)
4. Mahmud Taimur	Qalar Rawi	Am Mutawalli (complete)
5. Taufiquil Hakim	Masrahiyat	Sirrul Muntahira (complete)
6. Abbas Mahmud Aqquad	Mukhtarat Min Adabil Arab-II	Assiddiq (complete)

(B) STUDY OF INDIAN AUTHORS :

1. Ghulam Ali Azad Bilgrami
2. Shah Walullah Dehlavi
3. Zulfikar Ali Deobandi
4. Abdul Aziz Mernan
5. Syed Abul Hassan Ali Hasani Nadvi

ASSAMESE**PAPER I**

[Answers must be written in Assamese]

Section A**Language**

- (a) History of the origin and development of the Assamese Language—its position among the Indo-Aryan language—periods in its history.
- (b) Development of Assamese prose.
- (c) Vowels and consonants of the Assamese Language—Rules of phonetic changes with stress on Assamese coming down from Old Indo-Aryan.
- (d) Assamese vocabulary—and its sources.
- (e) Morphology of the language—conjugation—enclitic definitives and pleonastic suffixes.
- (f) Dialectal divergences—the Standard colloquial and the Kamrupi dialect in particular.
- (g) Assamese script—its evolution through the ages till 19th century A.D.

Section B**Literary Criticism and Literary History**

- (a) Principles of literary criticism up to New criticism.
- (b) Different literary genres.
- (c) Development of literary forms in Assamese.
- (d) Development of literary criticism in Assamese.
- (e) Periods of the literary history of Assam from the earliest beginnings, i.e. from the period of the charyageeta with their socio-cultural background : the proto Assamese Pre-Sankaradeva—Sankaradeva—Post-Sankaradeva—Modern period (from the coming of the Britishers)—Post-Independence period. Special emphasis is to be given on the Vaisnavite period, the gonaki and the post-independence periods.

PAPER II

This paper will require first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

[Answers must be written in Assamese]

Section A

Rāmāyana (Ayodhyā Kānda—by Madhava Kandali only)

Pārijāt-Harana	—by Sankaradeva.
Rāsakridā	—by Sankaradeva (From Kirtana Ghosa)
Bārgēet	—by Madhavadeva.
Rājasūya	—by Madhavadeva.
Kathā-Bhāgavata (Books I and II)	—by Baikurthanath Bhattacharyya.
Gārucarī-Kathā (Sankaradeva's Part only)	—ed. by Maheswar Neog.

SECTION B

Mor Jeevan Soñwaran	—by Lakshminath Bezbaroa.
Kripābar Borbaruār Kakatar Topola	—by Lakshminath Bezbaroa.
Pratimā	—by Chandra Kumar Agarwalla.
Gāomburhā	—by Padmanath Gohain Barua.
Manomatī	—by Rajanikanta Bordoloi.
Purani Asamiyā Sāhitya	—by Banikanta Kakati.
Kārengar Ligiri	—by Jyotiprasad Agarwalla
Jeevanar Bātat	—by Bina Barva (Birinchi Kumar Barua)
Mrityunjoy	—by Birendrakumar Bhattacharyya
Samrāt	—by Navakanta Barua

BENGALI**PAPER I****History of Language and Literature.****[Answers must be written in Bengali]****Section A : Topics from the History of Bangla language**

1. The chronological track from Proto Indo-European to Bangla (Family tree with branches and approximate dates).
2. Historical stages of Bangla (Old, Middle, New) and their linguistic features.
3. Dialects of Bangla and their distinguishing characteristics.
4. Elements of Bangla Vocabulary.
5. Forms of Bangla Literary Prose—Sadhu and Chalit.
6. Processes of language change relevant for Bangla : Apinihiti (Anaptyxis), Abhishruti (umlaut), Murdhanyibhavan (cerebralization), Nasikyibhavan (Nasalization), Samibhavan (Assimilation), Sadrishya (Analogy), Svaragama (Vowel insertion) —Adi Svaragama, Madhya Svaragama or Svarabhakti, Antya Svaragama, Svarasangati (Vowel harmony), y—shruti and w—shruti.

7. Problems of standardization and reform of alphabet and spelling, and those of transliteration and Romanization.
8. Phonology, Morphology and Syntax of Modern Bangla. (Sounds of Modern Bangla, Conjunctions; word formations, compounds; basic sentence patterns.)

Section B : Topics from the History of Bangla Literature.

1. Periodization of Bangla Literature : Old Bangla and Middle Bangla.
2. Points of difference between modern and pre-modern Bangla Literature.
3. Roots and reasons behind the emergence of modernity in Bangla Literature.
4. Evolution of various Middle Bangla forms ; Mangal Kavyas, Vaishnava lyrics, Adapted narratives (Ramayana, Mahabharata, Bhagavata) and religious biographies.
5. Secular forms in middle Bangla literature.
6. Narrative and lyric trends in the nineteenth century Bangla poetry.
7. Development of prose.
8. Bangla dramatic literature (nineteenth century, Tagore, Post-1944 Bangla drama).
9. Tagore and post-Tagoreans.
10. Fiction, major authors : Bankimchandra, Tagore, Saratchandra, Bibhutibhusan, Tarasankar, Manik .
11. Women and Bangla literature : creators and created.

PAPER II

Prescribed texts for close study.

[Answers must be written in Bengali]**Section A**

1. **Vaishnava Padavali** (Calcutta University) Poems of Vidyapati, Chandidas, Jnanadas, Govindadas and Balaramdas.
2. **Chandimangal** Kalketu episode by Mukunda (Sahitya Akademi).
3. **Chaitanya Charitamrita**, Madhya Lila by Krishnadas Kaviraj (Sahitya Akademi).
4. **Meghnadbadh Kavya** by Madhusudan Dutta.
5. **Kapalkundala** by Bankimchandra Chatterjee.
6. **Samya and Bangadesher Krishak** by Bankimchandra Chatterjee.
7. **Sonar Tari** by Rabindranath Tagore.
8. **Chhinnapatravali** by Rabindranath Tagore.

Section B

9. **Raktakarabi** by Rabindranath Tagore.
10. **Nabajatak** by Rabindranath Tagore.
11. **Grihadaha** by Saratchandra Chatterjee.
12. **Prabandha Samgraha**, Vol. I, by Pramatha Choudhuri.
13. **Aranyak** by Bibhutibhusan Banerjee.

14. **Short stories** by Manik Bandyopadhyay : Atashi Mami, Pragaitihasik, Holud-Pora, Sarisrip, Haraner Natjamai, Chhoto-Bokulpurer Jatri, Kustharogir Bou, Jakey Ghush Ditey Hoy.
15. **Shrestha Kavita** by Jibanananda Das.
16. **Jagori** by Satinath Bhaduri.
17. **Ebam Indrajit** by Badal Sircar.

PAPER I

History of Bodo Language and Literature

[Answers must be written in Bodo]

Section A**History of Bodo Language**

1. Homeland, language family, its present status and its mutual contact with Assamese.
2. (a) phonemes : Vowel and Consonant Phonemes
(b) Tones.
3. Morphology : Gender, Case and Case endings, Plural suffix, Definitives, Verbal suffix.
4. Vocabulary and its sources.
5. Syntax : Types of sentences, Word Order
6. History of scripts used in writing Bodo Language since inception.

Section B**History of Bodo literature**

1. General introduction of Bodo folk literature.
2. Contribution of the Missionaries.
3. Periodization of Bodo Literature.
4. Critical analysis of different genre (Poetry, Novel, Short Story and Drama)
5. Translation Literature.

Paper II

The paper will require first-hand reading of the texts prescribed and will be designed to test the critical ability of the candidates.

(Answers must be written in Bodo)

Section A

- (a) Khonthai-Methai
(Edited by Madaram Brahma & Rupnath Brahma.)
- (b) Hathorkhi-Hala
(Edited by Pramod Chandra Brahma)
- (c) Boroni Gudi Sibsar Arw Aroz : Madaram Brahma
- (d) Raja Nilambar : Dwarendra Nath Basumatary
- (c) Bibar (prose section)
(Edited by Satish Chandra Basumatary).

Section B

- (a) Bibi Bithai (Aida Nwi) : Bihuram Boro
- (b) Radab : Samar Brahma Chaudhury
- (c) Okhrang Gongse Nangou : Brajendra Kumar Brahma
- (d) Baisagu Arw Harimu : Laksheswar Brahma

- (e) Gwdan Boro : Manoranjan Lahary
- (f) Jujaini Or : Chittaranjan Muchahary
- (g) Mwihoor : Dharanidhar Wary
- (h) Hor Badi Khwmsi : Kamal Kumar Brahma
- (i) Jaolia Dewan : Mangal Singh Hoowary
- (j) Hagra Guduni Mwi : Nilkamal Brahma

CHINESE**PAPER I**

This paper will require the candidates to have a good knowledge of standard Chinese language and its characteristics so as to test the candidate's organisational capabilities. All the questions (except the question on translation from Chinese to English) must be answered in Chinese. All the questions carry equal marks.

Section A

1. Essay writing in about 500 Chinese characters on a topical subject.
2. Translation :
a. Chinese-English
b. English-Chinese
3. Syntactic and grammatical usage.

Section B

1. Explanation of idioms and phrases in Chinese.
2. Development of Chinese language.
3. Comprehension Precis writing.

PAPER II

This paper will require the candidates to have a good grasp of Chinese studies and will be designed to test the candidate's critical ability. All the questions must be answered in Chinese. All the questions carry equal marks.

Section A

1. Short notes on topics related to major events in modern Chinese history (From 1919 till date).
2. Critical evaluation of major literary works in pre-liberation period (1919- 1949):
a. Lao She : Four Generations, Rickshaw-puller.
b. Ba Jin : Family.
c. Lu Xun : Medicine, Madman's Dairy, The True Story of Ah Q.
d. Mao Dun : Midnight.
e. Ai Quing : Coal's Reply (Mei de Duihua), Beggar (Qigai), I Love This Land (Wo Ai Zhe Tudi), Old Man (Laoren)
f. Guo Moruo : The Goddesses.
3. Role of Philosophy and Religion in the Development of Chinese Society.

Section B

1. Socio-Economic/Political/Educational/Sports/Science and Technological Development since 1979.

2. Critical appreciation of major literary works in post-liberation period (1949 till date):

- a. Gu Hua : The Town Called Hibiscus (Furongzhen)
 b. Chen Rong : Till the Middle Age (Ren dao Zhongnian)
 c. Liu Xinwu : The Class-in-Charge (Ban Zhuren)
 d. Lu Yao : The Human Existence (Rensheng)
 e. Ai Qing : Fish Fossil, the Mirror, The Gardener's Dream, The Hunter Who Drew Birds.
 f. Shu Ting : Motherland, My Beloved Motherland.

DOGRI

PAPER I

HISTORY OF DOGRI LANGUAGE AND LITERATURE

(Answers must be written in Dogri)

Section A

History of Dogri Language

1. Dogri language: Origin and development through different stages.
2. Linguistic boundaries of Dogri and its dialects.
3. Characteristic features of Dogri language.
4. Structure of Dogri Language:
 - (a) Sound Structure:

Segmental : Vowels and Consonants

Non-segmental : Length, Stress, Nasalization, Tone and Juncture.
 - (b) Morphology of Dogri:
 - (i) Inflection Categories: Gender, Number, Case, Person, Tense and Voice.
 - (ii) Word Formation: use of prefixes, infixes and suffixes.
 - (iii) Vocabulary: tatsam, tadbhav, foreign and regional.
 - (c) Sentence Structure: Major Sentence-types and their constituents, agreement and concord in Dogri syntax.
5. Dogri Language and Scripts: Dogre/Dogra Akkhar, Devanagari and Persian.

Section B

History of Dogri Language

1. A brief account of Pre-independence Dogri Literature: Poetry & Prose.
2. Development of modern Dogri Poetry and main trends in Dogri Poetry.
3. Development of Dogri short-story, main trends and prominent short-story writers.

4. Development of Dogri Novel, main trends and contribution of Dogri Novelists.

5. Development of Dogri Drama and contribution of prominent playwrights.
6. Development of Dogri Prose: Essays, Memoirs and travelogues.
7. An introduction to Dogri Folk literature—Folk songs, Folk tales 7 Ballads.

PAPER-II

TEXTUAL CRITICISM OF DOGRI LITERATURE

(Answers must be written in Dogri)

Section A

Poetry

1. Azadi Pahlle Di Dogri Kavita
The following poets:
Devi Ditta, Lakkhu, Ganga Ram, Ramdhan, Hardutt, Pahari Gandhi Baba Kanshi Ram & Permanand Almast
2. Modern Dogri Poetry
Azadi Bad Di Dogri Kavita
The following poets :
Kishan Smailpuri, Tara Smailpuri, Mohan Lal Sapolia, Yash Sharma, K.S. Madhukar, Padma Sachdev, Jitendra Udampuri, Charan Singh and Prakash Premi
3. Sheeraza Dogri Number 102, Ghazal Ank
The following poets :
Ram Lal Sharma, Ved Pal Deep, N.D. Jamwal, Shiv Ram Deep, Ashwini Magotra and Virendra Kesar
4. Sheeraza Dogri Number 147, Ghazal Ank
The following poets:
R.N. Shastri, Jitendra Udampuri, Champa Sharma and Darshan Darshi.
5. Ramayan (Epic) by Shambhu Nath Sharma (up to Ayodhya Kand)
6. Veer Gulab (Khand Kavya) by Dinoo Bhai Pant.

Section B

Prose

1. Ajakani Dogri Kahani
The following Short Story writers :
Madan Mohan Sharma, Narendra Khajuri and B.P. Sathe
2. Ajakani Dogri Kahani Part-II
The following Short Story writers :
Ved Rahi, Narsingh Dev Jamwal, Om Goswami, Chahtrapol, Lalit Magotra, Chaman Arora and Ratan Kesar.
3. Khatha Kunj Bhag II
The following Story writers :
Om Vidyarthi, Champa Sharma and Krishan Sharma.

4. Meel Patthar (collection of short stories) by Bandhu Sharma.
5. Kaidi (Novel) by Desh Bandhu Dogra Nutan.
6. Nanga Rukkh (Novel) by O.P. Sharma Sarathi.
7. Nayaan (Drama) by Mohan Singh.
8. Satrang (A collection of one act plays).

The following play wrights :

Vishwa Nath Khajuria, Ram Nath Shastri, Jitendra Sharma, Lalit Magotra and Madan Mohan Sharma.

9. Dogri Lalit Nibandh

The following authors:

Vishwa Nath Khajuria, Narayan Mishra, Balkrishan Shastri, Shiv Nath, Shyam Lal Sharma, Lakshmi Narayan, D.C. Prashant, Ved Ghai, Kunwar Viyogi.

ENGLISH

The syllabus consists of two papers, designed to test a first-hand and critical reading of texts prescribed from the following periods in English Literature : Paper 1 : 1600-1900 and Paper 2 : 1900-1990.

There will be two compulsory questions in each paper : (a) A short-notes question related to the topics for general study, and (b) A critical analysis of UNSEEN passages both in prose and verse.

PAPER I

(Answers must be written in English)

Texts for detailed study are listed below. Candidates will also be required to show adequate knowledge of the following topics and movements :

The Renaissance; Elizabethan and Jacobean Drama; Metaphysical Poetry; The Epic and the Mock-epic; Neoclassicism; Satire; The Romantic Movement; The Rise of the Novel; The Victorian Age.

Section A

1. William Shakespeare : King Lear and The Tempest.
2. John Donne. The following poems :
 - Canonization;
 - Death be not proud;
 - The Good Morrow;
 - On his Mistress going to bed;
 - The Relic;
3. John Milton : Paradise Lost, I, II, IV, IX.
4. Alexander Pope. The Rape of the Lock.
5. William Wordsworth. The following poems :
 - Ode on Intimations of Immortality.
 - Tintern Abbey.
 - Three years she grew.

- She dwelt among untrodden ways.
- Michael.
- Resolution and Independence.
- The World is too much with us.
- Milton, thou shouldst be living at this hour.
- Upon Westminster Bridge.

6. Alfred Tennyson : In Memoriam.
7. Henrik Ibsen : A Doll's House

Section B

1. Jonathan Swift. Gulliver's Travels.
2. Jane Austen. Pride and Prejudice.
3. Henry Fielding. Tom Jones.
4. Charles Dickens. Hard Times.
5. George Eliot. The Mill on the Floss.
6. Thomas Hardy. Tess of the d'Urbervilles.
7. Mark Twain. The Adventures of Huckleberry Finn.

PAPER II

(Answers must be written in English)

Texts for detailed study are listed below. Candidates will also be required to show adequate knowledge of the following topics and movements :

Modernism; Poets of the Thirties; The stream-of-consciousness Novel; Absurd Drama; Colonialism and Post-Colonialism; Indian Writing in English; Marxist, Psychoanalytical and Feminist approaches to literature; Post-Modernism.

Section A

1. William Butler Yeats. The following poems :
 - Easter 1916.
 - The Second Coming.
 - A Prayer for my daughter.
 - Sailing to Byzantium.
 - The Tower.
 - Among School Children.
 - Leda and the Swan.
 - Meru.
 - Lapis Lazuli.
 - The Second Coming.
 - Byzantium.
2. T.S. Eliot. The following poems :
 - The Love Song of J. Alfred Prufrock.
 - Journey of the Magi.
 - Burnt Norton.
3. W.H. Auden. The following poems :
 - Partition
 - Musee des Beaux Arts

- In Memory of W.B. Yeats
 - Lay your sleeping head, my love
 - The Unknown Citizen
 - Consider
 - Mundus Et Infans
 - The Shield of Achilles
 - September 1, 1939
 - Petition
4. John Osborne : Look Back in Anger.
5. Samuel Beckett. Waiting for Godot.
6. Philip Larkin. The following poems :
- Next
 - Please
 - Deceptions
 - Afternoons
 - Days
 - Mr. Bleaney
7. A.K. Ramanujan. The following poems :
- Looking for a Cousin on a Swing
 - A River
 - Of Mothers, among other Things
 - Love Poem for a Wife I
 - Small-Scale Reflections on a Great House
 - Obituary

(All these poems are available in the anthology Ten Twentieth Century Indian Poets, edited by R. Parthasarthy, published by Oxford University Press, New Delhi).

Section B

1. Joseph Conrad. Lord Jim.
2. James Joyce. Portrait of the Artist as a Young Man.
3. D.H. Lawrence. Sons and Lovers.
4. E.M. Forster. A Passage to India.
5. Virginia Woolf. Mrs. Dalloway.
6. Raja Rao. Kanthapura.
7. V.S. Naipaul. A House for Mr. Biswas.

FRENCH PAPER I

[Answers must be written in French except in the case of question requiring translation from French to English]

Section A

1. Main trends in French Literature
 - a. Classicism
 - b. Romanticism
 - c. Realism
2. Art in France
 - a. Romanticism
 - b. Realism
 - c. Impressionism

3. The Vth Republic
 - (a) De Gaulle and the Vth République
 - (b) May 1968
 - (c) Pompidou
 - (d) Giscard d'Estaing
 - (e) Mitterrand
 - (f) Chirac
4. Translation : French to English (2 passages of socio-politico-economic nature of 200 words each).

Section B

1. Main trends in French Literature
 - a. Symbolism
 - b. Surrealism
 - c. Theatre of the Absurd
2. Art in French
 - a. Surrealism
 - b. Cubism
 - c. Abstract Painting.
3. The Vth Republic
 - a. Partis politiques en France
 - b. Place et rôle du Président de la V^e République
 - c. Le Gouvernement
 - d. Le Parlement
 - e. Le Sénat
4. Translation : English to French 2 passages of socio-politico-economic nature of 200 words each.

PAPER II

(Answers must be written in French)

Section A

This paper will require an in-depth reading of the following texts and the questions will be designed to test the candidate's critical ability.

1. XVIIth Century
 - (a) Corneille: *Le Cid*
 - (b) Racine: *Andromaque*
 - (c) Moliere: *L'Avare*
2. XVIIIth Century

Beaumarchais: *Le Mariage de Figaro*
3. XIXth Century
 - (a) Lamartine: *Le lac, Le Vallon*
 - (b) Victor Hugo: *La Conscience. Elle Avait Pris Ce Pii.....*
Demain, Dès L'Aube...

- (c) Victor Hugo: *Hernani*
 (d) Musset: *Souvenir, La Nuit de Décembre*
 (e) Mérimée: *Colomba*
 (f) Balzac: *Eugénie Grandet*
 (g) Flaubert: *Madame Bovary*
 (h) Baudelaire: *L'Invitation au Voyage, Recueillement, L'Albatros.*
 (i) Rimbaud: *Le Dormeur du Val*
 (j) Verlaine: *Chanson d'Automne, Mon Rêve Familier, Il Pleure Dans Mon Coeur...*

Section B**4. XXth Century**

- (a) Appolinaire: *Nuit Rhénane, Le Pont Mirabeau*
 (b) Jacques Prévert: *Pour Faire Le Portrait d'Un Oiseau, Barbara*
 (c) Paul Fluard: *Liberté*
 (d) Paul Valéry: *Les Pas, La Fileuse*
 (e) André Gide: *La Symphonie Pastorale*
 (f) Camus: *L'Etranger*
 (g) Sartre: *Les Mains Sales*
 (h) Ionesco: *Rhinocéros*

Francophonie :

- (a) Gérard Besette: *Le Libraire*
 (b) Ananda Devi: *Le Voile de Draupadi*
 (c) Cheikh Hamidou Kane: *L'Aventure Ambigüe*
 (d) Abdellatif Laabi: *Poèmes en prose*
 1. *L'Arbre à poèmes (L'Etreinte du Monde)*
 2. *Lès Reves viennent mourir sur la page (L'Etreinte du Monde)*

5. Essay of general nature on a contemporary theme.**GERMAN****PAPER I****(Answers must be written in German)****Section A****1. Structure of language :**

Candidates are expected to have a thorough knowledge of German grammar with reference to specific aspects such as word order, syntactic structure and semantics.

2. Essay in German :

Candidates are expected to demonstrate command over techniques of written expression in German by writing an essay on a contemporary topic of a general nature.

Section B**1. Translation of a text of a general nature from English into German****2. Socio-political and cultural history of Germany from the 18th century onwards with special reference to :**

- Impact of Enlightenment on German society and culture.
- The impact of Prussian culture on Germany.
- Cultural debates in the Weimar Republic.
- The concept of culture under National Socialism in Germany.
- The development of two German literatures and cultures after 1945.
- Reunification of Germany and the problems of cultural pluralism.
- The role and relevance of German language and literature in the European Union.

PAPER II**(Answers must be written in German)****Section A****1. Development of German literature from the 19th century to the present.**

Candidates should know the main trends, representative authors and their important works. The emphasis is not on collecting information on works and authors, but the candidate is expected to identify features of a literary epoch on the basis of representative texts.

2. The Study of literary genres.

Candidates must be aware of the characteristic features of the different genres like *Roman, Novelle, Drama, Ballade, Elegie, Marchen, Fabeln, Kurzgeschichte.*

Section B**1. Perceptions of Literary Interpretation.**

Candidates should be aware of various approaches to a critical understanding of literature.

2. Study of Selected Texts.

- Goethe : *Die Leiden des jungen Werther.*
- Schiller : *maria Stuart.*
- Eichendorff : *Gedichte.*
- Gottfried Keller : *kleider machen Leute.*
- Thomas Mann : *Die vertauschten Kopfe.*
- Franz Kafka : *Vor dem Gesetz.*
- Friedrich Durrenmatt : *Die Physiker.*
- Max Frisch: *Andorra.*
- Heinrich Boll : *Die verlorene Ehre der Katharina Blum.*
- Ingeborg Bachmann: *Alles (aus dem Erzählband: Das Dreißigste Jahr).*
- Rose Auslander: *Gedichte.*
- Christa Wolf: *Der geteilte Himmel.*
- Gunter Grass: *Zunge zeigen.*

GUJARATI**PAPER I****(Answers must be written in Gujarati)****Section A****Gujarati Language : Form and History**

- (1) History of Gujarati Language with special reference to New Indo-Aryan i.e. last one thousand years.
- (2) Significant features of the Gujarati language : phonology, morphology and syntax.
- (3) Major dialects : Surti, pattani, charotari and Saurashtri.

History of Gujarati literature**Medieval :**

4. Jaina tradition
5. Bhakti tradition : Sagun and Nirgun (Jnanmargi)
6. Non-sectarian tradition (Laukik parampara)

Modern :

7. Sudharak yug
8. Pandit yug
9. Gandhi yug
10. Anu-Gandhi yug
11. Adhunik yug

Section B

Literary Forms : (Salient features, history and development of the following literary forms :)

- (a) **Medieval**
 1. Narratives : Rasa, Akhyan and Padyavarta
 2. Lyrical: Pada
- (b) **Folk**
 3. Bhavai
- (c) **Modern**
 4. Fiction : Novel and Short Story
 5. Drama
 6. Literary Essay
 7. Lyrical Poetry
- (d) **Criticism**
 8. History of theoretical Gujarati criticism
 9. Recent research in folk tradition.

PAPER II**(Answers must be written in Gujarati)**

The paper will require first-hand reading of the texts prescribed and will be designed to test the critical ability of the candidate.

Section A**I. Medieval**

- (i) Vasantvilas phagu—AJNATKRUT

- (ii) Kadambari—BHALAN
- (iii) Sudamacharitra—PREMANAND
- (iv) Chandrachandravatini varta —SHAMAL
- (v) Akhegeeta—AKHO

2. Sudharakyug & Pandityug

- (vi) Mari Hakikat—NARMADASHIA
- (vii) Farbasveerah—DALPATRAM
- (viii) Saraswatichandra-Part I GOVARDHANRAM TRIPATHI
- (ix) Purvalap—'KANT'(MANISHANKAR RATNAJI BHATT)
- (x) Raino Parvat—RAMANBHAI NEELKANTH

Section B**1. Gandhiyug & Anu Gandhiyug**

- (i) Hind Swaraj—MOHANDAS KARAMCHAND GANDHI
- (ii) Patanni Prabhuta—KANHAIYALAL MUNSHI
- (iii) Kavyani Shakti—RAMNARAYAN VISHWANATH PATHAK
- (iv) Saurashtrani Rasdhar-Part I ZAVERCHAND MEGHANI
- (v) Manvini Bhavai—PANNALAL PATEL
- (vi) Dhvani - RAJENDRA SHAI

2. Adhunik yug

- (vii) Saptapadi—UMASHANKAR JOSHI
- (viii) Janantike -SURESH JOSHI
- (ix) Ashwatthama—SITANSHU YASHASCHANDRA.

HINDI**PAPER I****(Answers must be written in Hindi)****Section A****1. History of Hindi Language and Nagari Lipi**

- I. Grammatical and applied forms of Apbhransh, Awahatta & Arambhik Hindi.
- II. Development of Braj and Awadhi as Literary language during medieval period.
- III. Early form of Khari-boli in Siddha-Nath Sahitya, Khusero, Sant Sahitaya, Rahim etc. and Dakhni Hindi.
- IV. Development of Khari-boli and Nagari Lipi during 19th Century.
- V. Standardisation of Hindi Bhasha & Nagari Lipi.
- VI. Development of Hindi as a National Language during freedom movement.
- VII. The development of Hindi as a National Language of Union of India.

- VIII. Scientific & Technical Development of Hindi Language.
- IX. Prominent dialects of Hindi and their inter-relationship.
- X. Salient features of Nagari Lipi and the efforts for its reform & Standard form of Hindi.
- XI. Grammatical structure of Standard Hindi.

Section B

2. History of Hindi Literature

I. The relevance and importance of Hindi literature and tradition of writing History of Hindi Literature.

II. Literary trends of the following four periods of history of Hindi Literature.

A: Adikal—Sidh, Nath and Raso Sahitya. Prominent poets—Chandvardai, Khusaro, Hemchandra, Vidyapati.

B: Bhaktikal—Sant Kavyadhara, Sufi Kavyadhara, Krishna Bhaktidhara and Ram Bhaktidhara. Prominent Poets—Kabir, Jayasi, Sur & Tulsi.

C: Ritikal—Ritikavya, Ritibaddhkavya & Riti Mukta Kavya. Prominent Poets—Keshav, Bihari, Padmakar and Ghananand.

D: Adhunik Kal—

a. Renaissance, the development of Prose, Bharatendu Mandal.

b. Prominent Writers—Bharatendu, Bal Krishna Bhatt & Pratap Narain Mishra.

c. Prominent trends of modern Hindi Poetry: Chhayavad, Pragativad, Prayogvad, Nai Kavita, Navgeet and Contemporary poetry and Janvadi Kavita.

Prominent Poets—Maithili Sharan Gupta, Prasad, Nirala, Mahadevi, Dinkar, Agyeya, Muktibodh, Nagarjun.

3. Katha Sahitya

A: Upanyas & Realism

B: The origin and development of Hindi Novels.

C: Prominent Novelists—Premchand, Jainendra, Yashpal, Renu and Bhism Sahani.

D: The origin and development of Hindi short story.

E: Prominent Short Story Writers—Premchand, Prasad, Agyeya, Mohan Rakesh & Krishna Sobti.

4. Drama & Theatre

A: The Origin & Development of Hindi Drama.

B: Prominent Dramatists—Bharatendu, Prasad, Jagdish Chandra Mathur, Ram Kumar Verma, Mohan Rakesh.

C: The development of Hindi Theatre.

5. Criticism

A: The origin and development of Hindi criticism :

Saiddhantik, Vyavharik, Pragativadi. Manovishleshanvadi & Nai Alochana.

B: Prominent critics—Ramchandra Shukla, Hajari Prasad Dwivedi, Ram Vilas Sharma & Nagendra.

6. The other form of Hindi prose—Lalit Nibandh, Rekhachitra, Sansmaran, Yatra-vrittant.

PAPER II

(Answers must be written in Hindi)

The paper will require first-hand reading of the prescribed texts and will test the critical ability of the candidates.

Section A

1. Kabir : Kabir Granthawali, Ed. Shyam Sundar Das (First hundred Sakhis)
2. Surdas : Bhramar Gitsar, Ed. Ramchandra Shukla (First hundred Padas)
3. Tulsidas : Ramcharit Manas (Sundar Kand) Kavita wali (Uttarkand)
4. Jayasi : Padmawat Ed. Shyam Sundar Das (Sinhai Dwip Khand & Nagmativiyog Khand)
5. Bihari : Bihari Ratnakar Ed. Jagannath Prasad Ratnakar (First 100 Dohas)
6. Maithili Sharan Gupta : Bharat Bharati
7. Prasad : Kamayani (Chinta and Shraddha Sarg)
8. Nirala : Rag-Virag, Ed. Ram Vilas Sharma (Ram Ki Shakti Puja & Kukumutta)
9. Dinkar : Kurukshetra
10. Agyeya : Angan Ke Par Dwar (Asadhya Vina)
11. Muktibodh : Brahm Rakhshas
12. Nagarjun : Badal Ko Ghirte Dekha Hai, Akal Ke Bad, Harijan Gatha.

Section B

1. Bharatendu : Bharat Durdasha
2. Mohan Rakesh : Ashad Ka Ek Din
3. Ramchandra Shukla : Chintamani (Part I) (Kavita Kya Hai, Shraddha Aur Bhakti)
4. Dr. Satyendra : Nibandh Nilaya—Bal Krishna Bhatt, Premchand, Gulab Rai, Hajari Prasad Dwivedi, Ram Vilas Sharma, Agyeya, Kuber Nath Rai.
5. Premchand : Godan, Premchand ki Sarvashreshtha Kahaniyan, Ed. Amrit Rai Manjusha—Prem Chand ki Sarvashreshtha Kahaniyan, Ed. Amrit Rai.
6. Prasad : Skandgupta
7. Yashpal : Divya

8. Phaniswar Nath : Maila Anchal Renu
 9. Mannu Bhandari : Mahabhoj
 10. Rajendra Yadav : Ek Dunia Samanantar (All Stories)

**KANNADA
 PAPER I**

(Answers must be written in Kannada)

Section A

A. History of Kannada Language

What is Language? General characteristics of Language. Dravidian Family of Languages and its specific features. Antiquity of Kannada Language. Different phases of its Development.

Dialects of Kannada Language : Regional and Social. Various aspects of developments of Kannada Language: phonological and Semantic changes. Language borrowing.

B. History of Kannada Literature

Ancient Kannada literature : Influence and Trends, Poets for study : Specified poets from Pampa to Ratnakara Varni are to be studied in the light of contents, form and expression : Pampa, Janna, Nagachandra.

Medieval Kannada literature : Influence and Trends.

Vachana Literature : Basavanna, Akka Mahadevi.

Medieval Poets : Harihara, Raghavanka, Kumara-Vyasa.

Dasa literature : Purandara and Kanaka.

Sangataya : Ratnakarvarni

C. Modern Kannada literature : Influence, trends and ideologies, Navodaya, Pragatishila, Navya, Dalita and Bandaya.

Section B

A. Poetics and Literary Criticism

Definition and concepts of poetry; Word, Meaning, Alankara, Reeti, Rasa, Dhvani, Auchitya.

Interpretations of Rasa Sutra. Modern Trends of literary criticism : Formalist, Historical, Marxist, Feminist, Post-colonial criticism.

B. Cultural History of Karnataka

Contribution of Dynasties to the culture of Karnataka: Chalukyas of Badami and Kalyani, Rashtrakutas, Hoysalas, Vijayanagara rulers, in literary context.

Major religions of Karnataka and their cultural contribution.

Arts of Karnataka ; Sculpture, Architecture, Painting, Music, Dance—in the literary context.

Unification of Karnataka and its impact of Kannada literature.

PAPER II

(Answers must be written in Kannada)

The Paper will require first-hand reading of the Texts prescribed and will be designed to test the critical ability of the candidates.

Section A

A. Old Kannada Literature

1. Vikramaarjuna Vijaya of Pampa (Cantos 12 & 13), (Mysore University Pub.)

2. Vaddaraadhane (Sukumaraswamyia Kathe, Vidyutchorana Kathe)

B. Medieval Kannada Literature

1. Vachana. Kammata, Ed. K. Marulasiddappa K.R. Nagaraj (Bangalore University Pub.)

2. Janapriya Kanakasamputa, Ed. D. Javare Gowda (Kannada and Culture Directorate, Bangalore)

3. Nambiyannana Ragale, Ed., T.N. Sreekantaiah (Ta. Vem. Smaraka Grantha Male, Mysore)

4. Kumaravyasa Bharata : Karna Parva (Mysore University)

5. Bharatesha Vaibhava Sangraha Ed. Ta. Su. Shama Rao (Mysore University)

Section B

A. Modern Kannada Literature

1. Poetry : Hosagannada Kavite. Ed. G.H. Nayak (Kannada Saahitya Parishattu, Bangalore)

2. Novel : Bettada Jeeva Shivarama Karanta Madhavi—Anupama Niranjana Odalaala-Deva-nuru Mahadeva

3. Short Story : Kannada Sanna Kathegalu, Ed. G.H. Nayak (Sahitya Academy, New Delhi)

4. Drama : Shudra Tapaswi—Kuvempu. Tughalak—Girish Kamad.

5. Vichara : Devaru—A.N. Moorthy Rao (Pub: D.V.K. Sahitya : Moorthy, Mysore.)

B. Folk Literature :

1. Janapada Swaroopa—Dr. H.M. Nayak. (Ta. Vem. Smaraka Grantha Male, Mysore.)

2. Janpada Geetaanjali—Ed. D. Javare Gowda. (Pub : Sahitya Academy, New Delhi).

3. Kannada Janapada Kathegalu—Ed. J.S. Paramashiviah (Mysore University).

4. Beedi Makkalu Beledo. Ed. Kalegowda Nagavara (Pub : Bangalore University).

5. Savirada Oगतugalu—Ed. S.G. Imrapura.

KASHMIRI**PAPER I****(Answers must be written in Kashmiri)****Section A**

1. Genealogical relationship of the Kashmiri language: various theories.
2. Areas of occurrence and dialects (geographical/social)
3. Phonology and grammar:
 - i. Vowel and consonant system;
 - ii. Nouns and pronouns with various case inflections;
 - iii. Verbs: various types and tenses.
4. Syntactic structure:
 - i. Simple, active and declarative statements;
 - ii. Coordination;
 - iii. Relativisation.

Section B

1. Kashmiri literature in the 14th century (Socio-cultural and intellectual background with special reference to *Lal Dyad* and *Sheikhul Alam*).
2. Nineteenth century Kashmiri literature (development of various genres : *vatsun*; *ghazal* and *mathnavi*).
3. Kashmiri literature in the first half of the twentieth century (with special reference to Mahjoor and Azad; various literary influences).
4. Modern Kashmiri literature (with special reference to the development of the short story, drama, novel and nazm).

PAPER II**(Answers must be written in Kashmiri)****Section A**

1. Intensive study of Kashmiri poetry up to the nineteenth century :
 - (i) Lal Dyad,
 - (ii) Sheikhul Aalam
 - (iii) Habba Khatoon
2. Kashmiri poetry : 19th Century
 - (i) Mahmood Gami (*Vatsans*)
 - (ii) Maqbool shah (*Gulrez*)
 - (iii) Rasool Mir (*Ghazals*)
 - (iv) Abdul Ahad Nadim (*N'at*)
 - (v) Krishanjoo Razdan (*Shiv Lagun*)
 - (vi) Sufi Poets (Test in *Sanglaab*, published by the Deptt. of Kashmiri, University of Kashmir)
3. Twentieth Century Kashmiri poetry (text in *Azich Kashir Shairi*, published by the Deptt. of Kashmiri, University of Kashmir).
4. Literary criticism and research work : development and various trends.

Section B

1. An analytical study of the short story in Kashmiri.
 - (i) *Afsana Majmu'a*, published by the Deptt. of Kashmiri, University of Kashmir.
 - (ii) *Kashur Afsana Az*, published by the Sahitya Akademi.
 - (iii) *Hamasar Kashur Afsana*, published by the Sahitya Akademi.

The following short story writers only : Akhtar Mohi-ud Din, Kamil, Hari Krishan Kaul, Hraday Kaul Bharti, Bansi Nirdosh, Gulshan Majid.

2. Novel in Kashmiri :
 - (i) *Mujrim* by G. N. Gowhar
 - (ii) *Marun*—Ivan Ilyichun, (Kashmiri version of Tolstoy's) *The Death of Ivan Ilyich* (published by Kashmiri Deptt.)
3. Drama in Kashmiri :
 - (i) *Natuk Kariv Band* by Hari Krishan Kaul
 - (ii) Qk Angy Natuk, ed. Motilal Kccmu, published by the Sahitya Akademi.
 - (iii) *Razi Oedipus*, tr. Naji Munawar, published by the Sahitya Akademi.
4. Kashmiri Folk Literature :
 - (i) *Kashur Luki Theatre* by Mohammad Subhan Bhagat, published by the Deptt. of Kashmiri, University of Kashmir.
 - (ii) *Kashiry Luki Beeth* (all volumes) published by the J&K Cultural Akademy.

KONKANI**PAPER I****(Answers must be written in Konkani)****Section A****History of the Konkani Language :**

- (i) Origin and development of the language and influences on it.
- (ii) Major variants of Konkani and their linguistic features.
- (iii) Grammatical and lexicographic work in Konkani, including a study of cases, adverbs, indeclinables and voices.
- (iv) Old Standard Konkani, New Standard and Standardisation problems.

Section B**History of Konkani Literature**

Candidates would be expected to be well-acquainted with Konkani literature and its social and cultural background and consider the problems and issues arising out of them.

- (i) History of Konkani literature from its probable source to the present times, with emphasis on its major works, writers and movements.

- (ii) Social and cultural background of the making of Konkani literature from time to time.
- (iii) Indian and Western influences on Konkani literature, from the earliest to modern times.
- (iv) Modern literary trends in the various genres and regions including a study of Konkani folklore.

PAPER II

(Answers must be written in Konkani)

Textual Criticism of Konkani Literature

The paper will be designed to test the candidate's critical and analytical abilities. Candidates would be expected to be well-acquainted with Konkani Literature and required to have first-hand reading of the following texts :

Section A : Prose

1. (a) Konkani Mansangotri (excluding poetry) ed. by Prof. Olivinho Gomes.
(b) Old Konkani language and literature—the Portuguese Role
2. (a) Otmø Denvcharak—a novel by A. V. da Cruz.
(b) Vadoll ani Varem—a novel by Antonio Pereira.
(c) Devache Kurpen—a novel by V.J.P. Saldanha.
3. (a) Vajralikhani—Shenoy goem-bab-An anthology—ed. by Shantaram Varde Valavalikar.
(b) Konkani Lalit Niband—Essays—ed. by Shyam Verekar.
(c) Teen Dasakam—An anthology—ed. by Chandrakant Keni.
4. (a) Demand—Drama—by Pundalik Naik.
(b) Kadambini: A Miscellany of Modern Prose—ed. by Prof. O.J.F. Gomes and Smt. P.S. Tadkodkar.
(c) Ratha Tujeo Ghudieo—by Smt. Jayanti Naik.

Section B : Poetry

1. (a) Ev ani Mori : Poetry by Eduardo Bruno de Souza.
(b) Abravanchem Yadnyadan—by Luis Mascarenhas.
2. (a) Godde Ramayan—ed. by R.K. Rao.
(b) Ratnhar I and II—collection of poems—ed. R. V. Pandit.
3. (a) Zayo Zuyo—poems—Manohar L. Sardesai.
(b) Kanadi Mati Konkani Kavi—Anthology of Poems—ed. Pratap Naik.
4. (a) Adrushatache Kalle—Poems by Pandurang Bhangui.
(b) Yaman—Poems by Madhav Borkar.

MAITHILI

PAPER I

HISTORY OF MAITHILI LANGUAGE AND ITS LITERATURE

(Answers must be written in Maithili)

PART A

History of Maithili Language

1. Place of Maithili in Indo-European Language family.

2. Origin and development of Maithili language. (Sanskrit, Prakrit, Avhatt, Maithili)
3. Periodic division of Maithili Language. (Beginning, Middle era, Modern era).
4. Maithili and its different dialects.
5. Relationship between Maithili and other Eastern languages (Bengali, Asamese, Oriya)
6. Origin and Development of Tirhuta Script.
7. Pronouns and Verbs in Maithili Language.

PART B

History of Maithili Literature

1. Background of Maithili Literature (Religious, Economic, Social, Cultural).
2. Periodic division of Maithili literature.
3. Pre-Vidyapati Literature.
4. Vidyapati and his tradition.
5. Medieval Maithili Drama (Kirtaniya Natak, Ankia Nat, Maithili dramas written in Nepal).
6. Maithili Folk Literature (Flok Tales, Folk Drama, Folk Stories, Folk Songs).
7. Development of different literary forms in modern era :
(a) Prabandh-kavya
(b) Muktak-kavya
(c) Novel
(d) Short Story
(e) Drama
(f) Essay
(g) Criticism
(h) Memoirs
(i) Translation
8. Development of Maithili Magazines and Journals.

PAPER-II

(Answers must be written in Maithili)

The paper will require first-hand reading of the prescribed texts and will test the critical ability of the candidates.

PART A

Poetry

1. Vidyapati Geet-Shati—Publisher : Sahitya Akademi, New Delhi (Lyrics— 1 to 50)
2. Govind Das Bhajanavali—Publisher : Maithili Academy, Patna (Lyrics— 1 to 25)
3. Krishnajanm—Manbodh
4. Mithilabhasha Ramayana—Chanda Jha (only Sunder-Kand)
5. Rameshwar Charit Mithila Ramayan—Lal Das (only Bal-kand)
6. Keechak-Vadh—Tantra Nath Jha.
7. Datta-Vati—Surendra Jah 'Suman' (only 1st and 2nd Cantos).

8. Chitra-Yatri
9. Samakaleen Maithili Kavita—Publisher: Sahitaya Akademi, New Delhi.

Part-B

10. Varna Ratnakar—Jyotirishwar (only 2nd Kallol)
11. Khattar Kakak Tarang—Hari Mohan Jha
12. Lorik—Vijaya Manipadma
13. Prithvi Putra—Lalit
14. Bhaphait Chahak Jinagi—Sudhanshu 'Shekhar' Choudhary
15. Kriti Rajkamlak—Publisher: Maithili Academy, Patna (First Ten Stories only)
16. Katha Sangrah—Publisher: Maithili Academy, Patna.

MALAYALAM

PAPER I

(Answers must be written in Malayalam)

Section A

1—Early phase of Malayalam language :

- 1.1 Various theories : Origin from proto Dravidian, Tamil, Sanskrit.
- 1.2 Relation between Tamil and Malayalam : Six nayas of A. R. Rajarajavarma.
- 1.3 Pattu School—Definition, Ramacharitam, later pattu works—Niranam works and Krishnagatha.

2—Linguistic features of :

- 2.1 Manipravalam—definition. Language of early manipravalam works—Champu, Sandesakavya, Chandrotsava, minor works. Later manipravalam works—medieval Champu and Attakkatha.
- 2.2 Folklore—Southern and Northern ballads, Mappila songs.
- 2.3 Early Malayalam Prose—Bhashakautaliyam, Brahmandapuram, Attaprakaram, Kramadipika and Nambiantamil.

3—Standardisation of Malayalam :

- 3.1 Peculiarities of the language of Pana, Kilippattu and Tullal.
- 3.2 Contributions of indigenous and European missionaries to Malayalam.
- 3.3 Characteristics of contemporary Malayalam ; Malayalam as administrative language. Language of scientific and technical literature—media language.

Section B

LITERARY HISTORY

4—Ancient and Medieval Literature :

- 4.1 Pattu—Ramacharitam, Niranam Works and Krishnagatha.
- 4.2 Manipravalam—early and medieval manipravalam works including attakkatha and champu.
- 4.3 Folk literature.

- 4.4 Kilippattu, Tullal and Mahakavya.

5—Modern Literature—Poetry

- 5.1 Venmani poets and contemporaries.
- 5.2 The advent of Romanticism—Poetry of Kavitraya i.e., Asan, Ulloor and Vallathol.
- 5.3 Poetry after Kavitraya.
- 5.4 Modernism in Malayalam Poetry.

6—Modern Literature—Prose

- 6.1 Drama.
- 6.2 Novel.
- 6.3 Short story.
- 6.4 Biography, travelogue, essay and criticism.

PAPER II

(Answers must be written in Malayalam)

This paper will require first hand reading of the texts prescribed and is designed to test the candidate's critical ability.

Section A

Unit 1

- 1.1 Ramacharitam—Patalam I.
- 1.2 Kannassaramayanam—Balakandam first 25 stanzas.
- 1.3 Unnunilisesandesam—Purvabhagam 25 slokas including Prastavana.
- 1.4 Mahabharatham Kilippattu—Bhishmaparvam.

Unit 2

- 2.1 Kumaran Asan—Chintavisthayaya Sita.
- 2.2 Vailoppilli—Kutiyozhikkal.
- 2.3 G. Sankara Kurup—Perunthachan.
- 2.4 N. V. Krishna Variar—Tivandiyile pattu.

Unit 3

- 3.1 O. N. V.—Bhumikkoru Charamagitam.
- 3.2 Ayyappa Panicker—Kurukshestram.
- 3.3 Akkittam—Pandatha Messanthi.
- 3.4 Attur Ravivarma—Megharupam.

Section B

Unit 4

- 4.1 O. Chanthu Menon—Indulekha.
- 4.2 Thakazhy—Chemmin.
- 4.3 O. V. Vijayan—Khasakkinte Ithihasam.

Unit 5

- 5.1 M. T. Vasudevan Nair—Vanaprastham (Collection).
- 5.2 N. S. Madhavan—Higvitta (Collection).
- 5.3 C. J. Thomas—1128-il Crime 27.

Unit 6

- 6.1 Kuttikrishna Marar—Bharataparyatanam.
- 6.2 M. K. Sanu—Nakshatragalute Snehabhajanam.
- 6.3 V. T. Bhattathirippad—Kannirum Kinavum.

MANIPURI**PAPER I****(Answers must be written in Manipuri)****Section A****Language :**

- (a) General characteristics of Manipuri Language and history of its development; its importance and status among the Tibeto-Burman Languages of North-East India; recent development in the study of Manipuri language; evolution and study of old Manipuri script.
- (b) Significant features of Manipuri language :
- Phonology : Phoneme-vowels, consonants juncture, tone, consonant cluster and its occurrence, syllable-its structure, pattern and types.
 - Morphology : Word-class, root and its types; affix and its types; grammatical categories-gender, number, person, case, tense and aspects, process of compounding (samās and sandhi).
 - Syntax : Word order; types of sentences, phrase and clause structures.

Section B

- (a) Literary History of Manipuri :
Early period (upto 17th Century)—Social and cultural background; Themes, diction and style of the works.
Medieval period (18th and 19th Century)—Social, religious and political background; Themes, diction and style of the works.
Modern period—Growth of major literary forms; change of Themes, diction and style.
- (b) Manipuri Folk Literature :
Legend, Folktale, Folksong, Ballad, Proverb and Riddle.
- (c) Aspects of Manipuri Culture :
Pre-Hindu Manipuri Faith; Advent of Hinduism and the process of syncreticism;
Performing arts—Lai Haraoba, Maha Ras;
Indegenous games—Sagol Kangjei, Khong Kangjei, Kang.

PAPER II**(Answers must be written in Manipuri)**

This paper will require first hand reading of the texts prescribed and will be designed to test candidate's critical ability to assess them.

Section A**Old and Medieval Manipuri Literature :****(a) Old Manipuri Literature :**

- O. Bhogeswar Singh (Ed.) : Numit Kappa
- M. Gourachandra Singh (Ed.) : Thawanthaba Hiran
- N. Khelchandra Singh (Ed.) : Naothingkhong Phambal Kaba
- M. Chandra Singh (Ed.) : Panthoibi Khonggul

(b) Medieval Manipuri Literature :

- M. Chandra Singh (Ed.) : Samsok Ngamba
- R.K. Snahal Singh (Ed.) : Ramayana Adi Kanda
- N. Khelchandra Singh (Ed.) : Dhananjoy Laibu Ningba
- O. Bhogeswar Singh (Ed.) : Chandrakirti Jila Changba

Section B**Modern Manipuri Literature :****(a) Poetry and Epic :****(I) Poetry :**

- (a) Manipuri Sheireng (Pub) Manipuri Sahitya Parishad, 1998 (ed.)

Kh. Chaoba Singh : Pi Thadoi, Lamgi Chekla Amada, Loktak

Dr. I. Kamal Singh : Nirjanata, Nirab Rajani

A. Minaketan Singh : Kamalda, Nonggumalkkhoda.

L. Samarendra Singh : Ingagi Nong, Mamang Leikai Thambal Satle

E. Nilakanta Singh : Manipur, Lamangnaba

Shri Biren : Tangkhul Hui

Th. Ibopishak : Anouba Thunglaba Jiba.

- (b) Kanchi Sheireng. (Pub) Manipur University 1998 (ed.)

Dr. I. Kamal Singh : Biswa-Prem

Shri Biren : Chaphadraba Laigi Yen

Th. Ibopishak : Norok Patal Prithivi

(II) Epic :

- A. Dorendrajit Singh : Kansa Bodha
- H. Anganghal Singh : Khamba-Thoibi Sheireng (San-Scenba, Lei Langba, Shamu Khonggi Bichar)

(III) Drama :

- S. Lalit Singh : Areppa Marup
- G.C. Tongbra : Matric Pass
- A. Samarendra : Judge Saheb ki Imung

(b) Novel, Short-story and Prose :**(I) Novel :**

- Dr. I. Kamal Singh : Madhabi
- H. Anganghal Singh : Jahera
- H. Guno Singh : Laman
- Pacha Meetei : Imphal Amasung, Magi Ishing, Nungsitki Phibam

(II) Short-story :

- (a) Kanchi Warimacha (Pub) Manipur University 1997(ed.)

R.K. Shitaljit Singh : Kamala Kamala

M.K. Binodini : Eigi Thahoudraba Heitup
Lalu

Kh. Prakash : Wanom Shareng

- (b) Parishadki Khangatlabha Warimacha (Pub) Manipuri Sahitya Parishad 1994 (ed.)

S. Nilbir Shastri : Loukhatpa

R.K. Elangba : Karinunggi

- (c) Anouba Manipuri Warimacha (Pub) The Cultural Forum Manipur 1992 (ed.)

N. Kunjamohon Singh : Ijat Tanba

E. Dinamani : Nongthak Khongnang

(III) Prose :

- (a) Warenggi Saklon [Due Part] (Pub) The Cultural Forum Manipur 1992 (ed.)

Kh. Chaoba Singh : Khamba-Thoibigi Wari
Amasung Mahakavya

- (b) Kanchi Wareng (Pub) Manipur University, 1998 (ed.)

B. Manisana Shastri : Phajaba

Ch. Manihar Singh : Lai-Haraoba

- (c) Apunba Wareng (Pub) Manipur University, 1986 (ed.)

Ch. Pishak Singh : Samaj Amasung Sanskriti

M.K. Binodini : Thoibidu Warouhouida

Eric Newton : Kalagi Mahousa (translated
by I.R. Babu)

- (d) Manipuri Wareng (Pub) The Cultural Forum Manipur 1999 (ed.)

S. Krishnamohan Singh : Lan

MARATHI

PAPER I

(Answers must be written in Marathi)

Section A

Language and Folk-lore

- (a) Nature and Functions of Language
(with reference to Marathi)

Language as a signifying system : Langue and Parole; Basic functions; Poetic Language; Standard Language and dialect; Language variations according to social parameters.

Linguistic features of Marathi in thirteenth century and seventeenth century.

- (b) Dialects of Marathi

Ahirani; Varhadi; Dangi.

- (c) Marathi Grammar

Parts of Speech; Case-system; Prayog-vichar (Voice).

- (d) Nature and kinds of Folk-lore

(with special reference to Marathi)

Lok-Geet, Lok Katha, Lok Natya.

Section B

(History of Literature and Literary Criticism)

- (a) History of Marathi Literature

1. From beginning to 1818 AD, with special reference to the following : The Mahanubhava writers, the Varkari poets, the Pandit poets, the Shahirs, Bakhar literature.

2. From 1850 to 1990, with special reference to developments in the following major forms : Poetry, Fiction (Novel and Short Story), Drama; and major literary currents and movements, Romantic, Realist, Modernist, Dalit, Gramin, Feminist.

- (b) Literary Criticism

1. Nature and function of Literature;

2. Evaluation of Literature;

3. Nature, Objectives and Methods of Criticism;

4. Literature, Culture and Society.

PAPER II

(Answer must be written in Marathi)

Textual study of prescribed literary works.

The paper will require first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

Section A

(Prose)

- (1) 'Smritisthala'
- (2) Mahatma Jotiba Phule
'Shetkaryacha Asud'
'Sarvajanik Satyadharna'
- (3) S.V. Ketkar
'Brahmankanya'
- (4) P.K. Atre
'Sashtang Namaskar'
- (5) Sharchchandra Muktibodh
'Jana Hey Volatu Jethe'
- (6) Uddhav Shelke
'Shilan'
- (7) Baburao Bagul
'Jevha Mi Jaat Chorli Hoti'
- (8) Gouri Deshpande
'Ekek Paan Galavaya'
- (9) P.I. Sonkamble
'Athavaninche Pakshi'

Section B

(Poetry)

- (1) 'Namadevanchi Abhangawani'
Ed: Inamdar, Relekar, Mirajkar
Modern Book Depot, Pune
- (2) 'Painjan'
Ed : M.N. Adwant
Sahitya Prasar Kendra, Nagpur

- (3) 'Damayanti-Swayamvar'
By Raghunath Pandit
- (4) 'Balakvinchi Kavita'
By Balkavi
- (5) 'Vishakha'
By Kusumagraj
- (6) 'Maridgandh'
By Vinda Karandikar
- (7) 'Jahinama'
By Narayan Surve
- (8) 'Sandhyakalchya Kavita'
By Grace
- (9) 'Ya Sattet Jeev Ramat Nahi'
By Namdev Dhasal

NEPALI**PAPER I**

(Answers must be written in Nepali)

Section A

1. History of the origin and development of Nepali as one of the new Indo Aryan Languages.
2. Fundamentals of Nepali Grammar and phonology :
 - (i) Nominal forms and categories :—
Gender, Number, Case, Adjectives, Pronouns, Avyayas
 - (ii) Verbal forms and categories :—
Tense, Aspects, Voice, Roots and Fixes
 - (iii) Nepali Swara and Vyanjana;
3. Major Dialects of Nepali
4. Standardisation and Modernisation of Nepali with special reference to language movements (viz. Halanta Bahiskar, Jharrovd etc.)
5. Teaching of Nepali language in India—Its history and development with special reference to its socio-cultural aspects.

Section B

1. History of Nepali literature with special reference to its development in India.
2. Fundamental concepts and theories of literature :
Kavya/Sahitya, Kavya Prayojan, Literary genres, Shabda Shakti, Rasa, Alankara, Tragedy, Comedy, Aesthetics, Stylistics.
3. Major literary trends and movements—
Swachchhandatavad, Yatharthavad, Astitwavad, Ayamik Movement Contemporary Nepali writings, Postmodernism.
4. Nepali folklores (the following folk-form only)—
Sawai, Jhyaurey, Selo, Sangini, Lahari.

PAPER II

(Answers must be written in Nepali)

This paper will require first hand reading of the texts prescribed below and questions will be designed to test the candidate's critical acumen.

Section A

1. Santa Jnandil Das — Udaya Lahari
2. Lekhnath Poudyal — Tarun Tapasi
(Vishrams III, V, VI, XII, XV, XVIII only)
3. Agam Sing Giri — Jaleko Pratibimba Royeko
Pratidhwani (The following Poems only-
Prasawako
Chichyahatsanga
Byunjheko Ek Raat,
Chhorolai, Jaleko
Pratibimba : Royeko
Pratidhwani, Hamro
Akashmani Pani Hunchha
Ujyalo, Tihar).
4. Haribhakta Katuwal — Yo Zinadagi Khai Ke
Zindagi : (The following
poems only-Jeevan : Ek
Dristi, Yo Zindagi Khai
Ke Zindagi, Akashka Tara
Ke Tara, Hamilai Nirdho
Nasamjha, Khai Manyata
Yahan Atmahutiko
Balidan Ko).
5. Balkrishna Sama — Prahlad.
6. Manbahadur Mukhia — Andhyaroma
Banchcharu (The
following One-Act only-
Andhyaroma
Banchcharu' 'Suskeru')

Section B

1. Indra Sundas — Sahara.
2. Lilbahadur Chhetri — Brahmaputrako
Chheuchhau
3. Rupnarayan Sinha — Katha Navaratna
(The following
stories only—Biteka
Kura, Jimmewari Kasko,
Dhanamatiko Cinema—
Swapna,
Vidhwasta Jeevan).

4. Indrabahadur Rai — Vipana Katipaya (The following stories only— Raatbhari Huri Chalyo, Jayamaya Aphumatra Lekhapani Aipugi, Bhagi, Ghosh Babu, Chhutuaiyo).
5. Sanu Lama — **Katha Sampaad** (The following stories only— Swasni Manchhey, Khani Tarma Ekdin, Phurbale Gaun Chhadyo, Asinapo Manchhey).
6. Laxmi Prasad Devkota — **Laxmi Nibandha Sangraha** (The following essays only— Sri Ganeshaya Namha, Nepali Sahityako Itihasma Sarvashrestha Purus, Kalpana, Kala Ra Jeevan, Gadha Buddhiman ki Guru?)
7. Ramkrishna Sharma — **Das Gorkha** (The following essays only— Kavi, Samaj Ra Sahitya, Sahityama Sapekshata, Sahityik Ruchiko Praudhata, Nepali Sahityako Pragati).

ORIIYA**PAPER I**

(Answers must be written in Oriya)

Section A**History of Oriya Language**

- (i) Origin and development of Oriya Language— Influence of Austric, Dravidian, Perso— Arabic and English on Oriya Language.
- (ii) Phonetics and Phonemics : Vowels, Consonants Principles of changes in Oriya sounds.
- (iii) Morphology : Morphemes (free, bound compound and complex), derivational and inflectional affixes, case inflection, conjugation of verb.
- (iv) Syntax : Kinds of sentences and their transformation, structure of sentences.
- (v) Semantics—Different types of change in meaning. Euphemism.
- (vi) Common errors in spellings, grammatical uses and construction of sentences.
- (vii) Regional variations in Oriya Language (Western; Southern and Northern Oriya) and Dialects (Bhatri and Desia).

Section B**History of Oriya Literature**

- (i) Historical backgrounds (social, cultural and political) of Oriya Literature of different periods.
- (ii) Ancient epics, ornate kavyas and padavalis.
- (iii) Typical structural forms of Oriya Literature (Koili, Chautisa, Poi, Chaupadi, Champu).
- (iv) Modern trends in poetry, drama short story, novel essay and literary criticism.

PAPER II

(Answers must be written in Oriya)

Critical Study of texts—

The paper will require first hand reading of the text and test the critical ability of the candidate.

Section A**Poetry****(Ancient)**

1. Sāralā Dās—Shanti Parva from Mahābhārata.
2. Jaganāth Dās—Bhāgabata, XI Skadhā—Jadu Avadhuta Sambāda.

(Medieval)

3. Dinakrushna Dās—Raskallola (Chhāndas—16 & 34)
4. Upendra Bhanja—Lāvanyabati (Chhāndas—1 & 2).

(Modern)

5. Rādhānath Rāy—Chandrabhāgā.
6. Māyādhār Mānasinha Jeevan—Chitā.
7. Sāchidananda Routray Kabitā—1962.
8. Ramākānta Ratha—Saptama Ritu.

Section B**Drama :**

9. Manoranjan Dās—Kātha-Ghoda.
10. Bijay Mishra—Tata Niranjanā.

Novel :

11. Fakir Mohan Senāpati Chhamāna Āthaguntha.
12. Gopināth Mohānty—Dānāpani.

Short Story :

13. Surendra Mohānty—Marālara Mrityu.
14. Manoj Dās—Laxmira Abhisāra.

Essay :

15. Chittaranjan Dās—Tranga O Tadit (First Five essays).
16. Chandra Sekhar Rath—Mun Satyadharmā Kahuchhi (First five essays).

PALI**PAPER I**

(Pali Language)

N.B. All answers must be written in Pāli language in Devanāgarī or Roman Script

Section A

1. Origin and Homeland of Pāli and its characteristics.
2. Pāli Grammar—(i) Technical Terms of Pāli Grammar—Akkhara, Sara, Vyanjana, Niggahita, Nāma, Sabbanāma Akhyāta, Upasagga, Nipāta, Abyaya, (ii) Kāraka, (iii) Samāsa, (iv) Sandhi, (v) Taddhita. (Apaccabodhaka—and Adhikārabodhaka- Paccaya); (vi) Etymological derivation of the following words :—

Buddho, Bhikkhu, Sāmanero, Satthā, Dhammo, Latāya, Purisānam, Tumhe, Amhebbhi, Muninā, Rattīsu, Phalāya, Atthisu, Raññam, Sangho.

3. Translation of two Pāli unseen passages into English.

Section B

4. Essay consisting of 300 words on any one of the following:—
(a) Bhagavā Buddho, (b) Tilakkhaṃ, (c) Ariyo atthagiko maggo, (d) Cattāri ariyāsaccāni, (e) Kammavādo (f) Patikkasamuppādo, (g) Nibbānam paramaim sukham, (h) Tipitekam, (i) Dhammapadam, (j) Majjhimā—Patipad.
5. Summary of Pāli passages.
6. Explanation of Pāli verses in Pāli.
7. The meaning of following indeclinables (*Abyaya* and *Nipāta*) and their use in candidates' own Pāli sentences:

(i) Athā, (ii) Antarā, (iii) Addhā, (iv) Kadā, (v) Kittāvatā, (vi) Ahorattam, (vii) Divā, (viii) Yathā, (ix) Ce, (x) Seyyathīdam, (xi) Vinā, (xii) Kudācanam, (xiii) Saddhīm, (xiv) Antarena, (xv) Kho, (xvi) Mā, (xvii) Evaṃ, (xviii) Etha, (xix) Kira, (xx) Pana.

PAPER II

(Pali Literature)

There will be two compulsory questions which must be answered in Pāli Language in Devanagari or Roman Script. The remaining questions must be attempted either in Pāli or in the medium of examination opted by the candidate.

Section A

- (i) Life and teachings of Buddha from the Pāli sources.
- (ii) History of Pāli Literature—Canonical and Non-Canonical with reference to the following books and authors :
Mahāvagga, Cullavagga, Pātimokkha, Dāgha-Nikāya, Dhammapada, Jātaka, Teragāthā, Therāgāthā, Dāpavamsa, Mahāvamsa, Dāthavamsa, Sāsanavamsa, Milindapañha, Pebakopadesa, Nettippakārañña, Buddhādatta, Buddhaghosa and Dhammapāla.

Section B

1. Textual questions, critical comments and annotated translations would be asked from the following prescribed texts :—
(i) Dīgha-Nikāya (Only the Sāmaññaphala-Sutta)
(ii) Sutta-nipāta (Only the Khaggavisāñña-Sutta and Dhaniya-Sutta)
(iii) Dhammapada (Only the first five Vagga-s)
(iv) Milindapañha (Only the Lakkhañña-pañha)
(v) Mahāvamsa (Only the Tatiya-Saṅgīti)
(vi) Abhidhammattha-Saṅgaha (First, Second and Sixth Chapters).
(vii) Pāli Prosody : Vuttodaya-Anutthubha, indavajirā, Upendavajirā, Vasantatilakā, Mālinī, Sikharinī, Upajāti, Totaka, Dodhaka Vamsattha.
(viii) Pāli Rhetoric : Subodhālakāra Yamaka, Anuppāsa, Rupaka, Upama, Atisayutti, Vyatireka, Nidassana, Atthantaranyāsa, Dipaka, Dittthanta.
2. Short Notes on Buddhist concepts dealt with in the prescribed texts.
3. Explanation of Pāli Verses from the prescribed texts.

PERSIAN**PAPER I**

There will be two questions indicated in question paper which must be answered in Persian. The remaining questions must be answered either in Persian or in the medium of examination opted by the candidate.

Section A

1. (a) Description of the origin and development of Persian language (to be answered in Persian).
(b) Applied Grammar, Rhetorics, Prosody, Idioms and Phrases frequently used.
(i) Grammar : Ism and its kinds. Zamir-e-Muttasil and Munfasil, Murakkabi-Tausifi, Murakkab-i-Izafi. Ismi-Ishara, Musharun Elaih, Fel and its kinds, Tenses, Gardan, singular and plural Jumleh and its kinds.
(ii) Rhetorics : Tajnees, Ishteqaq, Luzum-mala-yalzum, Seyaqatul Aaadad, Qalb, Tarsec, Esteaara, Maratun Nazir, Laff-o-Nashr, Iham, Husn-o-Tajahulil Tajahuli Aarefaneh, Talmih, Tansiqus Sifat.
(iii) Prosody : Bahri-Muzara, Ramal, Mutaqarib, Tawil, Hazaj, Kamil.

Section B

1. Short essay in Persian—250 words (to be answered in Persian).
2. History of Persian Literature in Iran and India; Literary Criticism and styles; trends in classical and modern literature; socio-cultural influences, development of modern literary genres including drama, novel, short story.

PAPER II

This paper will require first hand reading of the texts prescribed and will be designed to test the candidate's critical ability. There will be two compulsory questions—one each in textual portions of prose and poetry which are to be answered in Persian. The remaining questions are to be answered either in Persian or in the medium of examination opted by the candidate.

Section A**PROSE**

1. Nizami Aroozī Samarqandī : Chahar Maqala :
 - (i) Dabiri
 - (ii) Shaa'iri
2. Qabus. b. Washmgir : Qabus Nama :
 - (i) Dar Shinakhtan-e-Haqq-e-Pidar-wa-Madar
 - (ii) Dar Bishi Justan Az Sukhandani
 - (iii) Dar Talib Ilmi Wa Faqih Wa Fuqaha
3. Sadi Shirazi : Gulistan :
 - (i) Dar Tasir-e-Suhbat
4. Modh. Awfi : Jawameul Hikayat :
 - (i) First Ten Hikayaat
5. Ziauddin Burney : Tarikh-i-Firozshahi :
 - (i) Wasaya-i-Sultan Balban Be Farzand-e-Buzurg
6. Abul Fazl : Ain-e-Akbari :
 - (i) Ain-Khazina-i-Abadi
 - (ii) Ain-e-Shabistan-e-Iqbal
 - (iii) Ain-e-Manzil Dar Yurishha
 - (iv) Ain-e-Cheragh Afrozi
7. Sadiq-i-Hedayat :
 - (i) Dash Akul
 - (ii) Girdab
8. Mohd. Hijazi :
 - (i) Khudkushi
 - (ii) Pezeshk-e-Chashm.

Section B**POETRY**

1. Firadausi : Shahnama :
 - (i) Rustam-o-Sohrab
2. Khayyam : Rubaaiyat (Radif Alif and Be)
3. Saadi Shirazi : Bustan :
 - 'Dar Adl-u-Tadbir-u-Rai'

4. Amir Khusrau : Majmua-i-Diwan-e-Khusrau.
 - (Radif Dal)
5. Maulana Rum : Mathnawi Maanawi
 - (First Half of Daftar Duwwum)
6. Hafiz : (Radif Alif and Dal)
7. Urfi Shirazi : Qasaaid :
 - (i) Iqbal-e-Karam Migazad Arbabi-Himam Ra.
 - (ii) Har Sukhta Jane Ki Ba Kashmir Dar Ayad.
 - (iii) Sabah-e-Idd Ke Dar Takiyagah-e-Naz-u-Nacem.
8. Ghalib : Ghazaaliyat (Radif Alif)
9. Bahar Mashhadi :
 - (i) Jughd-e-Jung
 - (ii) Sukoot-e-Shab
 - (iii) Damawandiye
 - (iv) Dukhtar-e-Basra
10. Furugh-e-Farrukhzad :
 - (i) Dar Barabar-e-Khuda
 - (ii) Diw-e-Shab
11. Nimayushij :
 - (i) Qu
 - (ii) Khar-Kan

NOTE :-—Textual portions of prose and poetry are to be explained in Persian compulsorily.

PUNJABI**PAPER I**

Answers must be written in Punjabi in Gurumukhi script

Section A

- (a) Origin of Punjabi language; different stages of development and recent development in Punjabi language; characteristics of Punjabi phonology and the study of its tones; classification of vowels and consonants.
- (b) Punjabi morphology; the number-gender system (animate and inanimate), prefixes, affixes and different categories of Post positions; Punjabi word formation; **Tatsam. Tad Bhav.** forms; Sentence structure, the notion of subject and object in Punjabi; Noun and verb phrases.
- (c) Language and dialect : the notions of dialect and idiolect; major dialects of Punjabi : Pothohari, Majhi, Doabi, Malwai, Paudhi; the validity of speech variation on the basis of social stratification, the distinctive features of various dialects with special reference to tones. Language and script; origin and development of Gurumukhi; Suitability of Gurumukhi for Punjabi.

(d) Classical background : Nath Jogi Sahit.

Medieval literature : Gurmat, Suti, Kissa and Var : janamsakhis.

Section B

- (a) Modern trends Mystic, romantic, progressive and neomystic (Vir Singh, Puran Singh, Mohan Singh, Amrita Pritam, Bawa Balwant, Pritam Singh Safeer, J. S. Neki).
Experimentalist (Jasbir Singh Ahluwalia, Ravinder Ravi, Ajaib Kamal).
Aesthetes (Harbhajan Singh, Tara Singh). Neo-progressive (Pash, Jagtar, Patar).
- (b) Folk literature Folk songs, Folk tales, Riddles, Proverbs.
Epic (Vir Singh, Avtar Singh Azad, Mohan Singh).
Lyric (Gurus, Sufis and Modern Lyricists—Mohan Singh, Amrita Pritam, Shiv Kumar, Harbhajan Singh).
- (c) Drama (I.C. Nanda, Harcharan Singh, Balwant Gargi, S.S. Sekhon, Charan Das Sidhu).
Novel (Vir Singh, Nanak Singh, Jaswant Singh Kanwal, K.S. Duggal, Sukhbir, Gurdial Singh, Dalip Kaur Tiwana, Swaran Chandan).
Short Story (Sujan Singh, K. S. Virk, Prem Parkash, Waryam Sandhu).
- (d) Socio-cultural Sanskrit, Persian and Western.
Literary influences;
Essay (Puran Singh, Teja Singh, Gurbaksh Singh).
Literary Criticism (S.S. Sekhon, Attar Singh, Kishan Singh, Harbhajan Singh, Najam Hussain Sayyad).

PAPER II

Answers must be written in Punjabi in Gurumukhi script

This paper will require first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

Section A

- (a) Sheikh Farid The complete Bani as included in the Adi Granth.
(b) Guru Nanak Japu Ji. Baramah. Asa di Var.
(c) Bulleh Shah Kafian
(d) Waris Shah Heer

Section B

- (a) Shah Mohammad Jangnama (Jang Singhan te Firangian)
Dhani Ram Chatrik Chandan Vari
(Poet) Sufi Khana
Nawan Jahan
- (b) Nanak Singh Chitta Lahu
(Novelist) Pavittar Papi
Ek Mian Do Talwaran
- (c) Gurbaksh Singh Zindagi-di-Ras
(Essayist) Nawan Shivala
Merian Abhul Yadaan.
Balraj Sahni Mera Roosi Safarnama
(Travelogue) Mera Pakistani Safarnama
- (d) Balwant Gargi Loha Kutt
(Dramatist) Dhuni-di-Agg
Sultan Razia
Sant Singh Sekhon Sahityarth
(Critic) Parsidh Punjabi Kavi
Punjabi Kav Shiromani.

RUSSIAN

PAPER I

Answers must be written in Russian except in the case of question requiring translation from Russian to English

(Language and Culture)

Section A

- Modern Russian Language :
Phonetics, Morphology, Syntax Lexicology, Lexicography and Semantics, linguistics.
- Translation from Russian into English and vice versa.

Section B

- Social-political and economical development of the Russian Federation : Patriotic war of 1812, October Revolution, Perestroika and Glasnot, disintegration of USSR. Regional & Cultural variations of the Russian Federation.
- Essay on general topics.

PAPER II

Answers must be written in Russian

(Literature)

Section A

Literary History and Literary Criticism.

Literary movements, Sentimentalism, Romanticism, Naturalism, Realism, Critical Realism, Socialism, Acmeism, Symbolism, Futurism; Origin and development of literary genres : Folk literature, Lyrics and poems A.S. Pushkin, M.U. Lermontov, Alexander Blok, Esenin, V. Mayakovky, Anna Akhmatova. Epic—L.N. Tolstoy, M. Sholokhov. Short story.

novelet, novels—Pushkin, Lermontov, N.V. Gogol, S. Skenedin, I. Gorcharov, I. Turgenev, F.M. Dostoevsky, L.N. Tolstoy, A.P. Chekov, M. Gorkay, M. Sholokhov, I. Bunin, E. Zamyatin, Boris Pasternak, A. Solzhenitsyn, M. Bulgakov, Chingiz Aitmatov, V. Rasputin, V. Shukshin, Criticism—Belinsky, Dobrolyubov, Chernyshevsky, Pisarev. Drama—Chekhov, Gogol. Influence of socio-political movements on literature.

Section B

This part will require first hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

- | | |
|----------------------|--|
| 1. A.S. Pushkin | Evgeny Onegin |
| 2. M.U. Lermontov | Hero of our times |
| 3. N.V. Gogol | Revizor |
| 4. I.S. Turgenev | Fathers and Sons |
| 5. F.M. Dostoevsky | Crime and Punishment |
| 6. L.N. Tolstoy | i. War and Peace
ii. Resurrection |
| 7. A.P. Chekhov | i. Toska
ii. Smert Chinovnika
iii. Chameleon |
| 8. A.M. Gorky | Mother |
| 9. A. Blok | The twelve |
| 10. B.B. Mayakovsky | i. Cloud in pants
ii. Good |
| 11. M. Sholokhov | Fate of a man |
| 12. B. Pasternak | Doctor Zhivago |
| 13. Solzhenitsyn | One day in the life of Ivan Danisovich |
| 14. V. Rasputin | Zhivi i Pomni |
| 15. Chingiz Aitmatov | Bely Porokhod |
| 16. V. Shukshin | Chudik |

SANSKRIT

PAPER I

There will be three questions as indicated in the Question Paper which must be answered in Sanskrit. The Remaining questions must be answered either in Sanskrit or in the medium of examination opted by the candidate.

Section A

- Significant features of the grammar, with particular stress on Sanjna, Santhi, Karaka, Samasa, Kartari and Karmani vacyas (voice usages) (to be answered in Sanskrit).
- (a) Main characteristics of Vedic Sanskrit language
(b) Prominent feature of classical Sanskrit language
(c) Contribution of Sanskrit to linguistic studies
- General Knowledge of :—
(a) Literary history of Sanskrit
(b) Principal trends of literary criticism
(c) Ramayana
(d) Mahabharata

- The origin and development of literary genres of Mahakavya
Rupaka (drama)
Katha
Akhyayika
Campu
Khandakavya
Muktaka Kavya.

Section B

- Essential of Indian Culture with stress on
(a) Purusārthas
(b) Samskāras
(c) Varnāśramavyavasthā
(d) Arts and fine arts
(e) Technical Sciences.
- Trends of Indian Philosophy
(a) Mīmāṃsā
(b) Vedānta
(c) Nyaya
(d) Vaiśeṣika
(e) Sāṅkhya
(f) Yoga
(g) Bauddha
(h) Jaina
(i) Carvāka
- Short Essay (in Sanskrit)
- Unseen passage with the questions (to be answered in Sanskrit).

PAPER-II

Question from Group 4 is to be answered in Sanskrit only. Questions from Groups 1, 2 and 3 are to be answered either in Sanskrit or in the medium opted by the candidate.

Section A

General study of the following groups :

- | | |
|----------------|--|
| Group 1 | (a) Raghuvamsam Kalidasa
(b) Kumarasambhavam—Kalidasa
(c) Kiratarjuniyam Bharavi
(d) Sisupalavadham Magha
(e) Naisadhiyacaritam—Sriharsa
(f) Kadambari Banabhatta
(g) Dasakumaracaritam—Dandin
(h) Sivarajyodayam S.B. Varnekar |
| Group 2 | (a) Isāvāsyaopanisad
(b) Bhagavadgītā
(c) Sundarakanda of Valmiki's Ramayana
(d) Arthasastra of Kautilya |
| Group 3 | (a) Svapanavasavadattam—Bhasa
(b) Abhijñanasakuntalam—Kalidasa |

- (c) Mricchakatikam—Sudraka
 (d) Mudraraksasam—Visakhadatta
 (e) Uttararamacaritam—Bhavbhuti
 (f) Ratnavali—Sriharshavardhana
 (g) Venisamharam—Bhattacharaya
- Group 4** Short notes in Sanskrit on the following :—
 (a) Meghadutam—Kalidasa
 (b) Nitisatakam—Bhartrhari
 (c) Pancatantra—
 (d) Rajatarangini—Kalhana
 (e) Harsacaritam—Banabhatta
 (f) Amarukasatakam—Amaruka
 (g) Gitagovindam—Jayadeva.

Section B

This section will require first hand reading of the following selected texts :— (Questions from Groups 1 & 2 are to be answered in Sanskrit only) Questions from Groups 3 and 4 are to be answered either in Sanskrit or in the Medium opted by the candidate.

- Group 1** (a) Raghuvamsam Canto I, Verses 1 to 10
 (b) Kumarasambhavam Canto I, Verses 1 to 10
 (c) Kiratarjuniyae Canto I, Verses 1 to 10
- Group 2** (a) Isavasyopanisad Verses 1, 2, 4, 6, 7, 15 and 18
 (b) Bhagavatgita II Chapter Verses 13 to 25
 (c) Sundarakandam of Valmiki Canto 15, Verses 15 to 30 (Geeta Press Edition)
- Group 3** (a) Meghadutam Verses 1 to 10
 (b) Nitisatakam Verses 1 to 10 (Edited by D.D. Kosambi Bharatiya Vidya Bhavan Publication)
 (c) Kadambari Sukanasopadesa (only)
- Group 4** (a) Svapnavasavadattam Act VI
 (b) Abhijnansakuntalam Act IV Verses 15 to 30 (M.R. Kale Edition)
 (c) Uttararamacaritam Act I Verses 31 to 47 (M.R. Kale Edition).

**SANTALI
PAPER I****(Answers must be written in Santali)****Section A****Part I—History of Santali Language**

1. Main Austric Language family, population and distribution.

2. Grammatical structure of Santali Language.
 3. Important character of Santali Language: Phonology, Morphology, Syntax, Semantics, Translation, Lexicography.
 4. Impact of other languages of Santali.
 5. Standardization of Santali Language.

Part II—History of Santali Literature

1. Literary trend of the following four periods of history of Santali Literature.
 (a) Ancient Literature before 1854.
 (b) Missionary period Literature between 1855 to 1889 AD.
 (c) Medieval period: Literature between 1890 to 1946 AD.
 (d) Modern period: Literature from 1947 AD to till date.
2. Writing tradition in History of Santali literature.

Section-B

Literary forms : Main characteristics, history and development of following literary forms.

Part I

Folk Literature in Santali folk song, folk tale, phrase, idioms puzzles, and Kudum.

Part II

Modern literature in Santali

1. Development of poetry and prominent poets
 2. Development of prose and prominent writers.
 (i) Novels and prominent Novelists.
 (ii) Stories and prominent story writers.
 (iii) Drama and Prominent Dramatist.
 (iv) Criticism and prominent critics.
 (v) Essay, sketches, memoirs, travelogues and prominent writers.

Santali writers

Shyam Sundar Hembram, Pandit Raghunath Murmu, Barha Beshra, Sadhu Ramchand Murmu, Narayan Soren 'Foresutam', Sarda Prasad Kisku, Raghunath Tudu, Kalipada Soren, Sakla Soren, Digamber Hansda, Aditya Mitra 'Santali', Babulal Murmu 'Adivasi', Jadumani Beshra, Arjun Hembram, Krishna Chandra Tudu, Rupchand Hansda, Kalendra Nath Mandi, Mahadev, Hansda, Gour Chandra Murmu, Thakur Prasad Murmu, Hara Prasad Murmu, Uday Nath Majhi, Parimal Hembram, Dharendra Nath Baske, Shyam Charan Hembram, Damayanti Beshra, I.K. Rapaj, Boyha Biswanath Tudu.

Part III

Cultural Heritage of Santali tradition, customs, festival and rituals (birth, marriage and death).

PAPER II

(Answers must be written in Santali)

Section A

This paper will require in-depth reading of the following texts and the questions will be designed to test the candidates' critical ability.

Ancient Literature :**Prose**

- (a) Kherwal Bonso Dhorom Puthi—Majhi Ramdas Tudu "Rasika".
- (b) Mare Hapramko Reyak Katha—L.O. Scrafsrud.
- (c) Jomsim Binti Lita—Mangal Chandra Turkulumang Soren.
- (d) Marang Buru Binti—Kanailal Tudu.

Poetry

- (a) Karam Sereng—Nunku Soren.
- (b) Devi Dasain Sereng—Manindra Hansda.
- (c) Horh Sereng—W.G. Archer.
- (d) Baha Sereng—Balaram Tudu.
- (e) Dong Sereng—Padmashri Bhagwat Murmu 'Thakur'.
- (f) Hor Sereng—Raghunath Murmu.
- (g) Soros Sereng—Babulal Murmu "Adivasi".
- (h) More Sin More Ndia—Rup chand Hansda.
- (i) Judasi Madwa Latar—Tez Narayan Murmu.

Section B**Modern Literature****Part I—Poetry**

- (a) Onorhen Baha Dhalwak—Paul Jujhar Soren.
- (b) Asar Binti—Narayan Soren "Tore Sutam".
- (c) Chand Mala—Gora Chand Tudu.
- (d) Onto Baha Mala—Aditya Mitra "Santali".
- (e) Tiryo Tetang—Hari Har Hansda.
- (f) Sisirjon Rar—Thakur Prasad Murmu.

Part II—Novels

- (a) Harmawak Ato—R. Karstiars (Translator—R.K. Kisku Rapaz).
- (b) Manu Mati—Chandra Mohan Hansda.
- (c) Ato Orak—Doman Hansdak.
- (d) Ojoy Gada Dhiph re—Nathaniel Murmu.

Part III—Stories

- (a) Jiyon Gada—Rup Chand Hansda and Jadumani Beshra.
- (b) Mayajaal—Doman Sahu 'Samir' and Padmashri Bhagwat Murmu 'Thakur'.

Part IV—Drama

- (a) Kherwar Bir—Pandit Raghunath Murmu.
- (b) Juri Khatir—Dr. K.C. Tudu.
- (c) Birsa Bir—Ravi Lal Tudu.

Part V—Biography

Santal Ko Ren Mayam Gohako—Dr. Biswanath Hansda.

SINDHI**PAPER I**

Answers must be written in Sindhi
(Arabic or Devanagari Script)

Section A

1. (a) Origin and evolution of Sindhi language—views of different scholars.
- (b) Significant linguistic features of Sindhi language, including those pertaining to its phonology, morphology and syntax.
- (c) Major dialects of the Sindhi language.
- (d) Sindhi vocabulary—stages of its growth, including those in the pre-partition and post-partition periods.
- (e) Historical study of various Writing Systems (Scripts) of Sindhi.
- (f) Changes in the structure of Sindhi language in India, after partition, due to influence of other languages and social conditions.

Section B

2. Sindhi literature through the ages in context of socio-cultural conditions in the respective periods :
 - (a) Early medieval literature upto 1350 A.D. including folk literature.
 - (b) Late medieval period from 1350 A.D. to 1850 A.D.
 - (a) Renaissance period from 1850 A.D. to 1947 A.D.
 - (d) Modern period from 1947 and onwards.

(Literary genres in Modern Sindhi literature and experiments in poetry, drama, novel, short story, essay, literary criticism, biography, autobiography, memoirs and travelogues.)

PAPER II

Answer must be written in Sindhi
(Arabic or Devanagari script)

This paper will require the first-hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

Section A

References to context and critical appreciation of the texts included in this section.

(1) Poetry

- "Shah Jo Choond Shair" : ed. H.I. Sadarangani, Published by Sahitya Akademi (First 100 pages).
- "Sachal Jo Choond Kalam" : ed. Kalyan B. Advani Published by Sahitya Akademi (Kafis only).
- "Sami-a-ja Choond Sloka" : ed. B.H. Nagrani Published by Sahitya Akademi (First 100 pages).
- "Shair-e-Bewas" : by Kishinchand Bēwas ("Saamooni Sipoon" portion only).
- "Roshan Chhanvro" : Narayan Shyam.
- "Virhange Khapoi je Sindhi Shair jee Choond" : ed. H.I. Sadarangani, published by Sahitya Akademi.

(2) Drama

- "Behtareen Sindhi Natak" (One-act Plays) : Edited by M. Kamal Published by Gujarat Sindhi Academy.
- "Kako Kaloomal" (Full-length Play) : by Madan Jumani.

Section B

References to context and critical appreciation of the texts included in this section.

- 'Pakhecara Valar Khan Vichhrya' (Novel) : by Gobind Malhi.
- 'Sat Deenhan' (Novel) : by Krishin Khatwani.
- 'Choond Sindhi Kahanyoon' (Short Stories) Vol. III. : Edited by Prem Prakash, published by Sahitya Akademi.
- 'Bandhan' (Short Stories) : Sundari Uttamchandani.
- 'Behtareen Sindhi Mazmoon' (Essays) : Edited by Hiro Thakur, published by Gujarat Sindhi Akademi.
- 'Sindhi Tanqeed' (Criticism) : Edited by Harish Vaswani : Published by Sahitya Akademi.
- 'Mumhinjee Hayati-a-ja Sona Ropa varqa' (Autobiography) : by Popati Hiranandani.
- "Dr. Choithram Gidwani" (Biography) : by Vishnu Sharma.

TAMIL**PAPER I**

Answers must be written in Tamil

Section A**Part I: History of Tamil Language**

Major Indian Language Families—The place of Tamil among Indian Languages in general and Dravidian in particular—Enumeration and Distribution of Dravidian languages.

The language of Sangam Literature—The language of medieval Tamil : Pallava Period only—Historical study of Nouns, Verbs, Adjectives, Adverbs—Tense markers and case markers in Tamil.

Borrowing of words from other languages into Tamil—Regional and social dialects—difference between literary and spoken Tamil.

Part 2 : History of Tamil Literature

Tolkappiyam—Sangam Literature—The division of Akam and Puram—The secular characteristics of Sangam Literature—The development of Ethical literature—Silappadikaram and Manimekalai.

Part 3 : Devotional Literature (Alvars and Nayanamars)

The bridal mysticism in Alvar hymns—Minor literary forms (Tutu, Ula, Parani, Kuravanji).

Social factors for the development of Modern Tamil Literature; Novel, Short Story and New Poetry—The impact of various political ideologies on modern writings.

Section B**Part 1 : Recent trends in Tamil Studies**

Approaches to criticism : Social, psychological, historical and moralistic—the use of criticism—the various techniques in literature; Ullurai, Iraicchi, Thonmam (Myth) Otturuvagam (allegory), Angadam (Satire), Meyappadu, Padimam (image), Kuriyedu (Symbol), Irunmai (Ambiguity)—The concept of comparative literature—the principle of comparative literature.

Part 2 : Folk literature in Tamil

Ballads, Songs, proverbs and riddles—Sociological study of Tamil folklore. Uses of translation—Translation of Tamil works into other languages—Development of journalism in Tamil.

Part 3 : Cultural Heritage of the Tamils

Concept of Love and War— Concept of Aram—the ethical codes adopted by the ancient Tamils in their warfare—customs beliefs, rituals, modes of worship in the five Thinais.

The Cultural changes as revealed in post sangam literature— cultural fusion in the medieval period (Janism and Buddhism). The development of arts and architecture through the ages (Pallavas, later Cholas, and Nayaks). The impact of various political, social, religious and cultural movements on Tamil Society. The role of mass media in the cultural change of contemporary Tamil society.

PAPER II

Answers must be written in Tamil

The paper will require first-hand reading of the text prescribed and will be designed to test the critical ability of the candidate.

Section A**Part 1 : Ancient Literature**

- (1) Kuruntokai (1—25 poems)
- (2) Purananuru (182—200 poems)
- (3) Tirukkural Porupal: Arasiyalum Amaichiyalum (from Iramatchi to Avaianjamai).

Part 2 : Epic Literature

- (1) Silappadikaram : Madhurai Kadam only.
- (2) Kambaramayanam : Kumbakarunan Vadhai Padalam.

Part 3 : Devotional Literature

- (1) Tiruvagam : Neethal Vinnappam
- (2) Tiruppavai : (Full Text).

Section B**Modern Literature****Part 1 : Poetry**

- (1) Bharathiar : Kannan Pattu
- (2) Bharathidasan : Kudumba Vilakku
- (3) Naa. Kamarasan : Karappu Malarkal

Prose

- (1) Mu. Varadharajanar : Aramum Arasiyalum
- (2) C. N. Annadurai : Ye! Thazhnta Tamilagame.

Part 2 : Novel, Short Story and Drama

- (1) Akilon ; Chittairappavai
- (2) Jayakanthan : Gurupeedam
- (3) Cho : Yaurkkum Vetkamillai

Part 3 : Folk Literature

- (1) Muthuppattan kathai Edited by Na. Vanamamalai, (Publication : Madurai Kamaraj University).
- (2) Malaiyaruvi, Edited by Ki. Va Jagannathan (Publication : Saraswathi Mahal, Thanjavur).

TELUGU**PAPER I****Answer must be written in Telugu****Section A : Language**

1. Place of Telugu among Dravidian languages and its antiquity—Etymological History of Telugu, Tenugu and Andhra.
2. Major linguistic changes in phonological, morphological, grammatical and syntactical levels, from Proto-Dravidian to old Telugu and from old Telugu to Modern Telugu.
3. Evolution of spoken Telugu when compared to classical Telugu—Formal and functional view of Telugu language.

4. Influence of other languages and its impact on Telugu.
5. Modernization of Telugu language :
 - (a) Linguistic and literary movements and their role in modernization of Telugu.
 - (b) Role of media in modernization of Telugu (Newspapers, Radio, TV etc.)
 - (c) Problems of terminology and mechanisms in coining new terms in Telugu in various discourses including scientific and technical.
6. Dialects of Telugu—Regional and social variations and problems of Standardization.
7. Syntax—Major divisions of Telugu sentences—simple, complex and compound sentences—Noun and verb predications—Processes of nominalization and relativization—Direct and indirect reporting—conversion processes.
8. Translation—Problems of translation, cultural, social and idiomatic—Methods of translation—Approaches to translation—Literary and other kinds of translation—Various uses of translation.

Section B : Literature

1. Literature in Pre-Nannaya Period Marga and Desi poetry.
2. Nannaya Period—Historical and literary background of Andhra Mahabharata.
3. Saiva poets and their contribution Dvipada, Sataka, Ragada, Udaharana.
4. Tikkana and his place in Telugu literature.
5. Errana and his literary works Nachana Somana and his new approach to poetry.
6. Srinatha and Potana—Their works and contribution.
7. Bhakti poets in Telugu literature Tallapaka Annamayya, ramadasu, tyagayya.
8. Evolution of prabandhas—Kavya and prabandha.
9. Southern school of Telugu literature—raghunatha Nayaka, chemakura vankatakavi and women poets—Literary forms like yakshagana, prose and padakavita.
10. Modern Telugu Literature and literary forms—Novel, Short Story, Drama, Playlet and poetic forms.
11. Literary Movements : Reformation, Nationalism, Neo-classicism, Romanticism and Progressive, Revolutionary movements.
12. Digambarakavulu, feminist and dalit Literature.
13. Main divisions of folk literature—Performing folk arts.

PAPER II**Answer must be written in Telugu**

This paper will require first hand reading of the prescribed texts and will be designed to test the candidate's

critical ability, which will be in relation to the following approaches :—

- (i) Aesthetic approach—Rassa, Dhawani, Vakroti and Auchitya—Formal and Structural-Imagery and Symbolism.
- (ii) Sociological, Historical, Ideological, Psychological approaches.

Section A

1. Nannaya-Dushyanta Chritra (Adiparva 4th Canto verses 5—109).
2. Tikkana-Sri Krishna Rayabaramu (Udyoga parva-3rd Canto verses 1—144).
3. Srinath-Guna Nidhi Katha (Kasikhandam, 4th Canto, verses 76—133).
4. Pingali Surana-sugatri Salinulakatha (Kalapurnodayamu 4 Canto verses, 60—142).
5. Molla-Ramayanamu (Balakanda including avatarika).
6. Kasula Purushothama Kavi—Andhra Nayaka Satakamu.

Section B

7. Gurajada Appa Rao—Animutyalu (Short stories).
8. Viswanatha Satyanarayana—Andhra prasasti.
9. Devulapalli Krishna Sastry—Krishnapaksham (excluding Uravsi and Pravasam).
10. Sri Sri-Maha prastanam.
11. Jashuva-Gabbilam (Part I).
12. C. Narayana Reddy—Karpuravasanta rayalu.
13. Kanuparti Varalakshamma—Sarada lekhalu (Part I).
14. Atreya—N.G.O.
15. Racha Konda Viswanatha Sastry—Alpajaevi.

URDU

PAPER I

Answer must be written in Urdu

Section A

Development of Urdu Language

- (a) Development of Indo-Aryan
 - (i) Old Indo-Aryan
 - (ii) Middle Indo-Aryan
 - (iii) New Indo-Aryan.
- (b) Western Hindi and its dialects Brij Bhasha Khadi Boli, Haryanavi, Kannauji, Bundeli—
Theories about the origin of Urdu language.
- (c) Dakhani Urdu—origin and development, its significant linguistic features.
- (d) Social and Cultural roots of Urdu language— and its distinctive features.

Script, Phonology, Morphology, Vocabulary.

Section B

- (a) Genres and their development :
 - (i) Poetry: Ghazal, Masnavi, Qasida, Marsia, Rubai Jadid Nazm.
 - (ii) Prose : Novel, Short Story, Dastan, Drama, Inshaiya, Khutoot, Biography.
- (b) Significant features of: (i) Deccani, Delhi and Lucknow schools, (ii) Sir Syed movement, Romantic movement, Progressive movement, Modernism.
- (c) Literary Criticism and its development with reference to Hali, Shibli, Kaleemuddin Ahmad, Ehtisham Hussain, Ale-Ahmad Suroor.
- (d) Essay writing (covering literary and imaginative topics).

PAPER II

Answer must be written in Urdu

This paper will require first hand reading of the texts prescribed and will be designed to test the candidate's critical ability.

Section A

- | | |
|------------------------|-----------------------------|
| 1. Mir Amman | Bagho-Babar |
| 2. Ghalib | Intikhab-e-Khutoot-e Ghalib |
| 3. Mohd. Husain Azad | Nairang-e-Khayal |
| 4. Prem Chand | Godan |
| 5. Rajendra Singh Bedi | Apne Dukh Mujhe Dedo |
| 6. Abul Kalam Azad | Ghubar-e-Khatir |

Section B

- | | |
|----------------|---|
| 1. Mir | Intikhab-e-Kalam-e-Mir (Ed. Abdul Haq.) |
| 2. Mir Hasan | Sahrul Bayan |
| 3. Ghalib | Diwan-e-Ghalib |
| 4. Iqbal | Bal-e-Jibrail |
| 5. Firaq | Gul-e-Naghma |
| 6. Faiz | Dast-e-Saba |
| 7. Akhtruliman | Bint-e-Lamhat |

MANAGEMENT

The candidate should make a study of the concept of development of Management as science and art drawing upon the contributions of leading thinkers of management and apply the concepts to the real life of government and business decision-making keeping in view the changes in the strategic and operative environment.

PAPER I**1. Managerial Function and Process :**

Concept and foundations of management, Evolution of Management Thoughts; Managerial Functions—Planning, Organizing, Controlling; Decision-making; Role of Manager, Managerial skills; Entrepreneurship; Management of innovation; Managing in a global environment, Flexible Systems Management; Social responsibility and managerial ethics; Process and customer orientation; Managerial processes on direct and indirect value chain.

2. Organisational Behaviour and Design :

Conceptual model of organization behaviour; The individual processes—personality, values and attitude, perception, motivation, learning and reinforcement, work stress and stress management; The dynamics of organization behaviour—power and politics, conflict and negotiation, leadership process and styles, communication; The Organizational Processes—decision-making, job design; Classical, Neoclassical and Contingency approaches to organizational design; Organizational theory and design—organizational culture, managing cultural diversity, learning organization; Organizational change and development; Knowledge Based Enterprise—systems and processes; Networked and virtual organizations.

3. Human Resource Management :

HR challenges; HRM functions; The future challenges of HRM; Strategic Management of human resources; Human resource planning; Job analysis; Job evaluation, Recruitment and selection; Training and development; Promotion and transfer; Performance management; Compensation management and benefits; Employee morale and productivity; Management of organizational climate and Industrial relations; Human resources accounting and audit; Human resource information system; International human resource management.

4. Accounting for Managers :

Financial accounting—concept, importance and scope, generally accepted accounting principles, preparation of financial statements with special reference to analysis of a balance sheet and measurement of business income, inventory valuation and depreciation, financial statement analysis, fund flow analysis, the statement of cash flows; Management accounting concept, need, importance and scope; Cost accounting—records and processes, cost ledger and control accounts, reconciliation and integration between financial and cost accounts; Overhead cost and control, Job and process costing, Budget and budgetary control, Performance budgeting, Zero-base budgeting, relevant costing and costing for decision-making, standard costing and variance analysis, marginal costing and absorption costing.

5. Financial Management :

Goal of Finance Function. Concepts of value and return. Valuation of bonds and Shares; Management of working capital : Estimation and Financing; Management of cash, receivables, inventory and current liabilities; Cost of capital ; Capital budgeting; Financial and operating leverage; Design of capital structure: theories and practices; Shareholder value creation: dividend policy, corporate financial policy and strategy, management of corporate distress and restructuring strategy; Capital and money markets: institutions and instruments; Leasing hire purchase and venture capital; Regulation of capital market; Risk and return: portfolio theory; CAPM; APT; Financial derivatives: option, futures, swap; Recent reforms in financial sector.

6. Marketing Management :

Concept, evolution and scope; Marketing strategy formulation and components of marketing plan; Segmenting and targeting the market; Positioning and differentiating the market offering; Analyzing competition; Analyzing consumer markets; Industrial buyer behaviour; Market research; Product strategy; Pricing strategies; Designing and managing Marketing channels; Integrated marketing communications; Building customer satisfaction, Value and retention; Services and non-profit marketing; Ethics in marketing; Consumer protection; Internet marketing; Retail management; Customer relationship management; Concept of holistic marketing.

PAPER-II**1. Quantitative Techniques in Decision-making :**

Descriptive statistics—tabular, graphical and numerical methods, introduction to probability, discrete and continuous probability distributions, inferential statistics—sampling distributions, central limit theorem, hypothesis testing for differences between means and proportions, inference about population variances, Chi-square and ANOVA, simple correlation and regression, time series and forecasting, decision theory, index numbers; Linear programming—problem formulation, simplex method and graphical solution, sensitivity analysis.

2. Production and Operations Management :

Fundamentals of operations management; Organizing for production; Aggregate production planning, capacity planning, plant design: process planning, plant size and scale of operations, Management of facilities; Line balancing; Equipment replacement and maintenance; Production control; Supply chain management—vendor evaluation and audit; Quality management; Statistical process control, Six Sigma; Flexibility and agility in manufacturing systems; World class manufacturing; Project management concepts, R&D management, Management of service operations; Role and importance of materials management, value analysis, make or buy decision; Inventory control, MRP; Waste management.

3. Management Information System :

Conceptual foundations of information systems; Information theory; Information resource management; Types of information Systems; Systems Development—Overview of Systems and Design; System Development management life-cycle; Designing online and distributed environments; Implementation and control of project; Trends in information technology; Managing data resources—Organising data. DSS and RDBMS; Enterprise Resource Planning (ERP), Expert systems, e-Business architecture, e-Governance; Information systems planning, Flexibility in information systems; User involvement; Evaluation of information systems.

4. Government Business Interface :

State participation in business, Interaction between Government, Business and different Chambers of Commerce and Industry in India; Government's policy with regard to Small Scale Industries; Government clearances for establishing a new enterprise; Public Distribution System; Government control over price and distribution; Consumer Protection Act (CPA) and The Role of Voluntary organizations in protecting consumers' rights; New Industrial Policy of the Government : liberalization, deregulation and privatisation; Indian planning system; Government policy concerning development of Backward areas/regions; The Responsibilities of the business as well as the Government to protect the environment; Corporate Governance; Cyber Laws.

5. Strategic Cost Management :

Business policy as a field of study; Nature and scope of strategic management, Strategic intent, vision, objectives and policies; Process of strategic planning and implementation; Environmental analysis and internal analysis; SWOT analysis; Tools and techniques for strategic analysis—Impact matrix; The experience curve, BCG matrix, GEC mode, Industry analysis, Concept of value chain; Strategic profile of a firm; Framework for analysing competition; Competitive advantage of a firm; Generic competitive strategies; Growth strategies—expansion, integration and diversification; Concept of core competence, Strategic flexibility; Reinventing strategy; Strategy and structure; chief Executive and Board; turnaround management; Management of strategic change; Strategic alliances, Mergers and Acquisitions; Strategy and corporate evolution in the Indian context.

6. International Business :

International Business Environment : Changing composition of trade in goods and services; India's Foreign Trade: Policy and trends; Financing of International trade; Regional Economic Cooperation; FTAs; Internationalisation of service firms; International production; Operation Management in International companies; International Taxation; Global competitiveness and technological developments; Global E-Business; Designing global organisational structure and control; Multicultural

management; Global business strategy; Global marketing strategies; Export Management; Export-Import procedures; Joint Ventures; Foreign Investment: Foreign direct investment and foreign portfolio investment; Cross-border Mergers and Acquisitions; Foreign Exchange Risk Exposure Management; World Financial Markets and International Banking; External Debt Management; Country Risk Analysis.

MATHEMATICS**PAPER I****(1) Linear Algebra :**

Vector spaces over R and C , linear dependence and independence, subspaces, bases, dimensions, Linear transformations, rank and nullity, matrix of a linear transformation.

Algebra of Matrices; Row and column reduction, Echelon form, congruence's and similarity; Rank of a matrix; Inverse of a matrix; Solution of system of linear equations; Eigenvalues and eigenvectors, characteristic polynomial, Cayley-Hamilton theorem, Symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal and unitary matrices and their eigenvalues.

(2) Calculus :

Real numbers, functions of a real variable, limits, continuity, differentiability, mean-value theorem, Taylor's theorem with remainders, indeterminate forms, maxima and minima, asymptotes; Curve tracing; Functions of two or three variables; Limits, continuity, partial derivatives, maxima and minima, Lagrange's method of multipliers, Jacobian.

Riemann's definition of definite integrals; Indefinite integrals; Infinite and improper integral; Double and triple integrals (evaluation techniques only); Areas, surface and volumes.

(3) Analytic Geometry :

Cartesian and polar coordinates in three dimensions, second degree equations in three variables, reduction to Canonical forms; straight lines, shortest distance between two skew lines, Plane, sphere, cone, cylinder, paraboloid, ellipsoid, hyperboloid of one and two sheets and their properties.

(4) Ordinary Differential Equations :

Formulation of differential equations; Equations of first order and first degree, integrating factor; Orthogonal trajectory; Equations of first order but not of first degree, Clairaut's equation, singular solution.

Second and higher order linear equations with constant coefficients, complementary function, particular integral and general solution.

Second order linear equations with variable coefficients, Euler-Cauchy equation; Determination of complete solution

when one solution is known using method of variation of parameters.

Laplace and Inverse Laplace transforms and their properties, Laplace transforms of elementary functions. Application to initial value problems for 2nd order linear equations with constant coefficients.

(5) Dynamics and Statics :

Rectilinear motion, simple harmonic motion, motion in a plane, projectiles; Constrained motion; Work and energy, conservation of energy; Kepler's laws, orbits under central forces.

Equilibrium of a system of particles; Work and potential energy, friction, Common catenary; Principle of virtual work; Stability of equilibrium, equilibrium of forces in three dimensions.

(6) Vector Analysis :

Scalar and vector fields, differentiation of vector field of a scalar variable; Gradient, divergence and curl in cartesian and cylindrical coordinates; Higher order derivatives; Vector identities and vector equation.

Application to geometry : Curves in space, curvature and torsion; Serret-Frenet's formulae.

Gauss and Stokes' theorems, Green's identities.

PAPER II

(1) Algebra :

Groups, subgroups, cyclic groups, cosets, Lagrange's Theorem, normal subgroups, quotient groups, homomorphism of groups, basic isomorphism theorems, permutation groups, Cayley's theorem.

Rings, subrings and ideals, homomorphisms of rings; Integral domains, principal ideal domains, Euclidean domains and unique factorization domains; Fields, quotient fields.

(2) Real Analysis :

Real number system as an ordered field with least upper bound property; Sequences, limit of a sequence, Cauchy sequence, completeness of real line; Series and its convergence, absolute and conditional convergence of series of real and complex terms, rearrangement of series. Continuity and uniform continuity of functions, properties of continuous functions on compact sets.

Riemann integral, improper integrals; Fundamental theorems of integral calculus.

Uniform convergence, continuity, differentiability and integrability for sequences and series of functions; Partial derivatives of functions of several (two or three) variables, maxima and minima.

(3) Complex Analysis :

Analytic function, Cauchy-Riemann equations, Cauchy's theorem, Cauchy's integral formula, power series, representation of an analytic function, Taylor's series; Singularities; Laurent's series; Cauchy's residue theorem; Contour integration.

(4) Linear Programming :

Linear programming problems, basic solution, basic feasible solution and optimal solution; Graphical method and simplex method of solutions; Duality.

Transportation and assignment problems.

(5) Partial differential Equations :

Family of surfaces in three dimensions and formulation of partial differential equations; Solution of quasilinear partial differential equations of the first order, Cauchy's method of characteristics; Linear partial differential equations of the second order with constant coefficients, canonical form; Equation of a vibrating string, heat equation, Laplace equation and their solutions.

(6) Numerical Analysis and Computer Programming :

Numerical methods: Solution of algebraic and transcendental equations of one variable by bisection, Regula-Falsi and Newton-Raphson methods, solution of system of linear equations by Gaussian Elimination and Gauss-Jordan (direct), Gauss-Seidel (iterative) methods. Newton's (forward and backward) and interpolation, Lagrange's interpolation.

Numerical integration: Trapezoidal rule, Simpson's rule, Gaussian quadrature formula.

Numerical solution of ordinary differential equations : Euler and Runge Kutta methods.

Computer Programming : Binary system; Arithmetic and logical operations on numbers; Octal and Hexadecimal Systems; Conversion to and from decimal Systems; Algebra of binary numbers.

Elements of computer systems and concept of memory; Basic logic gates and truth tables, Boolean algebra, normal forms.

Representation of unsigned integers, signed integers and reals, double precision reals and long integers.

Algorithms and flow charts for solving numerical analysis problems.

(7) Mechanics and Fluid Dynamics :

Generalised coordinates; D'Alembert's principle and Lagrange's equations; Hamilton equations; Moment of inertia; Motion of rigid bodies in two dimensions.

Equation of continuity; Euler's equation of motion for inviscid flow; Stream-lines, path of a particle; Potential flow; Two-dimensional and axisymmetric motion; Sources and sinks, vortex motion; Navier-Stokes equation for a viscous fluid.

MECHANICAL ENGINEERING

PAPER I

1. Mechanics :

1.1 Mechanics of Rigid Bodies :

Equations of equilibrium in space and its application; first and second moments of area; simple problems on friction; kinematics of particles for plane motion; elementary particle dynamics.

1.2 Mechanics of Deformable Bodies :

Generalized Hooke's law and its application; design problems on axial stress, shear stress and bearing stress; material properties for dynamic loading; bending shear and stresses in beams; determination of principle stresses and strains-analytical and graphical; compound and combined stresses; bi-axial stresses-thin walled pressure vessel; material behaviour and design factors for dynamic load; design of circular shafts for bending and torsional load only; deflection of beam for statically determinate problems; theories of failure.

2. Engineering Materials :

Basic concepts on structure of solids, common ferrous and non-ferrous materials and their applications; heat-treatment of steels; non-metals-plastics, ceramics, composite materials and nano-materials.

3. Theory of Machines :

Kinematic and dynamic analysis of plane mechanisms. Cams, Gears and epicyclic gear trains, flywheels, governors, balancing of rigid rotors, balancing of single and multi-cylinder engines, linear vibration analysis of mechanical systems (single degree of freedom), Critical speeds and whirling of shafts.

4. Manufacturing Science :**4.1 Manufacturing Process:**

Machine tool engineering - Merchant's force analysis; Taylor's tool life equation; conventional machining; NC and CNC machining process; jigs and fixtures.

Non-conventional machining-EDM, ECM, ultrasonic, water jet machining etc.; application of lasers and plasmas; energy rate calculations.

Forming and welding processes-standard processes.

Metrology-concept of fits and tolerances; tools and gauges; comparators; inspection of length; position; profile and surface finish.

4.2 Manufacturing Management :

System design: factory location—simple OR models; plant layout-methods based; applications of engineering economic analysis and break-even analysis for product selection, process selection and capacity planning; predetermined time standards.

System planning; forecasting methods based on regression and decomposition, design and balancing of multi model and stochastic assembly lines; inventory management-probabilistic inventory models for order time and order quantity determination; JIT systems; strategic sourcing; managing inter plant logistics.

System operations and control: Scheduling algorithms for job shops; applications of statistical methods for product and process quality control applications of control charts for mean, range, percent defective, number of defectives and

defects per unit; quality cost systems; management of resources, organizations and risks in projects.

System improvement: Implementation of systems, such as total quality management, developing and managing flexible, lean and agile organizations.

PAPER II**1. Thermodynamics, Gas Dynamics Turbine :**

1.1 Basic concept of First-law and Second law of Thermodynamics; concept of entropy and reversibility; availability and unavailability and irreversibility.

1.2 Classification and properties of fluids; incompressible and compressible fluids flows; effect of Mach number and compressibility; continuity momentum and energy equations; normal and oblique shocks; one dimensional isentropic flow; flow of fluids in duct with frictions that transfer.

1.3 Flow through fans, blowers and compressors: axial and centrifugal flow configuration; design of fans and compressors; single problems compresses and turbine cascade: open and closed cycle gas turbines: work done in the gas turbine; reheat and regenerators.

2. Heat Transfer :

2.1 Conduction heat transfer general conduction equation-Laplace, Poisson and Fourier equations; Fourier law of conduction; one dimensional steady state heat conduction applied to simple wall, solid and hollow cylinder and spheres.

2.2 Convection heat transfer Newton's law of convection; free and forced convection; heat transfer during laminar and turbulent flow of an incompressible fluid over a flat plate; concepts of Nusselt number, hydrodynamic and thermal boundary layer their thickness; Prandtl number; analogy between heat and momentum transfer—Reynolds, Colburn, Prandtl analogies; heat transfer during laminar and turbulent flow through horizontal tubes; free convection from horizontal and vertical plates.

2.3 Black body radiation— basic radiation laws such as Stefan-boltzman, Planck distribution, Wein's displacement etc.

2.4 Basic heat exchanger analysis; classification of heat exchangers.

3. Engines :

3.1 Classification, thermodynamic cycles of operation; determination of break power, indicated power, mechanical efficiency, heat balance sheet, interpretation of performance characteristics, petrol, gas and diesel engines.

3.2 Combustion in SI and CI engines, normal and abnormal combustion; effect of working parameters on knocking, reduction of knocking; Forms of combustion chamber for SI and CI engines; rating of fuels; additives; emission.

3.3 Different systems of IC engines-fuels; lubricating; cooling and transmission systems. Alternate fuels in IC engines.

4. Steam Engineering :

4.1 Steam generation—modified Rankine cycle analysis; Modern steam boilers; steam at critical and supercritical pressures; draught equipment; natural and artificial draught; boiler fuels solid, liquid and gaseous fuels. Steam turbines—Principle; types; compounding; impulse and reaction turbines; axial thrust.

4.2 Steam nozzles—flow of steam in convergent and divergent nozzle pressure at throat for maximum discharge with different initial steam conditions such as wet, saturated and superheated, effect of variation of back pressure; supersaturated flow of steam in nozzles, Wilson line.

4.3 Rankine cycle with internal and external irreversibility; reheat factor; reheating and regeneration, methods of governing; back pressure and pass out turbines.

4.4 Steam power plants—combined cycle power generation; heat recovery steam generators (HRSG) fired and unfired, co-generation plants.

5. Refrigeration and Air-conditioning :

5.1 Vapour compression refrigeration cycle—cycle on p-H & T-s diagrams; ecofriendly refrigerants—R 134a, 123; Systems like evaporators, condensers, compressor, expansion devices. Simple vapour absorption systems.

5.2 Psychrometry—properties; processes; charts; sensible heating and cooling; humidification and dehumidification effective temperature; air-conditioning load calculation; simple duct design.

MEDICAL SCIENCE

PAPER I

1. Human Anatomy :

Applied anatomy including blood and nerve supply of upper and lower limbs and joints of shoulder, hip and knee.

Gross anatomy, blood supply and lymphatic drainage of tongue, thyroid, mammary gland, stomach, liver, prostate, gonads and uterus.

Applied anatomy of diaphragm, perineum and inguinal region.

Clinical anatomy of kidney, urinary bladder, uterine tubes, vas deferens.

Embryology : Placenta and placental barrier. Development of heart, gut, kidney, uterus, ovary, testis and their common congenital abnormalities.

Central and Peripheral Autonomic Nervous System : Gross and clinical anatomy of ventricles of brain, circulation of cerebrospinal fluid; Neural pathways and lesions of cutaneous sensations, hearing and vision; Cranial nerves

distribution and clinical significance; Components of autonomic nervous system.

2. Human Physiology :

Conduction and transmission of impulse, mechanism of contraction, neuromuscular transmission, reflexes, control of equilibrium, posture and muscle tone, descending pathways, functions of cerebellum, basal ganglia, Physiology of sleep and consciousness.

Endocrine System : Mechanism of action of hormones; formation, secretion, transport, metabolism, function and regulation of secretion of pancreas and pituitary gland.

Physiology of Reproductive System : Pregnancy menstrual cycle, lactation, pregnancy.

Blood : Development, regulation and fate of blood cells.

Cardio-vascular, cardiac output, blood pressure, regulation of cardiovascular functions.

3. Biochemistry :

Organ function tests—liver, kidney, thyroid Protein synthesis.

Vitamins and minerals.

Restriction fragment length

polymorphism (RFLP).

Polymerase chain reaction (PCR).

Radio-immunoassays (RIA)

4. Pathology :

Inflammation and repair, disturbances of growth and cancer, Pathogenesis and histopathology of rheumatic and ischaemic heart disease and diabetes mellitus. Differentiation between benign, malignant, primary and metastatic malignancies, Pathogenesis and histopathology of bronchogenic carcinoma, carcinoma breast, oral cancer, cancer cervix, leukemia, Etiology, pathogenesis and histopathology of—cirrhosis liver, glomerulonephritis, tuberculosis, acute osteomyelitis.

5. Microbiology :

Humoral and cell mediated immunity.

Diseases caused by and laboratory diagnosis of —

- * Meningococcus, Saimonella
- * Shigella, Herpes, Dengue, Polio
- * HIV/AIDS, Malaria, E. Histolytica, Giardia
- * Candida, Cryptococcus, Aspergillus.

6. Pharmacology :

Mechanism of action and side effects of the following drugs :

- * Antipyretics and analgesics, Antibiotics,
- * Antimalaria, Antikala-azar, Antidiabetics,
- * Antihypertensive, Antidiuretics, General and cardiac vasodilators, Antiviral, Antiparasitic, Antigungal, Immunosuppressants,
- * Anticancer.

7. Forensic Medicine and Toxicology

Forensic examination of injuries and wounds; Examination of blood and seminal stains; Poisoning, sedative overdose, hanging, drowning, burns, DNA and finger print study.

PAPER-II

1. General Medicine

Etiology, clinical features, diagnosis and principles of management (including prevention) of—Typhoid, Rabies, AIDS, Dengue, Kala-azar, Japanese Encephalitis.

Etiology, clinical features, diagnosis and principles of management of:

Ischaemic heart disease, pulmonary embolism.

Bronchial asthma.

Pleural effusion, tuberculosis, Malabsorption syndromes; acid peptic diseases, Viral hepatitis and cirrhosis of liver.

Glomerulonephritis and pyelonephritis, renal failure, nephrotic syndrome, renovascular hypertension, complications of diabetes mellitus, coagulation disorders, leukaemia, Hypo and hyper thyroidism, meningitis and encephalitis.

Imaging in medical problems, ultrasound, echocardiogram, CT scan, MRI.

Anxiety and Depressive Psychosis and schizophrenia and ECT.

2. Paediatrics

Immunization, Baby friendly hospital, congenital cyanotic heart disease, respiratory distress syndrome, broncho—pneumonias, kernicterus. IMNCI classification and management, PEM grading and management. ARI and Diarrhea of under five and their management.

3. Dermatology

Psoriasis, Allergic dermatitis, scabies, eczema, vitiligo, Stevan Johnson's syndrome, Lichen Planus.

4. General Surgery

Clinical features, causes, diagnosis and principles of management of cleft palate, harelip.

Laryngeal tumour, oral and esophageal tumours.

Peripheral arterial diseases, varicose veins, coarctation of aorta.

Tumours of Thyroid, Adrenal, Glands.

Abscess cancer, fibroadenoma and adenosis of breast.

Bleeding peptic ulcer, tuberculosis of bowel, ulcerative colitis, cancer stomach.

Renal mass, cancer prostatic.

Haemothorax, stones of Gall bladder, Kidney, Ureter and Urinary Bladder.

Management of surgical conditions of Rectum, Anus and Anal canal, Gall bladder and Bile ducts.

Splenomegaly, cholecystitis, portal hypertension, liver abscess, peritonitis, carcinoma head of pancreas.

Fractures of spine, Colles' fracture and bone tumors.

Endoscopy.

Laprascopic Surgery.

5. Obstetrics and Gynaecology including Family Planning

Diagnosis of pregnancy.

Labour management, complications of 3rd stage, Antepartum and postpartum hemorrhage, resuscitation of the newborn, Management of abnormal life and difficult labour. Management of small for date or premature newborn.

Diagnosis and management of anemia. Preeclampsia and Toxaemias of pregnancy, Management of Post-menopausal Syndrome.

Intra-uterine devices, pills, tubectomy and vasectomy. Medical termination of pregnancy including legal aspects.

Cancer cervix.

Leucorrhoea, pelvic pain; infertility, dysfunctional uterine bleeding (DUB), amenorrhoea. Fibroid and prolapse of uterus.

6. Community Medicine (Preventive and Social Medicine)

Principles, methods approach and measurements of Epidemiology.

Nutrition, nutritional diseases/diorders and Nutrition Programmes.

Health information Collection, Analysis and Presentation.

Objectives, components and critical analysis of National programmes for control/eradication of:

Malaria, Kala-azar, Filaria and Tuberculosis,

HIV/AIDS, STDs and Dengue.

Critical appraisal of Health care delivery system.

Health management and administration; Techniques, Tools, Programme Implementation and Evaluation.

Objectives, Components, Goals and Status of Reproductive and Child Health, National Rural Health Mission and Millennium Development Goals.

Management of hospital and industrial waste.

PHILOSOPHY

PAPER-I

History and Problems of Philosophy

1. Plato and Aristotle : Ideas; Substance; Form and Matter; Causation; Actuality and Potentiality.
2. Rationalism (Descartes, Spinoza, Leibniz); Cartesian Method and Certain Knowledge; Substance; God; Mind-Body Dualism; Determinism and Freedom.
3. Empiricism (Locke, Berkeley, Hume) : Theory of Knowledge; Substance and Qualities; Self and God; Scepticism.
4. Kant: Possibility of Synthetic a priori Judgments; Space and Time; Categories; Ideas of Reason; Antinomies; Critique of Proofs for the Existence of God.
5. Hegel : Dialectical Method; Absolute Idealism.
6. Moore, Russell and Early Wittgenstein : Defence of Commonsense; Refutation of Idealism; Logical Atomism; Logical Constructions; Incomplete Symbols; Picture Theory of Meaning; Saying and Showing.
7. Logical Positivism : Verification Theory of Meaning; Rejection of Metaphysics; Linguistic Theory of Necessary Propositions.
8. Later Wittgenstein : Meaning and Use; Language-games; Critique of Private Language.
9. Phenomenology (Husserl): Method; Theory of Essences; Avoidance of Psychologism.
10. Existentialism (Kierkegaard, Sartre, Heidegger): Existence and Essence; Choice, Responsibility and Authentic Existence; Being-in-the-world and Temporality.
11. Quine and Strawson : Critique of Empiricism; Theory of Basic Particulars and Persons.
12. Carvaka : Theory of Knowledge; Rejection of Transcendent Entities.
13. Jainism : Theory of Reality; Saptabhanginaya; Bondage and Liberation.
14. Schools of Buddhism : Prat Ityasamutpada; Ksanikavada, Nairatmyavada.
15. Nyaya Vaishesika : Theory of Categories; Theory of Appearance; Theory of Pramana; Self, Liberation; God; Proofs for the Existence of God; Theory of Causation; Atomistic Theory of Creation.

16. Samkhya; Prakrit; Purusa; Causation; Liberation.
17. Yoga; Citta; Cittavrtti; Klesas; Samadhi; Kaivalya.
18. Mimamsa: Theory of Knowledge.
19. Schools of Vedanta : Brahman; Isvara; Atman; Jiva; Jagat; Maya; Avida; Adhyasa; Moksa; Aprthaksiddhi; Pancavidhabheda.
20. Aurobindo: Evolution, Involution; Integral Yoga.

PAPER-II

Socio-Political Philosophy

1. Social and Political Ideals : Equality, Justice, Liberty.
2. Sovereignty : Austin, Bodin, Laski, Kautilya.
3. Individual and State : Rights; Duties and Accountability.
4. Forms of Government : Monarchy; Theocracy and Democracy.
5. Political Ideologies: Anarchism; Marxism and Socialism.
6. Humanism; Secularism; Multi-culturalism.
7. Crime and Punishment : Corruption, Mass Violence, Genocide, Capital Punishment.
8. Development and Social Progress.
9. Gender Discrimination : Female Foeticide, Land and Property Rights; Empowerment.
10. Caste Discrimination : Gandhi and Ambedkar.

Philosophy of Religion

1. Notions of God : Attributes; Relation to Man and the World. (Indian and Western).
2. Proofs for the Existence of God and their Critique (Indian and Western).
3. Problem of Evil.
4. Soul : Immortality; Rebirth and Liberation.
5. Reason, Revelation and Faith.
6. Religious Experience : Nature and Object (Indian and Western).
7. Religion without God.
8. Religion and Morality.
9. Religious Pluralism and the Problem of Absolute Truth.
10. Nature of Religious language : Analogical and Symbolic; Cognitivist and Non-cognitive.

PHYSICS
PAPER-I

1. (a) Mechanics of Particles :

Laws of motion; conservation of energy and momentum, applications to rotating frames, centripetal and Coriolis accelerations; Motion under a central force; Conservation of angular momentum, Kepler's laws; Fields and potentials; Gravitational field and potential due to spherical bodies, Gauss and Poisson equations, gravitational self-energy; Two-body problem; Reduced mass; Rutherford scattering; Centre of mass and laboratory reference frames.

(b) Mechanics of Rigid Bodies :

System of particles; Centre of mass, angular momentum, equations of motion; Conservation theorems for energy, momentum and angular momentum; Elastic and inelastic collisions; Rigid body; Degrees of freedom, Euler's theorem, angular velocity, angular momentum, moments of inertia, theorems of parallel and perpendicular axes, equation of motion for rotation; Molecular rotations (as rigid bodies); Di and tri-atomic molecules; Precessional motion; top, gyroscope.

(c) Mechanics of Continuous Media :

Elasticity, Hooke's law and elastic constants of isotropic solids and their inter-relation; Streamline (Laminar) flow, viscosity, Poiseuille's equation, Bernoulli's equation, Stokes' law and applications.

(d) Special Relativity :

Michelson-Morely experiment and its implications; Lorentz transformations length contraction, time dilation, addition of relativistic velocities, aberration and Doppler effect, mass-energy relation, simple applications to a decay process. Four dimensional momentum vector; Covariance of equations of physics.

2. Waves and Optics :**(a) Waves :**

Simple harmonic motion, damped oscillation, forced oscillation and resonance; Beats; Stationary waves in a string; Pulses and wave packets; Phase and group velocities; Reflection and refraction from Huygens' principle.

(b) Geometrical Optics :

Laws of reflection and refraction from Fermat's principle; Matrix method in paraxial optic-thin lens formula, nodal planes, system of two thin lenses, chromatic and spherical aberrations.

(c) Interference :

Interference of light -Young's experiment, Newton's rings, interference by thin films, Michelson interferometer; Multiple beam interference and Fabry Perot interferometer.

(d) Diffraction :

Fraunhofer diffraction - single slit, double slit, diffraction grating, resolving power; Diffraction by a circular aperture and

the Airy pattern; Fresnel diffraction: half-period zones and zone plates, circular aperture.

(e) Polarisation and Modern Optics :

Production and detection of linearly and circularly polarized light; Double refraction, quarter wave plate; Optical activity; Principles of fibre optics, attenuation; Pulse dispersion in step index and parabolic index fibres; Material dispersion, single mode fibers; Lasers-Einstein A and B coefficients. Ruby and He-Ne lasers. Characteristics of laser light-spatial and temporal coherence; Focusing of laser beams. Three-level scheme for laser operation; Holography and simple applications.

3. Electricity and Magnetism :**(a) Electrostatics and Magnetostatics :**

Laplace and Poisson equations in electrostatics and their applications; Energy of a system of charges, multipole expansion of scalar potential; Method of images and its applications. Potential and field due to a dipole, force and torque on a dipole in an external field; Dielectrics, polarisation. Solutions to boundary-value problems-conducting and dielectric spheres in a uniform electric field; Magnetic shell, uniformly magnetised sphere; Ferromagnetic materials, hysteresis, energy loss.

(b) Current Electricity :

Kirchhoff's laws and their applications. Biot-Savart law, Ampere's law, Faraday's law, Lenz' law. Self-and mutual-inductances; Mean and rms values in AC circuits; DC and AC circuits with R, L and C components; Series and parallel resonance; Quality factor; Principle of transformer.

4. Electromagnetic Waves and Blackbody Radiation :

Displacement current and Maxwell's equations; Wave equations in vacuum, Poynting theorem; Vector and scalar potentials; Electromagnetic field tensor, covariance of Maxwell's equations; Wave equations in isotropic dielectrics, reflection and refraction at the boundary of two dielectrics; Fresnel's relations; Total internal reflection; Normal and anomalous dispersion; Rayleigh scattering; Blackbody radiation and Planck's radiation law- Stefan-Boltzmann law, Wien's displacement law and Rayleigh-Jeans law.

5. Thermal and Statistical Physics :**(a) Thermodynamics :**

Laws of thermodynamics, reversible and irreversible processes, entropy; Isothermal, adiabatic, isobaric, isochoric processes and entropy changes; Otto and Diesel engines, Gibbs' phase rule and chemical potential; Van der Waals equation of state of a real gas, critical constants; Maxwell-Boltzmann distribution of molecular velocities, transport phenomena, equipartition and virial theorems; Dulong-Petit, Einstein, and Debye's theories of specific heat of solids; Maxwell relations and application; Clausius-Clapeyron equation. Adiabatic demagnetisation, Joule-Kelvin effect and liquefaction of gases.

(b) Statistical Physics :

Macro and micro states, statistical distributions, Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Distributions, applications to specific heat of gases and blackbody radiation; Concept of negative temperatures.

PAPER-II**1. Quantum Mechanics :**

Wave-particle duality; Schrodinger equation and expectation values; Uncertainty principle; Solutions of the one-dimensional Schrodinger equation for free particle (Gaussian wave-packet), particle in a box, particle in a finite well, linear harmonic oscillator; Reflection and transmission by a step potential and by a rectangular barrier; Particle in a three dimensional box, density of states, free electron theory of metals; Angular momentum; Hydrogen atom; Spin half particles, properties of Pauli spin matrices.

2. Atomic and Molecular Physics :

Stern-Gerlach experiment, electron spin, fine structure of hydrogen atom; L-S coupling, J-J coupling; Spectroscopic notation of atomic states; Zeeman effect; Franck-Condon principle and applications; Elementary theory of rotational, vibrational and electronic spectra of diatomic molecules; Raman effect and molecular structure; Laser Raman spectroscopy; Importance of neutral hydrogen atom, molecular hydrogen and molecular hydrogen ion in astronomy. Fluorescence and Phosphorescence; Elementary theory and applications of NMR and EPR; Elementary ideas about Lamb shift and its significance.

3. Nuclear and Particle Physics :

Basic nuclear properties—size, binding energy, angular momentum, parity, magnetic moment; Semi-empirical mass formula and applications. Mass parabolas; Ground state of a deuteron, magnetic moment and non-central forces; Meson theory of nuclear forces; Salient features of nuclear forces; Shell model of the nucleus - success and limitations; Violation of parity in beta decay; Gamma decay and internal conversion; Elementary ideas about Mossbauer spectroscopy; Q-value of nuclear reactions; Nuclear fission and fusion, energy production in stars. Nuclear reactors.

Classification of elementary particles and their interactions; Conservation laws; Quark structure of hadrons : Field quanta of electroweak and strong interactions; Elementary ideas about unification of forces; Physics of neutrinos.

4. Solid State Physics, Devices and Electronics :

Crystalline and amorphous structure of matter; Different crystal systems, space groups; Methods of determination of crystal structure; X-ray diffraction, scanning and transmission electron microscopies; Band theory of solids—conductors, insulators and semi-conductors; Thermal properties of solids, specific heat, Debye theory; Magnetism: dia, para and ferromagnetism; Elements of super-conductivity, Meissner

effect, Josephson junctions and applications; Elementary ideas about high temperature super-conductivity.

Intrinsic and extrinsic semi-conductors- p-n-p and n-p-n transistors; Amplifiers and oscillators. Op-amps; FET, JFET and MOSFET; Digital electronics-Boolean identities, De Morgan's laws, Logic gates and truth tables. Simple logic circuits; Thermistors, solar cells; Fundamentals of microprocessors and digital computers.

**POLITICAL SCIENCE AND INTERNATIONAL
RELATIONS
PAPER-I**

Political Theory and Indian Politics :

1. Political Theory: meaning and approaches.
2. Theories of state : Liberal, Neo-liberal, Marxist, Pluralist, post-colonial and Feminist.
3. Justice : Conceptions of justice with special reference to Rawl's theory of justice and its communitarian critiques.
4. Equality : Social, political and economic; relationship between equality and freedom; Affirmative action.
5. Rights : Meaning and theories; different kinds of rights; Concept of Human Rights.
6. Democracy : Classical and contemporary theories; different models of democracy—representative, participatory and deliberative.
7. Concept of power : hegemony, ideology and legitimacy.
8. Political Ideologies : Liberalism, Socialism, Marxism, Fascism, Gandhism and Feminism.
9. Indian Political Thought: *Dharamshastra*, *Arthashastra* and Buddhist Traditions; Sir Syed Ahmed Khan, Sri Aurobindo, M. K. Gandhi, B. R. Ambedkar, M. N. Roy.
10. Western Political Thought : Plato, Aristotle, Machiavelli, Hobbes, Locke, John S. Mill, Marx, Gramsci, Hannah Arendt.

Indian Government and Politics**1. Indian Nationalism :**

- (a) Political Strategies of India's Freedom Struggle : Constitutionalism to mass Satyagraha, Non-cooperation, Civil Disobedience; Militant and Revolutionary Movements, Peasant and Workers Movements.
 - (b) Perspectives on Indian National Movement; Liberal, Socialist and Marxist; Radical Humanist and Dalit.
2. Making of the Indian Constitution : Legacies of the British rule; different social and political perspectives.
 3. Salient Features of the Indian Constitution : The Preamble, Fundamental Rights and Duties, Directive Principles; Parliamentary System and Amendment Procedures; Judicial Review and Basic Structure doctrine.

4. (a) Principal Organs of the Union Government : Envisaged role and actual working of the Executive, Legislature and Supreme Court.
- (b) Principal Organs of the State Government : Envisaged role and actual working of the Executive, Legislature and High Courts.
5. Grassroots Democracy : Panchayati Raj and Municipal Government; Significance of 73rd and 74th Amendments; Grassroot movements.
6. Statutory Institutions/Commissions : Election Commission, Comptroller and Auditor General, Finance Commission, Union Public Service Commission, National Commission for Scheduled Castes, National Commission for Scheduled Tribes, National Commission for Women; National Human Rights Commission, National Commission for Minorities, National Backward Classes Commission.
7. Federalism : Constitutional provisions; changing nature of centre-state relations; integrationist tendencies and regional aspirations; inter-state disputes.
8. Planning and Economic development : Nehruvian and Gandhian perspectives; Role of planning and public sector; Green Revolution, land reforms and agrarian relations; liberalization and economic reforms.
9. Caste, Religion and Ethnicity in Indian Politics.
10. Party System : National and regional political parties, ideological and social bases of parties; Patterns of coalition politics; Pressure groups, trends in electoral behaviour; changing socio-economic profile of Legislators.
11. Social Movement : Civil liberties and human rights movements; women's movements; environmentalist movements.
5. Approaches to the Study of International Relations : Idealist, Realist, Marxist, Functionalist and Systems theory.
6. Key Concepts in International Relations : National interest, security and power; Balance of power and deterrence; Transnational actors and collective security; World capitalist economy and globalisation.
7. Changing International Political Order :
 - (a) Rise of super powers; Strategic and ideological Bipolarity, arms race and cold war; Nuclear threat;
 - (b) Non-aligned Movement : Aims and achievements.
 - (c) Collapse of the Soviet Union; Unipolarity and American hegemony; Relevance of non-alignment in the contemporary world.
8. Evolution of the International Economic System : From Brettonwoods to WTO; Socialist economies and the CMEA (Council for Mutual Economic Assistance); Third World demand for new international economic order; Globalisation of the world economy.
9. United Nations : Envisaged role and actual record; Specialized UN agencies—aims and functioning; need for UN reforms.
10. Regionalisation of World Politics : EU, ASEAN, APEC, AARC, NAFTA.
11. Contemporary Global Concerns : Democracy, human rights, environment, gender justice terrorism, nuclear proliferation.

India and the World

1. Indian Foreign Policy : Determinants of foreign policy; the institutions of policy-making; Continuity and change.
2. India's Contribution to the Non-Alignment Movement Different phases; Current role.
3. India and South Asia :
 - (a) Regional Co-operation : SAARC-past performance and future prospects.
 - (b) South Asia as a Free Trade Area.
 - (c) India's "Look East" policy.
 - (d) Impediments to regional co-operation : River water disputes; illegal cross border migration; Ethnic conflicts and insurgencies; Border disputes.
4. India and the Global South : Relations with Africa and Latin America; Leadership role in the demand for NIEO and WTO negotiations.
5. India and the Global Centres of Power : USA, EU, Japan, China and Russia.

PAPER-II

Comparative Politics and International Relations

Comparative Political Analysis and International Politics :

1. Comparative Politics : Nature and major approaches; Political economy and political sociology perspectives; Limitations of the comparative method.
2. State in Comparative Perspective : Characteristics and changing nature of the State in capitalist and socialist economies, and advanced industrial and developing societies.
3. Politics of Representation and Participation : Political parties, pressure groups and social movements in advanced industrial and developing societies.
4. Globalisation : Responses from developed and developing societies.

6. India and the UN System: Role in UN Peace-keeping; Demand for Permanent Seat in the Security Council.
7. India and the Nuclear Question : Changing perceptions and policy.
8. Recent developments in Indian Foreign Policy : India's position on the recent crises in Afghanistan, Iraq and West Asia, growing relations with US and Isreal; Vision of a new world order.

PSYCHOLOGY

PAPER I

Foundations of Psychology

1. Introduction : Definition of Psychology; Historical antecedents of Psychology and trends in the 21st century; Psychology and scientific methods; Psychology in relation to other social sciences and natural sciences; Application of Psychology to societal problems.

2. Methods of Psychology : Types of research : Descriptive, evaluative, diagnostic and prognostic; Methods of Research : Survey, observation, case-study and experiments; Characteristics of experimental design and non-experimental designs; quasi experimental designs; Focussed group discussions, brain storming, grounded theory approach.

3. Research methods : Major steps in psychological research (problem statement, hypothesis formulation, research design, sampling, tools of data collection, analysis and interpretation and report writing); Fundamental versus applied research; Methods of data collection (interview, observation, questionnaire and case study). Research Designs (Ex-post facto and experimental). Application of statistical techniques (t-test, two-way ANOVA, correlation and regression and factor analysis) item response theory.

4. Development of Human Behaviour : Growth and development; Principles of development. Role of genetic and environmental factors in determining human behaviour; Influence of cultural factors in socialization; Life span development Characteristics, development tasks, promoting psychological well-being across major stages of the life span.

5. Sensation, Attention and Perception : Sensation: concepts of threshold, absolute and difference thresholds, signal-detection and vigilance; Factors influencing attention including set and characteristics of stimulus; Definition and concept of perception, biological factors in perception; Perceptual organization-influence of past experiences, perceptual defence-factor influencing space and depth perception, size estimation and perceptual readiness; The plasticity of perception; Extrasensory perception; Culture and perception, Subliminal perception.

6. Learning : Concepts and theories of learning (Behaviourists, Gestaltalist and Information processing models). The processes of extinction, discrimination and generalisation. Programmed learning, probability learning, self instructional learning, concepts, types and the schedules of reinforcement, escape, avoidance and punishment, modelling and social learning.

7. Memory : Encoding and remembering; Shot-term memory, Long-term memory, Sensory memory, Iconic memory, Echoic memory; The Multistore model, levels of processing; Organization and Mnemonic techniques to improve memory; Theories of forgetting: decay, interference and retrieval failure; Metamemory; Amnesia: Anterograde and retrograde.

8. Thinking and Problem Solving : Piaget's theory of cognitive development; Concept formation processes; Information processing, Reasoning and problem solving, Facilitating and hindering factors in problem solving, Methods of problem solving: Creative thinking and fostering creativity; Factors influencing decision making and judgement; Recent trends.

9. Motivation and Emotion : Psychological and physiological basis of motivation and emotion; Measurement of motivation and emotion; Effects of motivation and emotion on behaviour; Extrinsic and intrinsic motivation; Factors influencing intrinsic motivation; Emotional competence and the related issues.

10. Intelligence and Aptitude : Concept of intelligence and aptitude, Nature and theories of intelligence-Spearman, Thurstone, Guilford Vernon, Sternberg and J.P. Das; Emotional Intelligence, Social intelligence, measurement of intelligence and aptitudes, concept of IQ deviation IQ, constancy of IQ; Measurement of multiple intelligence; Fluid intelligence and crystallized intelligence.

11. Personality : Definition and concept of personality; Theories of personality (psychoanalytical, socio-cultural, interpersonal, developmental, humanistic, behaviouristic, trait and type approaches); Measurement of personality (projective tests, pencil-paper test); The Indian approach to personality; Training for personality development; Latest approaches like big 5 factor theory; The notion of self in different traditions.

12. Attitudes, Values and Interests : Definitions of attitudes, values and interests; Components of attitudes; Formation and maintenance of attitudes. Measurement of attitudes, values and interests. Theories of attitude changes, strategies for fostering values. Formation of stereotypes and prejudices; Changing other's behaviour, Theories of attribution; Recent trends.

13. Language and Communication : Human language— Properties, structure and linguistic hierarchy, Language acquisition predisposition, critical period hypothesis; Theories of language development Skinner and Chomsky; Process and types of communication effective communication training.

14. Issues and Perspectives in Modern Contemporary Psychology : Computer application in the psychological laboratory and psychological testing; Artificial intelligence; Psychocybernetics; Study of consciousness/sleep-wake schedules; dreams, stimulus deprivation, meditation, hypnotic/drug induced states; Extrasensory perception; Intersensory perception; Simulation studies.

PAPER II

Psychology : Issues and applications

1. Psychological Measurement of Individual Differences :

The nature of individual differences. Characteristics and construction of standardized psychological tests. Types of psychological tests. Use, misuse and limitation of psychological tests. Ethical issues in the use of psychological tests.

2. Psychological well being and Mental Disorders :

Concept of health-ill health positive health, well being casual factors in Mental disorders (Anxiety disorders, mood disorders; schizophrenia and delusional disorders; personality disorders, substance abuse disorders). Factors influencing positive health, well being; life style and quality of life; Happiness disposition

3. Therapeutic Approaches :

Psychodynamic therapies. Behaviour therapies. Client centered therapy. Cognitive therapies. Indigenous therapies (Yoga, Meditation). Biofeedback therapy. Prevention and rehabilitation of the mentally ill; Fostering mental health.

4. Work Psychology and Organisational Behaviour :

Personnel selection and training. Use of Psychological tests in the industry. Training and human resource development. Theories of work motivation. Herzberg, Maslow, Adam Equity theory, Porter and Lawler, Vroom; Leadership and participatory management; Advertising and marketing; Stress and its management; Ergonomics; consumer psychology; Managerial effectiveness; Transformational leadership; Sensitivity training; Power and politics in organizations.

5. Application of Psychology to Educational Field :

Psychological principles underlying effective teaching-learning process. Learning styles. Gifted, retarded, learning disabled and their training. Training for improving memory and better academic achievement. Personality development and value education. Educational, vocational guidance and Career counselling. Use of Psychological tests in educational institutions; Effective strategies in guidance programmes.

6. Community Psychology :

Definition and concept of Community Psychology. Use of all groups in social action. Arousing community consciousness and action for handling social problems. Group decision making and leadership for social change. Effective strategies for social change.

7. Rehabilitation Psychology :

Primary, secondary and tertiary prevention programmes role of psychologists. Organising of services for rehabilitation of physically, mentally and socially

challenged persons including old persons. Rehabilitation of persons suffering from substance abuse, juvenile delinquency, criminal behaviours. Rehabilitation of victims of violence. Rehabilitation of HIV/AIDS victims, the role of social agencies.

8. Application of Psychology to disadvantaged groups :

The concepts of disadvantaged, deprivation social, physical, cultural and economic consequences of disadvantaged and deprived groups. Educating and motivating the disadvantaged towards development; Relative and prolonged deprivation.

9. Psychological problem of social integration :

The concept of social integration. The problem of caste, class, religion and language conflicts and prejudice. Nature and manifestation of prejudice between the ingroup and outgroup. Casual factors of such conflicts and prejudices. Psychological strategies for handling the conflicts and prejudices. Measures to achieve social integration.

10. Application of Psychology in Information Technology and Mass Media :

The present scenario of information technology and the mass media boom and the role of psychologists. Selection and training of Psychology professionals to work in the field of IT and mass media. Distance learning through IT and mass media. Entrepreneurship through e-commerce. Multilevel marketing. Impact of TV and fostering value through IT and mass media. Psychological consequences of recent developments in Information Technology.

11. Psychology and Economic development :

Achievement motivation and economic development. Characteristics of entrepreneurial behaviour. Motivating and Training people for entrepreneurship and economic development; Consumer rights and consumer awareness, Government policies for promotion of entrepreneurship among youth including women entrepreneurs.

12. Application of Psychology to environment and related fields :

Environmental Psychology effects of noise, pollution and crowding. Population Psychology : Psychological consequence of population explosion and high population density. Motivating for small family norms. Impact of rapid scientific and technological growth on degradation of environment.

13. Application of psychology in other fields :

(a) Military Psychology

Devising psychological tests for defence personnel for use in selection, Training, counseling; training psychologists to work with defence personnel in promoting positive health; Human engineering in defence.

(b) Sports Psychology

Psychological interventions in improving performance of athletes and sports. Persons participating in Individual and Team Games.

(c) Media influences on pro and anti-social behaviour.

(d) Psychology of terrorism.

14. Psychology of Gender :

Issues of discrimination, Management of diversity; Glass ceiling effect, Self-fulfilling prophesy, Women and Indian society.

PUBLIC ADMINISTRATION

PAPER I

Administration Theory

1. Introduction :

Meaning, scope and significance of Public Administration, Wilson's vision of Public Administration, Evolution of the discipline and its present status. New Public Administration, Public Choice approach; Challenges of liberalization, Privatisation, Globalisation; Good Governance: concept and application; New Public Management.

2. Administrative Thought :

Scientific Management and Scientific Management movement; Classical Theory; Weber's bureaucratic model its critique and post-Weberian Developments; Dynamic Administration (Mary Parker Follett); Human Relations School (Elton Mayo and others); Functions of the Executive (C.I. Barnard); Simon's decision-making theory; Participative Management (R. Likert, C. Argyris, D. McGregor.)

3. Administrative Behaviour :

Process and techniques of decision-making; Communication; Morale; Motivation Theories content, process and contemporary; Theories of Leadership: Traditional and Modern;

4. Organisations :

Theories systems, contingency; Structure and forms: Ministries and Departments, Corporations, Companies; Boards and Commissions; Ad hoc, and advisory bodies; Headquarters and Field relationships; Regulatory Authorities; Public-Private Partnerships.

5. Accountability and Control :

Concepts of accountability and control; Legislative, Executive and judicial control over administration; Citizen and Administration; Role of media, interest groups, voluntary organizations; Civil society; Citizen's Charters; Right to Information; Social audit.

6. Administrative Law :

Meaning, scope and significance; Dicey on Administrative law; Delegated legislation; Administrative Tribunals.

7. Comparative Public Administration :

Historical and sociological factors affecting administrative systems; Administration and politics in different countries; Current status of Comparative Public Administration;

Ecology and administration; Riggsian models and their critique.

8. Development Dynamics :

Concept of development; Changing profile of development administration; 'Anti-development thesis'; Bureaucracy and development; Strong state versus the market debate; Impact of liberalisation on administration in developing countries; Women and development the self-help group movement.

9. Personnel Administration :

Importance of human resource development; Recruitment, training, career advancement, position classification, discipline, performance appraisal, promotion, pay and service conditions; employer-employee relations, grievance redressal mechanism; Code of conduct; Administrative ethics.

10. Public Policy :

Models of policy-making and their critique; Processes of conceptualisation, planning, implementation, monitoring, evaluation and review and their limitations; State theories and public policy formulation.

11. Techniques of Administrative Improvement :

Organisation and methods, Work study and work management; e-governance and information technology; Management aid tools like network analysis, MIS, PERT, CPM.

12. Financial Administration :

Monetary and fiscal policies: Public borrowings and public debt Budgets types and forms; Budgetary process; Financial accountability; Accounts and audit.

PAPER II

Indian Administration

1. Evolution of Indian Administration :

Kautilya Arthashastra; Mughal administration; Legacy of British rule in politics and administration Indianization of Public services, revenue administration, district administration, local self Government.

2. Philosophical and Constitutional framework of Government :

Salient features and value premises; Constitutionalism; Political culture; Bureaucracy and democracy; Bureaucracy and development.

3. Public Sector Undertakings :

Public sector in modern India; Forms of Public Sector Undertakings; Problems of autonomy, accountability and control; Impact of liberalization and privatization.

4. Union Government and Administration :

Executive, Parliament, Judiciary-structure, functions, work processes; Recent trends; Intra-governmental relations; Cabinet Secretariat; Prime Minister's Office; Central Secretariat; Ministries and Departments; Boards; Commissions; Attached offices; Field organizations.

5. Plans and Priorities :

Machinery of planning; Role, composition and functions of the Planning Commission and the National Development Council; 'Indicative' planning; Process of plan formulation at Union and State levels; Constitutional Amendments (1992) and decentralized planning for economic development and social justice.

6. State Government and Administration :

Union-State administrative, legislative and financial relations; Role of the Finance Commission; Governor; Chief Minister; Council of Ministers; Chief Secretary; State Secretariat; Directorates.

7. District Administration since Independence :

Changing role of the Collector; Union-State-local relations; Imperatives of development management and law and order administration; District administration and democratic decentralization.

8. Civil Services :

Constitutional position; Structure, recruitment, training and capacity building; Good governance initiatives; Code of conduct and discipline; Staff associations; Political rights; Grievance redressal mechanism; Civil service neutrality; Civil service activism.

9. Financial Management :

Budget as a political instrument; Parliamentary control of public expenditure; Role of finance ministry in monetary and fiscal area; Accounting techniques; Audit; Role of Controller General of Accounts and Comptroller and Auditor General of India.

10. Administrative Reforms since Independence :

Major concerns; Important Committees and Commissions; Reforms in financial management and human resource development; Problems of implementation.

11. Rural Development :

Institutions and agencies since Independence; Rural development programmes: foci and strategies; Decentralization and Panchayati Raj; 73rd Constitutional amendment.

12. Urban Local Government :

Municipal governance: main features, structures, finance and problem areas; 74th Constitutional Amendment; Global-local debate; New localism; Development dynamics, politics and administration with special reference to city management.

13. Law and Order Administration:

British legacy; National Police Commission; Investigative agencies; Role of Central and State Agencies including para military forces in maintenance of law and order and countering insurgency and terrorism; Criminalisation of politics and administration; Police-public relations; Reforms in Police.

14. Significant issues in Indian Administration:

Values in public service; Regulatory Commissions; National Human Rights Commission; Problems of administration in coalition regimes; Citizen administration interface; Corruption and administration; Disaster management.

SOCIOLOGY**PAPER I****FUNDAMENTALS OF SOCIOLOGY****1. Sociology - The Discipline:**

- Modernity and social changes in Europe and emergence of sociology.
- Scope of the subject and comparison with other social sciences.
- Sociology and common sense.

2. Sociology as Science:

- Science, scientific method and critique.
- Major theoretical strands of research methodology.
- Positivism and its critique.
- Fact value and objectivity.
- Non-positivist methodologies.

3. Research Methods and Analysis:

- Qualitative and quantitative methods.
- Techniques of data collection.
- Variables, sampling, hypothesis, reliability and validity.

4. Sociological Thinkers:

- Karl Marx - Historical materialism, mode of production, alienation, class struggle.
- Emile Durkheim - Division of labour, social fact, suicide, religion and society.
- Max Weber - Social action, ideal types, authority, bureaucracy, protestant ethic and the spirit of capitalism.
- Talcott Parsons - Social system, pattern variables.
- Robert K. Merton - Latent and manifest functions, conformity and deviance, reference groups.
- Mead - Self and identity.

5. Stratification and Mobility :

- Concepts - equality, inequality, hierarchy, exclusion, poverty and deprivation.
- Theories of social stratification - Structural functionalist theory, Marxist theory, Weberian theory.
- Dimensions - Social stratification of class, status groups, gender, ethnicity and race.
- Social mobility - open and closed systems, types of mobility, sources and causes of mobility.

6. Works and Economic Life :

- Social organization of work in different types of society - slave society, feudal society, industrial capitalist society.

- (b) Formal and informal organization of work.
- (c) Labour and society.

7. Politics and Society:

- (a) Sociological theories of power.
- (b) Power elite, bureaucracy, pressure groups and political parties.
- (c) Nation, state, citizenship, democracy, civil society, ideology.
- (d) Protest, agitation, social movements, collective action, revolution.

8. Religion and Society :

- (a) Sociological theories of religion.
- (b) Types of religious practices: animism, monism, pluralism, sects, cults.
- (c) Religion in modern society: religion and science, secularization, religious revivalism, fundamentalism.

9. Systems of Kinship:

- (a) Family, household, marriage.
- (b) Types and forms of family.
- (c) Lineage and descent.
- (d) Patriarchy and sexual division of labour.
- (e) Contemporary trends.

10. Social Change in Modern Society :

- (a) Sociological theories of social change.
- (b) Development and dependency.
- (c) Agents of social change.
- (d) Education and social change.
- (e) Science, technology and social change.

PAPER II**INDIAN SOCIETY : STRUCTURE AND CHANGE****A. Introducing Indian Society :****(i) Perspectives on the Study of Indian Society :**

- (a) Indology (G.S. Ghure).
- (b) Structural functionalism (M. N. Srinivas).
- (c) Marxist sociology (A. R. Desai).

(ii) Impact of colonial rule on Indian society :

- (a) Social background of Indian nationalism.
- (b) Modernization of Indian tradition.
- (c) Protests and movements during the colonial period.
- (d) Social reforms.

B. Social Structure:**(i) Rural and Agrarian Social Structure:**

- (a) The idea of Indian village and village studies.
- (b) Agrarian social structure—
evolution of land tenure system, land reforms.

(ii) Caste System:

- (a) Perspectives on the study of caste systems: G. S. Ghurye, M. N. Srinivas, Louis Dumont, Andre Beteille.
- (b) Features of caste system.
- (c) Untouchability-forms and perspectives

(iii) Tribal communities in India:

- (a) Definitional problems.
- (b) Geographical spread.
- (c) Colonial policies and tribes.
- (d) Issues of integration and autonomy.

(iv) Social Classes in India:

- (a) Agrarian class structure.
- (b) Industrial class structure.
- (c) Middle classes in India.

(v) Systems of Kinship in India:

- (a) Lineage and descent in India.
- (b) Types of kinship systems.
- (c) Family and marriage in India.
- (d) Household dimensions of the family.
- (e) Patriarchy, entitlements and sexual division of labour.

(vi) Religion and Society :

- (a) Religious communities in India.
- (b) Problems of religious minorities.

C. Social Changes in India:**(i) Visions of Social Change in India:**

- (a) Idea of development planning and mixed economy.
- (b) Constitution, law and social change.
- (c) Education and social change.

(ii) Rural and Agrarian Transformation in India:

- (a) Programmes of rural development, Community Development Programme, cooperatives, poverty alleviation schemes.
- (b) Green revolution and social change.
- (c) Changing modes of production in Indian agriculture.
- (d) Problems of rural labour, bondage, migration.

(iii) Industrialization and Urbanisation in India:

- (a) Evolution of modern industry in India.
- (b) Growth of urban settlements in India.
- (c) Working class: structure, growth, class mobilization.
- (d) Informal sector, child labour.
- (e) Slums and deprivation in urban areas.

(iv) Politics and Society :

- (a) Nation, democracy and citizenship.
- (b) Political parties, pressure groups, social and political elite.
- (c) Regionalism and decentralization of power.
- (d) Secularization.

(v) Social Movements in Modern India :

- (a) Peasants and farmers movements.
- (b) Women's movement.
- (c) Backward classes & Dalit movements.
- (d) Environmental movements.
- (e) Ethnicity and Identity movements.

(vi) Population Dynamics :

- (a) Population size, growth, composition and distribution.
- (b) Components of population growth: birth, death, migration.
- (c) Population Policy and family planning.
- (d) Emerging issues: ageing, sex ratios, child and infant mortality, reproductive health.

(vii) Challenges of Social Transformation :

- (a) Crisis of development : displacement, environmental problems and sustainability.
- (b) Poverty, deprivation and inequalities.
- (c) Violence against women.
- (d) Caste conflicts.
- (e) Ethnic conflicts, communalism, religious revivalism.
- (f) Illiteracy and disparities in education.

STATISTICS**PAPER I****1. Probability :**

Sample space and events, probability measure and probability space, random variable as a measurable function, distribution function of a random variable, discrete and continuous-type random variable, probability mass function, probability density function, vector-valued random variable, marginal and conditional distributions, stochastic independence of events and of random variables, expectation and moments of a random variable, conditional expectation, convergence of a sequence of random variable in distribution, in probability, in path, mean and almost everywhere, their criteria and inter-relations, Chebyshev's inequality and Khintchine's weak law of large numbers, strong law of large numbers and Kolmogoroff's theorems, probability generating function,

moment generating function, characteristic function, inversion theorem, Linderberg and Levy forms of central limit theorem, standard discrete and continuous probability distributions.

2. Statistical Inference:

Consistency, unbiasedness, efficiency, sufficiency, completeness, ancillary statistics, factorization theorem, exponential family of distribution and its properties, uniformly minimum variance unbiased (UMVU) estimation, Rao Blackwell and Lehmann-Scheffe theorems, Cramer-Rao inequality for single Parameter. Estimation by methods of moments, maximum likelihood, least squares, minimum chisquare and modified minimum chisquare, properties of maximum likelihood and other estimators, asymptotic efficiency, prior and posterior distributions, loss function, risk function, and minimax estimator. Bayes estimators.

Non-randomised and randomised tests, critical function, MP tests, Neyman-Pearson lemma, UMP tests, monotone likelihood ratio: similar and unbiased tests. UMPU tests for single paramet likelihood ratio test and its asymptotic distribution. Confidence bounds and its relation with tests.

Kolmogorov's test for goodness of fit and its consistency, sign test and its optimality. Wilcoxon signedranks test and its consistency, Kolmogorov-Smirnov two sample test, run test, Wilcoxon-Mann-Whitney test and median test, their consistency and asymptotic normality.

Wald's SPRT and its properties, Oc and ASN functions for tests regarding parameters for Bernoulli, Poisson, normal and exponential distributions. Wald's fundamental identity.

3. Linear Inference and Multivariate Analysis :

Linear statistical models, theory of least squares and analysis of variance, Gauss-Markoff theory, normal equations, least squares estimates and their precision, test of significance and interval estimates based on least squares theory in oneway, two-way and three-way classified data, regression analysis, linear regression, curvilinear regression and orthogonal polynomials, multiple regression, multiple and partial correlations, estimation of variance and covariance components, multivariate normal distribution, Mahalanobis's D^2 and Hotelling's T^2 statistics and their applications and properties, discriminant analysis, canonical correlations, principal component analysis.

4. Sampling Theory and Design of Experiments :

An outline of fixed-population and super-population approaches, distinctive features of finite population sampling, propability sampling designs, simple random sampling with and without replacement, stratified random sampling, systematic sampling and its efficacy, cluster sampling, twostage and multi-stage sampling, ratio and regression methods of estimation involving one or more auxiliary variables, two-phase sampling, probability proportional to size sampling with and

without replacement, the Hansen-Hurwitz and the Horvitz-Thompson estimators, non-negative variance estimation with reference to the Horvitz-Thompson estimator, non-sampling errors.

Fixed effects model (two-way classification) random and mixed effects models (two-way classification with equal observation per cell), CRD, RBD, LSD and their analyses, incomplete block designs, concepts of orthogonality and balance, BIBD, missing plot technique, factorial experiments and 2^4 and 3^2 , confounding in factorial experiments, split-plot and simple lattice designs, transformation of data Duncan's multiple range test.

PAPER II

1. Industrial Statistics

Process and product control, general theory of control charts, different types of control charts for variables and attributes, \bar{X} , R , s , p , np and charts, cumulative sum chart. Single, double, multiple and sequential sampling plans for attributes, OC, ASN, AOQ and ATI curves, concepts of producer's and consumer's risks, AQL, LTPD and AOQL, Sampling plans for variables, Use of Dodge-Romin tables.

Concept of reliability, failure rate and reliability functions, reliability of series and parallel systems and other simple configurations, renewal density and renewal function, Failure models: exponential, Weibull, normal, lognormal. Problems in life testing, censored and truncated experiments for exponential models.

2. Optimization Techniques :

Different types of models in Operations Research, their construction and general methods of solution, simulation and Monte-Carlo methods formulation of Linear Programming (LP) problem, simple LP model and its graphical solution, the simplex procedure, the two-phase method and the M-technique with artificial variables, the duality theory of LP and its economic interpretation, sensitivity analysis, transportation and assignment problems, rectangular games, two-person zero-sum games, methods of solution (graphical and algebraic).

Replacement of failing or deteriorating items, group and individual replacement policies, concept of scientific inventory management and analytical structure of inventory problems, simple models with deterministic and stochastic demand with and without lead time, storage models with particular reference to dam type.

Homogeneous discrete-time Markov chains, transition probability matrix, classification of states and ergodic theorems, homogeneous continuous-time Markov chains, Poisson process, elements of queuing theory, M/M/1, M/M/K, G/M/1 and M/G/1 queues.

Solution of statistical problems on computers using well-known statistical software packages like SPSS.

3. Quantitative Economics and Official Statistics:

Determination of trend, seasonal and cyclical components, Box-Jenkins method, tests for stationary series, ARIMA models and determination of orders of autoregressive and moving average components, fore-casting.

Commonly used index numbers - Laspeyre's, Paasche's and Fisher's ideal index numbers, cham-base index number, uses and limitations of index numbers, index number of wholesale prices, consumer price, agricultural production and industrial production, test for index numbers -proportionality, time-reversal, factor-reversal and circular.

General linear model, ordinary least square and generalized least squares methods of estimation, problem of multi-collinearity, consequences and solutions of multi-collinearity, autocorrelation and its consequences, heteroscedasticity of disturbances and its testing, test for independence of disturbances concept of structure and model for simultaneous equations, problem of identification-rank and order conditions of identifiability, two-stage least square method of estimation.

Present official statistical system in India relating to population, agriculture, industrial production, trade and prices, methods of collection of official statistics, their reliability and limitations, principal publications containing such statistics, various official agencies responsible for data collection and their main functions.

4. Demography and Psychometry :

Demographic data from census, registration, NSS other surveys, their limitations, and uses, definition, construction and uses of vital rates and ratios, measures of fertility, reproduction rates, morbidity rate, standardized death rate, complete and abridged life tables, construction of life tables from vital statistics and census returns, uses of life tables, logistic and other population growth curves, fitting a logistic curve, population projection, stable population, quasi-stable population, techniques in estimation of demographic parameters, standard classification by cause of death, health surveys and use of hospital statistics.

Methods of standardisation of scales and tests, Z-scores, standard scores, T-scores, percentile scores, intelligence quotient and its measurement and uses, validity and reliability of test scores and its determination, use of factor analysis and path analysis in psychometry.

ZOOLOGY

PAPER I

1. Non-chordata and Chordata :

- (a) Classification and relationship of various phyla up to subclasses: Acoelomate and Coelomate, Protostomes and Deuterostomes, Bilateria and Radiata; Status of Protista, Parazoa, Onychophora and Hemichordata; Symmetry.

- (b) Protozoa: Locomotion, nutrition, reproduction, sex; General features and life history of *Paramecium*, *Monocystis*, *Plasmodium* and *Leishmania*.
- (c) Porifera: Skeleton, canal system and reproduction.
- (d) Cnidaria: Polymorphism, defensive structures and their mechanism; coral reefs and their formation; metagenesis; general features and life history of *Obelia* and *Aurelia*.
- (e) Platyhelminthes: Parasitic adaptation; general features and life history of *Fasciola* and *Taenia* and their-Pathogenic symptoms.
- (f) Nematelminthes: General features, life history, parasitic adaptation of *Ascaris* and *Wuchereria*.
- (g) Annelida: Coelom and metamerism; modes of life in polychaetes; general features and life history of *Nereis*, earthworm and leach.
- (h) Arthropoda: Larval forms and parasitism in Crustacea; vision and respiration in arthropods (Prawn, cockroach and scorpion); modification of mouth, parts in insects (cockroach, mosquito, housefly, honey bee and butterfly), metamorphosis in insect and its hormonal regulation, socialbehaviour of *Apis* and termites.
- (i) Molluscs: Feeding, respiration, locomotion, general features and life history of *Lamellidens*, *Pila* and *Sepia*. Torsion and detorsion in gastropods.
- (j) Echinodermata: Feeding, respiration, locomotion, larval forms, general features and life history of *Asterias*.
- (k) Protochordata: Origin of chordates; general features and life history of *Branchiostoma* and *Herdmania*.
- (l) Pisces: Respiration, locomotion and migration.
- (m) Amphibia: Origin of tetrapods, parental care, paedomorphosis.
- (n) Reptilia; Origin of reptiles, skull types, status of *Sphenodon* and crocodiles.
- (o) Aves: Origin of birds, flight adaptation, migration.
- (p) Mammalia: Origin of mammals, dentition, general features of egg laying mammals, pouchedmammals, aquatic mammals and primates, endocrine glands (pituitary, thyroid, parathyroid, adrenal, pancreas, gonads) and their interrelationships.
- (q) Comparative functional anatomy of various systems of vertebrates. (integument and its derivatives, endoskeleton, locomotory organs, digestive system, respiratory system, circulatory system including heart and aortic arches, urinogenital system, brain and sense organs (eye and ear).

2. Ecology :

- (a) Biosphere: concept of biosphere; biomes, Biogeochemical cycles, Human induced changes in atmosphere including green house effect, ecological succession, biomes and ecotones, community ecology.
- (b) Concept of ecosystem; structure and function of ecosystem, types of ecosystem, ecological succession, ecological adaptation.
- (c) Population; characteristics, population dynamics, population stabilization.
- (d) Biodiversity and diversity conservation of natural resources.
- (e) Wildlife of India.
- (f) Remote sensing for sustainable development.
- (g) Environmental biodegradation; pollution and its impact on biosphere and its prevention.

3. Ethology :

- (a) Behaviour: Sensory filtering, responsiveness, sign stimuli, learning, and memory, instinct, habituation, conditioning, imprinting.
- (b) Role of hormones in drive; role of pheromones in alarm spreading; crypsis, predator detection, predator tactics, social hierarchies in primates, social organization in insects;
- (c) Orientation, navigation, homing; biological rhythms: biological clock, tidal, seasonal and circadian rhythms.
- (d) Methods of studying animal behaviour including sexual conflict, selfishness, kinship and altruism.

4. Economic Zoology:

- (a) Apiculture, sericulture, lac culture, carp culture, pearl culture, prawn culture, vermiculture.
- (b) Major infectious and communicable diseases (malaria, filaria, tuberculosis, cholera and AIDS) their vectors, pathogens and prevention.
- (c) Cattle and livestock diseases, their pathogen (helminths) and vectors (ticks, mites, *Tabanus*, *Stomoxys*).
- (d) Pests of sugar cane (*Pyrrilla perpusiella*), oil seed (*Achaeajanata*) and rice (*Sitophilus oryzae*).
- (e) Transgenic animals.
- (f) Medical biotechnology, human genetic disease and genetic counselling, gene therapy.
- (g) Forensic biotechnology.

5. Biostatistics:

Designing of experiments; null hypothesis; correlation, regression, distribution and measure of central tendency, chi square, student-test, F-test (one-way & two-way F-test).

6. Instrumentation methods:

- (a) Spectrophotometer, phase contrast and fluorescence microscopy, radioactive tracer, ultra centrifuge, gel electrophoresis, PCR, ELISA, FISH and chromosome painting.
- (b) Electron microscopy (TEM, SEM).

PAPER II**1. Cell Biology :**

- (a) Structure and function of cell and its organelles (nucleus, plasma membrane, mitochondria, Golgi bodies, endoplasmic reticulum, ribosomes and lysosomes), cell division (mitosis and meiosis), mitotic spindle and mitotic apparatus, chromosome movement chromosome type ploytene and lambrush, organization of chromatin, heterochromatin, Cell cycle regulation.
- (b) Nucleic acid topology, DNA motif, DNA replication, transcription, RNA processing, translation, protein foldings and transport.

2. Genetics :

- (a) Modern concept of gene, split gene, genetic regulation, genetic code.
- (b) Sex chromosomes and their evolution, sex determination in *Drosophila* and man.
- (c) Mendel's laws of inheritance, recombination, linkage, multiple alleles, genetics of blood groups, pedigree analysis, hereditary diseases in man.
- (d) Mutations and mutagenesis.
- (e) Recombinant DNA technology, plasmid, cosmid, artificial chromosomes as vectors, transgenics, DNA cloning and whole animal cloning (principles and methods).
- (f) Gene regulation and expression in prokaryotes and eukaryotes.
- (g) Signal molecules, cell death, defects in signaling pathway and consequences.
- (h) RFLP, RAPD and AFLP and application of RFLP in DNA finger-printing, ribozyme technologies, human genome project, genomics and protomics.

3. Evolution:

- (a) Theories of origin of life.
- (b) Theories of evolution; Natural selection, role of mutation in evolution, evolutionary patterns, molecular drive, mimicry, variation, isolation and speciation.
- (c) Evolution of horse, elephant and man using fossil data.
- (d) Hardy-Weinberg Law.
- (e) Continental drift and distribution of animals.

4. Systematics

Zoological nomenclature, international code, cladistics, molecular taxonomy and biodiversity.

5. Biochemistry

- (a) Structure and role of carbohydrates, fats, fatty acids,

cholesterol, proteins and amino-acids, nucleic acids. Bioenergetics.

- (b) Glycolysis and Krebs cycle, oxidation and reduction, oxidative phosphorylation; energy conservation and release, ATP, cycl cyclic AMP-its structure and role.
- (c) Hormone classification (steroid and peptide hormones), biosynthesis and functions.
- (d) Enzymes: types and mechanisms of action.
- (e) Vitamins and co-enzymes.
- (f) Immunoglobulin and immunity.

6. Physiology (with special reference to mammals)

- (a) Composition and constituents of blood; blood groups and Rh factor in man; factors and mechanism of coagulation; iron metabolism, acid-base balance, thermo regulation, anticoagulants.
- (b) Haemoglobin: Composition, types and role in transport of oxygen and carbon dioxide.
- (c) Digestion and absorption: Role of salivary glands, liver, pancreas and intestinal glands.
- (d) Excretion: nephron and regulation of urine formation; osmo-regulation and excretory product.
- (e) Muscles: Types, mechanism of contraction of skeletal muscles, effects of exercise on muscles.
- (f) Neuron: nerve impulse—its conduction and synaptic transmission; neurotransmitters.
- (g) Vision, hearing and olfaction in man.
- (h) Physiology of reproduction puberty and menopause in human.

7. Developmental Biology :

- (a) Gametogenesis; spermatogenesis, composition of semen, *in vitro* and *in vivo* capacitation of mammalian sperm, Oogenesis, totipotency; fertilization, morphogenesis and morphogen; blastogenesis, establishment of body axes formation, fate map, gestulation in frog and chick; genes in development in chick homeotic genes, development of eye and heart, placenta in mammals.
- (b) Cell lineage, cell to cell interaction, Genetic and induced teratogenesis, role of thyroxine in control of metamorphosis in amphibia, paedogenesis and neoteny, cell death, aging.
- (c) Developmental genes in man, *in vitro* fertilization; and embryo transfer; cloning.
- (d) Stem cells: Sources, types and their use in human welfare.
- (e) Biogenetic law.

APPENDIX II

Brief particulars relating to the Services to which recruitment is made through Civil Services Examination

I. Indian Administrative Service.—(a) Appointments will be made on probation for a period of two years which may

be extended subject to certain conditions. Successful candidates will be required to undergo prescribed training at such places and in such manner and pass such examinations during the period of probation as the Central Government may determine.

(b) If in the opinion of Government, the work or conduct of a probationer is unsatisfactory or shows that he is unlikely to become efficient, Government may discharge him forthwith or, as the case may be, revert him to the permanent post, on which he holds a lien or would hold a lien had it not been suspended under the rules applicable to him prior to his appointments to the Service.

(c) On satisfactory completion of his period of probation Government may confirm the officer in the Service or if his work or conduct has, in the opinion of Government, been unsatisfactory, Government may either discharge him from the Service or may extend his period of probation for such further period, subject to certain conditions as Government may think fit.

(d) An officer belonging to the Indian Administrative Service will be liable to serve anywhere in India or abroad either under the Central Government or under a State Government.

(e) Pay Bands and Grade Pays attached to various grades of IAS:—

Junior Scale

Pay Band-3 : Rs. 15600-39100 plus Grade Pay Rs. 5400.

Senior Scale

(i) Senior Time Scale

Pay Band-3 : Rs. 15600-39100 plus Grade Pay Rs. 6600

(Two additional increments shall be granted at the time of pay fixation on promotion);

(ii) Junior Administrative Grade

Pay Band-3 : Rs. 15600-39100 plus Grade Pay Rs. 7600; (Two additional increments shall be granted at the time of pay fixation on promotion);

(iii) Selection Grade

Pay Band-4 : Rs. 37400-67000 plus Grade Pay Rs. 8700; (Two additional increments shall be granted at the time of promotion on the minimum of the pay band plus grade pay);

Super Time Scale

Pay band-4 : Rs. 37400-67000, plus Grade Pay Rs. 10000;

Above Super Time Scale

(i) HAG Scale

Rs. 67000-(increment @ 3%)-79000, Grade Pay : nil.

(ii) Apex Scale

Rs. 80000 (fixed), Grade Pay : nil.

Dearness allowance will be admissible in accordance with

the orders issued by the Central Government from time to time under the All India Service (Dearness Allowance) Rules, 1972.

A probationer will start on the junior time scale and be permitted to count the period spent on probation towards leave, pension or increment in the time scale.

(f) **Provident Fund.**—Officers of the Indian Administrative Service are governed by the All India Service (Provident Fund) Rules, 1955, as amended from time to time.

(g) **Leave.**—Officers of the Indian Administrative Service are governed by the All India Service (Leave) Rules, 1955 as amended from time to time.

(h) **Medical Attendance.**—Officers of the Indian Administrative Service are entitled to medical attendance benefits admissible under the All India Service Medical Attendance Rules, 1954, as amended from time to time.

(i) **Retirement Benefit.**—Officers of the Indian Administrative Service appointed on the basis of Competitive examination are governed by the All India Services (Death-cum-Retirement Benefits) Rules, 1958 as amended from time to time.

2. Indian Foreign Service.—(a) Appointment will be made on probation for a period of two years which may be extended. Successful candidates will be required to pursue a course of training in India for approximately eighteen months. Thereafter they may be posted as Third Secretaries or Vice Consuls in Indian Missions abroad. During their period of training the probationers will be required to pass one or more departmental examinations before they become eligible for confirmation in Service.

(b) On the conclusion of his period of probation to the satisfaction of Government and on his passing the prescribed examination, the Probationer is confirmed in his appointment. If however, his work or conduct has in the opinion of the Government, been unsatisfactory, Government may either discharge him from the Service or may extend his period of probation for such period, as they may think fit, or may revert him to his substantive post, if any.

(c) If, in the opinion of Government, the work or conduct of an Officer on probation is unsatisfactory or shows that he is not likely to prove suitable for the Foreign Service, Government may either discharge him forthwith or may revert him to his substantive post, if any.

(d) Scale of pay (Pre-revised).

Junior Scale.—Rs. 8,000-275-13,500

Officers appointed to the Indian Foreign Service shall be eligible for appointment to the Senior Scale (Rs. 10,650-325-15,850) and Junior Administrative Grade (Rs. 12,750-375-16,500) on completion of four years and in the 9th year of service respectively.

In addition there are posts in the Selection Grade, Super Time Scale and above carrying pay between Rs. 15,100 and Rs. 26,000 to which IFS Officers are eligible for promotion.

(e) A probationer will receive the following pay during probation :

First Year.—Rs. 8,000 per mensem.

Second Year.—Rs. 8,275 per mensem.

NOTE 1.—A probationer will be permitted to count the period spent on probation towards leave, pension or increment in the time-scale.

NOTE 2.—Annual increments during probation will be contingent on the probationer passing the prescribed test if any and showing progress to the satisfaction of Government. Increments can also be earned in advance by passing the departmental examination.

NOTE 3.—The pay of the Government servant, who held a permanent post other than a tenure post in substantive capacity prior to his appointment as a probationer, will be regulated, subject to the provisions of F.R. 22-B(i).

(f) An officer belonging to the Indian Foreign Service will be liable to serve anywhere in or outside India.

(g) During service abroad I.F.S. Officers are granted foreign allowance according to their status to compensate them for the increased cost of living and of servants and also to meet the special responsibilities in regard to entertainment. In addition, the following facilities are also admissible to I.F.S. Officers during service abroad :

- (i) Free furnished accommodation according to status.
- (ii) Medical attendance facilities under the Assisted Medical attendance Scheme.
- (iii) One set of Home Leave Passage is given during each posting abroad for a normal tenure of 2/3 year, for self and dependent family members. In addition two single Emergency Passages are given during an officer's entire career for self or a member of his family to travel to India for reasons of personal or family emergency.

(iv) Annual return air passage for children between the ages of 6 and 22 studying in India to visit their parents during vacation, subject to certain conditions.

(v) Children education allowance for a maximum of two children between ages 5 and 20 studying at the station of the officer's posting in any of the schools approved by the Ministry of External Affairs.

(h) Central Civil Services (Leave Rules, 1972) as amended from time to time, will apply to members of the Service subject to certain modifications. For service abroad I.F.S. officers are entitled under the IFS (PLCA) Rules, 1961 to an additional credit of leave to the extent of 50 per cent to Earned Leave admissible under the C.C.S. (Leave) Rules, 1972, for the period of effective service rendered abroad.

(i) **Provident Fund.**—Officers of the Indian Foreign Service are governed by the General Provident Fund (Central Service) Rules, 1960.

(j) **Retirement Benefits.**—Officers of the Indian Foreign Service appointed on the basis of competitive examination are governed by the Central Civil Service (Pension) Rules, 1972.

(k) While in India Officers are entitled to such concessions as are admissible to other Government servants of equal and similar status.

3. Indian Police Service.—(a) Appointment will be made on probation for a period of two years which may be extended subject to certain conditions. Successful candidates will be required to undergo prescribed training at such places and in such manner and pass such examinations during the period of probation as Government may determine.

(b) and (c) As in clause (b) and (c) for the Indian Administrative Service.

(d) An officer belonging to the Indian Police Service will be liable to serve anywhere in India or abroad either under the Central Government or under a State Government.

(e) Scales of Pay :—

Rank	Time-Scale	Pay Scale		
		Revised		Pre-revised
		Pay-scale	Grade Pay	
SP	Junior Scale	Rs. 15,600-39,100	5400	Rs. 8,000-275-13500
	Senior Scale	Rs. 15,600-39,100	6600	Rs. 10,000-325-15200
	Junior Administrative Grade	Rs. 15,600-39,100	7600	Rs. 12,000-375-16,500
	Selection Grade	Rs. 37,400-67,000	8700	Rs. 14,300-400-18,300
DIG	Super-time Scale	Rs. 37,400-67,000	8900	Rs. 16,400-450-20,000
IG	Super-time Scale	Rs. 37,400-67,000	10,000	Rs. 18,400-500-22,400
ADG	Above Super-time Scale	Rs. 37,400-67,000	12,000	Rs. 22,400-525-24,500
DG	Above Super-time Scale	HAG-Rs. 75,500-80,000	Nil	Rs. 24,050-650-26,000
		(Increment @ 3%) Rs. 80,000 (Fixed)		Rs. 26,000 (Fixed)

Dearness allowance will be admissible in accordance with the orders issued by the Central Government from time to time under the All India Services (Dearness Allowance) Rules, 1972.

A probationer will start on the junior time scale and be permitted to count the period spent on probation towards leave pension or increment in the time scale.

(f) to (i) As in clauses (f), (g), (h) and (i) for the Indian Administrative Service.

4. Indian P and T Accounts and Finance Service.—(a) Appointments will be made on probation for a period of 2 years including the Foundational Course, provided that this period may be extended if the officer on probation has not qualified for confirmation by passing the prescribed examinations.

(b) If, in the opinion of Government, the work and conduct of an officer on probation is unsatisfactory, or shows that he is unlikely to become efficient, the Government may discharge him forthwith or, as the case may be, revert to the management post on which he holds a lien under the rules applicable to his prior to his appointment to the service.

(c) On the conclusion of his period of probation Government may confirm the officer in his appointment or if his work or conduct has in the opinion of the Government been unsatisfactory. Government may either discharge him from the service or may extend his period of probation for such further period as Government may think fit or may revert him to his substantive post, if any.

(d) "The Department of Posts is one of the constituent department serviced (by the Service) as per Indian Posts and Telecommunications Accounts and Finance Service Gr. "A" Recruitment Rules, 2001. The Recruitment to posts in the Department of Telecom and in the Department of Posts would be made through UPSC."

(e) The Indian P&T Accounts and Finance Service carries with it a definite liability for service in any part of India.

(f) Scales of Pay. (Pre-revised)

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- (i) Junior Time Scale.—[Rs. 8,000-275-13,500]
 - (ii) Senior Time Scale.—[Rs. 10,000-325-15,200]
 - (iii) Junior Administrative Grade.—[Rs. 12,000-375-16,500] (Ordinary Grade)
 - (iv) Junior Administrative Grade (Selection Grade).—[Rs. 14,300-400-18,300]
 - (v) Senior Administrative Grade.—[Rs. 18,400-500-22,400]
 - (vi) Senior DDG.—[Rs. 22,400-525-24,500] and
 - (vii) Advisor (Finance) [Rs. 22,400-600-26,000]
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(g) The pay of a Government servant who held a permanent post other than a tenure post in a substantive capacity prior to his appointment as probationer will however, be regulated subject to the provisions of F.R. 22 (b) (i).

5. Indian Audit and Accounts Service.—(a) Appointment will be made on probation for a period of 2 years provided that this period may be extended if the officer on probation has not qualified for confirmation by passing the prescribed departmental examination, repeated failures to pass the departmental examination within a period of three years will involve loss of appointment or as the case may be reversion to the permanent post on which he holds a lien under the rules applicable to him prior to his appointment to the service.

(b) If in the opinion of Government or the Comptroller and Auditor General, as the case may be, the work or conduct of an officer on probation is unsatisfactory or shows that he is unlikely to become efficient. Government may discharge him forthwith or as the case may be revert him to the permanent post on which he holds a lien under the rules applicable to him prior to his appointment to the service.

(c) On the conclusion of his period of probation Government or the Comptroller and Auditor General, as the case may be, may confirm the officer in his appointment or if his work or conduct has in the opinion of Government or the Comptroller and Auditor General, as the case may be, been unsatisfactory Government may either discharge him from the service or may extend his period of probation for such further period as Government may think fit, provided that in respect of appointments to temporary vacancies there will be no claim to confirmation.

(d) In view of the possibility of the separation of Audit from Accounts and other reforms the constitution of the Indian Audit and Accounts Service is liable to undergo changes and any candidate selected for that Service will have no claim for compensation in consequence of any such changes and will be liable to serve either in the separated Accounts Offices under the Central or State Governments or in the Statutory Audit Offices under the Comptroller and Auditor General and to be absorbed finally if the exigencies of service required it in the cadre on which posts in the separated Accounts offices under the Central or State Governments may be borne.

(e) The Indian Audit and Accounts Service carries with it a definite liability for service in any part of India as well as for field service in or out of India.

(f) Scales of Pay :—

Indian Audit and Accounts Service

Name of the posts	Existing Scales	Revised Pay Structure		
		Name of the Pay Bands	Corresponding Pay Scales	Corresponding Grade
Junior Time Scale	Rs. 8000-275-13500	PB-3	15600-39100	5400
Senior Time Scale	Rs. 10000-325-15200	PB-3	15600-39100	6600
Junior Administrative Grade	Rs. 12000-375-16500	PB-3	15600-39100	7600
Non-functional Selection Grade of JAG	Rs. 14300-400-18300	PB-4	37400-67000	8700
Sr. Administrative Grade	Rs. 18400-500-22400	PB-4	37400-67000	10000
Pr. AG/DG	Rs. 22400-525-24500	HAG	67000 (annual increment @ 3%)-79000	Nil
Addl. Deputy C & AG	Rs. 24050-650-26000	HAG+ Scale	75500 (annual increment @ 3%)-80000	Nil
Deputy C & AG	Rs. 26000/- (Fixed)	Apex Scale	80000 (fixed)	Nil

NOTE 1.—Probationary Officers will start on the Minimum of the time scale of I.A. and A.S. and will count their service for increments from the date of joining.

NOTE 2.—The Officers on probation may be granted the first increment with effect from the date of passing Part I of the departmental examination or on completion of one year's service whichever is earlier. The second increments may be granted with effect from the date of passing Part II of the departmental examination or on completion of two years service whichever is earlier. The third increment raising the pay to Rs. 8825 per month will be granted only on the completion of 3 years' service and subject to satisfactory completion of the specified period of probation or such other conditions as may be laid down.

NOTE 3.—The pay of a Government servant who held a permanent post other than a tenure post, in a substantive capacity prior to his appointment as probationer will however be regulated subject to the provision of F.R. 22-B (1).

NOTE 4.—IA & AS carries with it a definite liability to serve anywhere in India or abroad.

6. Indian Revenue Service (Customs & Central Excise) Group "A"

Scales of pay (Pre-revised):

Assistant Commissioner of Customs and Central Excise
Rs. 8,000-275-13,500.

Deputy Commissioner of Customs and Central Excise
Rs. 10,000-325-16,500.

Joint Commissioner of Customs and Central Excise
Rs. 12,000-375-16,500.

Additional Commissioner of Customs and Central Excise
Rs. 14,300-400-18,300.

Commissioner of Customs and Central Excise
Rs. 18,400-500-22,400.

Chief Commissioner of Customs and Central Excise
Rs. 22,400-525-24,500.

(a) Appointments will be made on probation for a period of 2 years provided that this period may be extended if the officer on probation has not qualified for confirmation by passing the prescribed departmental examinations. Repeated failures to pass the departmental examination within a period of two years will involve loss of appointment or as the case may be, reversion to the permanent post on which he holds a lien under the rules applicable to him prior to his appointment to the service.

(b) If in the opinion of the Government the work or conduct of an officer on probation is unsatisfactory or shows that he is unlikely to become efficient. Government may discharge him forthwith or as the case may be revert him to the permanent post on which he holds a lien under the rules applicable to him prior to his appointment to the service.

(c) On the conclusion of his/her period of probation Government may confirm the officer in his/her appointment or if his/her work or conduct has in the opinion of Government been unsatisfactory Government may either discharge him/her from the service or may extend his/her period of probation for such further period as Government may think fit or may revert him to his substantive post, if any provided that in respect of appointments to temporary vacancies there will be no claim to confirmation.

(d) The Indian Revenue Service (Customs & Central Excise) Group "A" carries with it a definite liability for service in any part of India.

NOTE 1.—A probationary officer will start at the minimum of the time scale of pay of Rs. 8000-275-13500 and will count his/her service for increments from the date of joining.

NOTE 2.—The pay of a Government servant who held a permanent post other than a tenure post in a substantive capacity prior to his appointment as probationer in the Indian Revenue Service (Customs & Central Excise) Group "A" will be regulated subject to the provisions of F.R. 22-B(1).

NOTE 3.—During the period of probation, an officer will undergo departmental training at the Directorate of Training (Customs and Central Excise) New Delhi and also fundamental course training at the Lal Bahadur Shastri National Academy of Administration Mussoorie. He/She will have to pass Part I and Part II of the Departmental Examination. The increments of the Probationers will be regulated as under :

“The first increment raising the pay to Rs. 8275 will be granted with effect from the date of passing of one of the two parts of the departmental examination or on completion of one year's service, whichever is earlier. The second increment raising the pay to Rs. 8550 will be granted with effect from the date of passing the second part of examination or on completion of two years' service whichever is earlier. The third increment raising pay to Rs. 8825 will however, be granted only on completion of 3 years' service and subject to satisfactory completion of probation and any other period specified in that behalf and any other condition which may be prescribed by the Government.”

NOTE 4.—It should be clearly understood by the probationers that the appointment would be subject to any change in the constitution of the Indian Revenue Service (Customs & Central Excise) Group “A” which the Government of India may think proper to make from time to time and that they would have no claim for compensation in consequence of any such change.

7. Indian Defence Accounts Service

1. Scale of pay :

- (a) Junior Time Scale (Assistant Controller of Defence Accounts and equivalent)—Rs. 8,000-275-13,500 (pre-revised)/Rs. 15,600—39,100 plus 5,400 (Grade Pay) (revised).
- (b) Senior Time Scale (Deputy Controller of Defence Accounts and equivalent)—Rs. 10,000-325-15,200 (pre-revised)/Rs. 15,600—39,100 plus 6,600 (Grade Pay) (revised).
- (c) Junior Administrative Grade (Joint Controller of Defence Accounts and equivalent)—Rs. 12,000-375-16,500 (pre-revised) Rs. 15,600—39,100 plus 7,600 (Grade Pay) (revised).
- (d) Junior Administrative Grade (Selecton Grade) (Additional Controller of Defence Accounts and equivalent)—Rs. 14,000-400-18,300 (pre-revised) Rs. 37,400—67,000 plus 8,700 (Grade Pay) (revised).
- (e) Senior Administrative Grade (Controller of Defence Accounts and equivalent)—Rs. 18,400-500-22,400 (pre-revised)/Rs. 37,400—67,000 plus 10,000 (Grade Pay) (revised).
- (f) Principal Controller of Defence Accounts and equivalent 22,400-525-24,500 (pre-revised)/Rs. 67,000-(annual increment @ 3%)-79,000 (revised).
- (g) Additional Controller General of Defence Accounts and equivalent Rs. 24,500-650-26,000 (pre-revised)/Rs. 75,500-(annual increment @ (3%)-80,000 (revised)

- (h) Controller General of Defence Accounts (Head of the Department)—Rs. 26,000 Fixed (pre-revised)/Rs. 80,000 (Fixed) (revised)

A Probationary Officer will start at the minimum of the Time Scale of Pay of Rs. 8,000-275-13,500 (pre-revised)/Rs. 15,600-39,100 plus 5,400 (Grade pay) (revised).

3. Appointments will be made on probation for a period of two years, during which the Probationers will have to qualify for confirmation by passing the prescribed Departmental Examinations. This period may be extended by the Government upto a total of four years, if considered necessary. Repeated failure to pass the probation (including extension thereof) will result in termination of service. Extension of probation beyond the normal period of two years may entail loss of seniority. Further, if during the period of probation, if any of the probationers are held to be unsuitable in any manner for employment in the Indian Defence Accounts Service, their services may be terminated by the Government without notice. The appointment is subject to any change in the Constitution of the Indian Defence Accounts Service, which the Government of India may think it proper to name and that you will have no claim for any compensation in consequence of such change.

4. Seniority of person recruited on the basis of results of Civil Services Examination conducted by the Commission in any year to the posts in the Junior Time Scale shall be fixed in accordance with the rules and orders on the subject and with reference to their merit position as recommended by the Union Public Service Commission based on the Competitive Examination. Provided that any probationer appointed on the basis of earlier selection shall rank above the persons appointed on the basis of subsequent selection.

5. The acceptance of this appointment in the Indian Defence Accounts Service involves a definite liability for field service in or out of India as well as for service in any part of the country.

6. During the period of probation the officers will undergo training in three phases : (1) Foundation course at Lal Bahadur Shastri National Academy of Administration, Mussoorie or any other equivalent Academy (duration—three months), (2) A certificate course in MBA (Finance) at the National Institute of Financial Management, Faridabad (duration—10 months), and (3) Departmental training at National Academy of Defence Financial Management, Pune (duration—10 months).

7. At the end of the training period the officers will be posted as Assistant Controller of Defence Accounts/Assistant Controller of Finance and Accounts (Factories) and equivalent to any one of the following organisations :—

- (1) Principal Controller/Controller of Defence Accounts (Army Commands).
- (2) Principal Controller/Controller of Defence Accounts (Air Force).
- (3) Principal Controller of Defence Accounts (Navy).
- (4) Principal Controller/Controller of Defence Accounts (Pensions).

- (5) Principal Controller Accounts (Ordnance Factories).
- (6) Principal Controller/Controller of Defence Accounts (Research and Development).
- (7) Principal Controller/Controller of Defence Accounts (Border Roads).
- (8) Integrated Financial Advisors (Army/Navy/Air Force/Border Road/Coast Guard/R & D).
- (9) Any other Principal Controller/Controller Officer.

8. Indian Revenue Service (I.T.) Group A—

(a) Appointments will be made on probation for a period of 2 years provided that this period may be extended if the officer on probation has not qualified for a confirmation by passing the prescribed departmental examinations. Repeated failures to pass the departmental examinations within a period of 3 years will involve loss of appointment or reversion to his substantive post, if any.

(b) If in the opinion of Government the work or conduct of an officer on probation is unsatisfactory or shows that he is unlikely to become an efficient Income-tax Officer the Government may discharge him forthwith or may revert him to its substantive post, if any.

(c) On the conclusion of his period of probation Government may confirm the officer in his appointment or if his work or conduct has in the opinion of Government been unsatisfactory. Government may either discharge him from the service or may extend his period of probation for such further period as Government may think fit provided that in respect of appointment to temporary vacancies there will be no claim to confirmation.

(d) If the power to make appointment in the service is delegated by Government to any officer, that officer may exercise any of the powers of Government described in the above clauses.

(e) Scale of pay (Pre-revised):—

- (i) Assistant Commissioner of Income-tax, group junior scale Rs. 8000—275—13500.
- (ii) Deputy Commissioner of Income-tax/Deputy Director of Income-tax. Rs. 10000—325—15200
- (iii) Joint Commissioner of Income-tax/Joint Director of Income-tax. Rs. 12000—375—16500
- (iv) Additional Commissioner of Income-tax. Rs. 14300—400—18300
- (v) Commissioner of Income-tax. Rs. 18400—500—22400
- (vi) Chief Commissioner of Income-tax/Director General of Income-tax. Rs. 22400—525—24500.

During the period of probation an officer will undergo training at Lal Bahadur Shastri National Academy of Administration, Mussoorie and the National Academy of Direct Taxes, Nagpur. At the end of the training at Mussoorie, he/she will have to pass the end-of-course test. In addition departmental examination will also have to be passed during

the period of probation. On completion of one year of service his/her pay will be raised to Rs. 8275. On passing the single departmental examination the pay will be raised to Rs. 8550. The pay beyond the stage of Rs. 8550 will not be allowed unless he/she is confirmed and has completed 3 years of service subject to such other condition as may be found necessary.

In case he/she does not pass the end-of-the course test at the Academy, the first increment will be postponed by one year from the date on which he/she would have drawn it or up to the date on which under the departmental regulations, the second increment accrues, whichever is earlier.

(1) The seniority amongst direct recruits, inter-se shall be determined on the basis of performance in the Civil Services Examination conducted by the Union Public Service Commission, in the Foundational Course and in the Professional Training conducted in the National Academy of Direct Taxes, Nagpur and the weightage to be given in such performances would be as indicated in the parenthesis—Civil Services Examination (76.67%), Foundational Course (8.33%) and Professional Training (15%).

Note.—It should clearly understood by probationer that their appointment would be subject to any change in the constitution of the Indian Revenue Service Group 'A' which the Government of India may think proper to make from time to time and that they would have no claim for compensation in consequences of any such changes.

9. Indian Ordnance Factories Service.—Group 'A' (Administration).—

- (a) Selected candidates will be appointed on probation for a period of 2 years. The period of probation may be reduced or extended by the Government on the recommendation of Director General, Factories/Chairman Ordnance Factory Board. Probationer will undergo such training as shall be provided by the Government and are required to pass departmental and language test as Government may prescribe. The language test will be a test in Hindi. On the conclusion of period of probation Government will confirm the officer in his appointment. If, however, during or at the end of the period of probation his work or conduct has in the opinion of Government been unsatisfactory, Government may either discharge him or extend his period of probation for such period as Government may think fit.
- (b) (i) Selected Candidates shall if so required, be liable to serve as Commissioned Officers in the Armed Forces for a period of not less than four years including the period spent on training, if any provided that such persons : (i) shall not be required to serve as aforesaid after the expiry of ten years from the date of appointment and (ii) shall not ordinarily be required to serve as aforesaid after attaining the age of forty years.

(ii) The candidates shall also be subject to Civilians in Defence Services (Field Liability) Rules, 1957 published under No. S.R.O. 92 dated 9th March, 1957 as amended. They will be medically examined in accordance with medical standard laid down therein.

(c) The following are the rates of pay admissible :—

Jr. Time Scale	Rs. 15,600-39100 G.P. 5400
Sr. Time Scale	Rs. 15,600-39100 G.P. 6600
Sr. Time Scale (NF)	Rs. 15,600-39100 G.P. 7600
Jr. Admn. Grade (F)	Rs. 37,400-67000 G.P. 8700
Sr. Admn. Grade	Rs. 37,400-67000 G.P. 10000
Sr.GM/Sr. DDG/HAG	Rs. 67,000-79000
Addl. DGO/Member (OFB)	Rs. 75500-80000
DGO/Chairman OFB	Rs. 80000 (Fixed)

NOTE. The pay of Government servant who held a permanent post other than a tenure post in a substantive capacity to his appointment as a probationer will be regulated as admissible under the rules.

(d) The probationer will draw pay in the prescribed scale of pay Rs. 15600-39100 G.P. 5400. During the period of probation, they will be required to undergo training in various branches of department National Academy of Defence Production Ambajhari, Nagpur and/or in the Lal Bahadur Shastri Academy of Administration, Mussoorie, in a foundational course of training.

(e) A probationer shall be liable to refund the entire cost of his training and any other payments made to him during the period of training/probation, if he/she wishes to resign from the service within a period of five years from the date of expiry of his training/probation or if he/she withdraws from training/probation. A bond of Rs. 1,00,000 (Rupees One Lakh) to that effect shall be executed by the probationer at the time of appointment.

(f) Indian Ordnance Factories Service - Group 'A' consists of the posts or grades or time scales mentioned in 9(c) and comprises of the following categories of officers, namely :—

- (i) Engineers (Mechanical/Electrical/Electronics and Telecommunications/Civil)
- (ii) Chemical Engineering
- (iii) Metallurgical Engineering
- (iv) Leather Technologists
- (v) Clothing Technicians
- (vi) Administrative Officers.

NOTE.—The Administrative Officers are ordinarily recruited through Civil Services Examination (CSE). Engineers at Sl. No. (i) are ordinarily recruited through Engineering Services Examination (ESE), Sl. No. (ii) to (v) are recruited through specialist Examination and/or interview conducted by UPSC.

10. Indian Postal Service.—(a) Selected candidates will be under training in the department for a period which will not ordinarily exceed two years. During this period they will be required to pass the prescribed departmental test.

(b) If in the opinion of Government the work or conduct of an officer under training is unsatisfactory or shows that he is unlikely to become efficient, Government may discharge him forthwith or may revert him to his substantive post, if any.

(c) On satisfactory completion of the prescribed training and passing the prescribed Departmental tests, Government may confirm the officer in his appointment or if his work or conduct has, in the opinion of the Government, been unsatisfactory Government may either discharge him from the service or may extend his period of training for such further period as Government may think fit.

(d) If power to make appointment in the service is delegated by Government to any officer, that officer may exercise any of the powers of Government described in the above clauses.

(e) Scales of pay :—

- (i) Junior Time Scale—Rs. 8000-275-13500
- (ii) Senior Time Scale—Rs. 10000-325-15200
- (iii) Junior Administrative Grade—Rs. 12000-375-16500
- (iv) Junior Administrative Grade (Selection Grade)—Rs. 14300-400-18300
- (v) Senior Administrative Grade—Rs. 18400-500-22400
- (vi) Sr. Deputy Director General/Chief Post Master General—Rs. 22400-525-24500
- (vii) Principal Chief Post Master General—Rs. 22400-600-26000
- (viii) Members of the Postal Services Board—Rs. 24050-650-26000.

(f) The pay of a Government servant who held a permanent post other than a tenure post in a substantive capacity prior to his appointment as a probationer will be regulated subject to the provisions of F.R. 22-B (1).

(g) It should be clearly understood by the officers on probation that their appointment would be subject to any change in the constitution of the Indian Postal Service which Government of India may think proper to make from time to time and that they would have no claim for compensation in consequence of any changes.

(h) While fixing the *inter se* seniority of direct recruits in the Junior Time Scale, the marks obtained by direct recruits in the Civil Services Examination and the marks obtained by them in the Probationary Training shall be taken into account.

(i) Officers of the Indian Postal Service are liable to serve in the Army Postal Service in India or abroad as required by Government.

(j) In the service there are at present 3 posts in the scale of Rs. 24050-650-26000, 3 posts in the scale of Rs. 22400-600-26000, 20 posts in the scale of Rs. 22400-525-24500, 58 posts in the scale of Rs. 18400-500-22400 and

91 posts in the scale of 14300-400-18300/12000-375-16500 (Non-Functional Selection Grade and the Junior Administrative Grade).

11. **Indian Civil Accounts Service.**—(a) Appointment will be made on probation for a period of 2 years provided that this period may be extended if the officer on probation has not qualified for confirmation by passing the prescribed departmental examinations. Repeated failure to pass the departmental examinations within a period of three years will involve loss of appointment.

(b) If in the opinion of Government, the works or conduct of an officer on probation is unsatisfactory, or shows that he is unlikely to become efficient, Government may discharge him forthwith or may revert him to his substantive post, if any.

(c) On the conclusion of his period of probation Government may confirm the officer in his appointment or if his work or conduct has, in the opinion of Government been unsatisfactory. Government may, either discharge him from the service or may extend his period of probation for such further period as Government may think fit, provided that in respect of appointments to temporary vacancies there will be no claim to confirmation.

(d) It should be clearly understood by the Officer in probation that the appointment would be subject to any change in the Constitution of the Indian Civil Accounts Service, which the Government of India may think proper to make from time to time and that they would have no claim for compensation in consequence of any such changes.

(e) Scales of pay :—

Sl. No.	Post	Name of Pay Band/Scale	Corresponding Pay Band/Scale	Grade Pay
(1)	(2)	(3)	(4)	(5)
1.	Controller General of Accounts	Apex Scale	80000 (Fixed)	Nil
2.	Additional Controller General of Accounts	HAG+Scale	75500 (annual increment @ 3%) 80000	Nil
3.	Principal Chief Controller of Accounts	HAG Scale	67000 (annual increment @ 3%) 79000	Nil
4.	Senior Administrative Grade (Jt.CGA/CCA)	PB-4	37400-67000	10000
5.	Selection Grade in Junior Administrative Grade (Dy. CGA/CA)	PB-4	37400-67000	8700

(1)	(2)	(3)	(4)	(5)
6.	Junior Administrative Grade (Dy. CGA/CA)	PB-3	15600-39100	7600
7.	Senior Time Scale (Asstt. CGA/Dy. CA)	PB-3	15600-39100	6600
8.	Junior Time Scale (ACA)	PB-3	15600-39100	5400

NOTE 1.—Probationary officer will start on the minimum of the scale of ICAS and will count their service for increments from the date of joining.

“The officers on probation will not be allowed the pay above the stage of Rs. 15600+5400 unless they pass the departmental examination in accordance with the rules which will be prescribed from time to time.”

NOTE 3.—The pay of Government servant who held a permanent post other than a tenure post in a substantive capacity prior to his appointment as probationer will however be regulated subject to the provision of F.R. 22(B)(1).

12. **Indian Railway Traffic Service :**

13. **Indian Railway Accounts Service :**

14. **Indian Railway Personnel Service :**

15. **Group ‘A’ Posts in the Railway Protection Force :**

(a) **Probation.**—Candidates recruited in these Services except IRAS, IRTS and IRPS will be on probation for a period of three years during which they will undergo training for two years and put in a minimum of one year's probation in a working post. If the period of training has to be extended in any case due to the training having not been completed satisfactorily the total period of probation will be correspondingly extended. Even if the work during the period of probation in the working is found not to be satisfactory, the total period of probation will be extended as considered.

However, the candidates recruited to the Indian Railway Accounts Service Indian Railway Personnel Service and Indian Railway Traffic service will be appointed as Probationers for a period of 1.5 years during which they will undergo training. If the period of training has to be extended in any case, due to the training having not been completed satisfactorily the total period of probation will also be correspondingly extended.

(b) **Training.**—All the probationers will be required to undergo training for a period of 1.5 years in accordance with the prescribed training syllabus for the particular Service/post at such places and in such manner and pass such examination during this period as the Government may determine from time to time.

(c) **Termination of appointment.**—

(i) The appointment of probationers can be terminated by three months notice in writing on either side during the period of probation.

Such notice is not, however, required in cases of dismissal or removal as a disciplinary measure after compliance with the provisions of clause (2) of Article 311 of the Constitution and compulsory retirement due to mental or physical incapacity. The Government, however, reserve the right to terminate the services forthwith.

- (ii) If in the opinion of the Government, the work or conduct of a probationer is unsatisfactory or shows that he is unlikely to become efficient. Government may discharge him

forthwith or may revert him to his substantive post, if any.

- (iii) Failure to pass the departmental examinations may result in termination of services. Failure to pass the examination in Hindi or an approved standard within the period of probation shall involve liability to termination of services.

(d) **Confirmation.**—On the satisfactory completion of the period of probation and on passing all the prescribed department and Hindi examinations, the probationer will be confirmed in the Junior Scale of the Service if they are considered fit for appointment in all respects.

(e) **Scale of pay.**—Indian Railway Traffic Service/Indian Railway Accounts Services/Indian Railway Personne! Service

Sl. No.	Grade	Name of Pay Band/Scale	Corresponding Scale	Corresponding Grade Pay
1.	Junior Scale	PB-3	Rs. 15600-39100	Rs. 5400
2.	Senior Scale	PB-3	Rs. 15600-39100	Rs. 6600
3.	Junior Administrative Grade	PB-3	Rs. 15600-39100	Rs. 7600
4.	Senior Administrative Grade	PB-4	Rs. 37400-67000	Rs. 10000

In addition there are supertime scale post carrying pay between Rs. 37400 and Rs. 80000 to which the officers of the above service are eligible.

Sl. No.	Grade	Name of Pay Band/Scale	Corresponding Scale	Corresponding Grade Pay
1.	Junior Scale	PB-3	Rs. 15600-39100	Rs. 5400
2.	Senior Scale	PB-3	Rs. 15600-39100	Rs. 6600
3.	Senior Commandant HQs	PB-3	Rs. 15600-39100	Rs. 7600
4.	Deputy Inspector General	PB-4	Rs. 37400-67000	Rs. 8900
5.	Inspector General	PB-4	Rs. 37400-67000	Rs. 10000
6.	Director General	HAG+Scale	Rs. 75500-(annual Increment @ 3% 80000)	Nil

A probationer will start on the minimum of Junior Scale and will be permitted to count the period spent on probation towards leave, pension and increments in time scale.

Dearness and other allowances will be admissible in accordance with the orders issued by the Government of India from time to time.

Failure to pass the departmental and other examinations during the period of probation may result in stoppage or postponement of increments.

(f) **Refund of the Cost of Training.**—If for any reason, which, in the opinion of the Government, are not beyond the control of the probationers, a probationer, wishes to withdraw from training or probation he shall be liable to refund any moneys paid to him, including the pay and allowances, travelling expenses to join appointment and all expenses that shall or may have been incurred by the Central Government for the Probationary Training. For this purpose Probationers will be required to execute a bond, a copy of which will be enclosed along with their offers of appointment. The Probationers permitted to apply for appointment to Indian Administrative Service, Indian Foreign Service etc. will not however, be required to refund the cost of training.

(g) **Leave.**—Officers of the Service will be eligible for leave in accordance with the Leave Rules in force from time to time.

(h) **Medical attendance.**—Officers will be eligible for medical attendance and treatment in accordance with the Rules in force from time to time.

(i) **Passes and Privilege Ticket Order.** Officers will be eligible for free Railway Passes and Privilege Ticket Orders in accordance with the Rules in force from time to time.

(j) **Provident Fund and Pension.**—Candidates recruited to the Service will be governed by the Railway Pension Rules and shall subscribe to the State Railway Provident Fund (Non-contributory) under the rules of that Fund as in force from time to time.

(k) Candidates recruited to the Service/post are liable to serve in any Railway or Project in or out of India.

NOTE. Candidates recruited to the Railway Protection Force will in addition to governed by the provisions contained in the R.P.F. Act, 1957 and the R.P.F. Rules, 1959.

16. Indian Defence Estates Service, Group 'A'.—(a)

(i) A candidate selected for appointment shall be required to be on probation for a period which shall not ordinarily exceed 2 years. During this period he shall be required to undergo such course of training as may be prescribed by Government.

(ii) The pay of a Government servant who held a permanent post other than a tenure post in a substantive capacity prior to his appointment as probationer will however be regulated subject to the provisions of F.R. 22-B(i).

(b) During the period of probation a candidate will be required to pass the prescribed departmental examination.

(c) (i) If in the opinion of Government, the work or conduct of any Officer on probation is unsatisfactory or shows that he is unlikely to become efficient, Government may discharge him after apprising him the grounds on which it is proposed to do so and after giving him an opportunity to show cause in writing before such order is passed.

(ii) If at the conclusion of the period of probation an Officer has not passed the Departmental Examination mentioned in sub-para (b) above. Government may, in its discretion, either discharge him from service or if the circumstances of the case so warrant, extend the period of probation for such period as Government may consider fit.

(iii) On the conclusion of the period of probation Government may confirm an officer in his appointment, or if his work or conduct has, in the opinion of Government been unsatisfactory, Government may either discharge him after apprising him of the grounds on which it is proposed to do so and after giving him an opportunity to show cause in writing before such order is passed or extends the period of probation for such further period Government may consider fit.

(d) No annual increment which may become due will be admissible to a member of the service during his probation unless he has passed the departmental examination. An increment which was not thus drawn will be allowed from the date of passing of the departmental examination.

(e) In case any of the Probationer does not pass the 'end-of-the-course test' at Lal Bahadur Shastri National Academy of Administration, Mussorie/National Academy of Direct Taxes, Nagpur/SVP National Police Academy, Hyderabad his first increment will be postponed by one year from the date on which he would have drawn it or up to the date on which under the departmental regulations, the second increment accrues whichever is earlier.

(f) The scale of pay are as under : (Pre-Revised)—

Director General of Defence Estates	Rs. 26000 (fixed)
Principal Director & Equivalent posts, Higher Administrative Grade	Rs. 22400-525-24500
Senior Administrative Grade	Rs. 18400-500-22400
Junior Administrative Grade (Selection Grade)	Rs. 14300-400-18300

Junior Administrative Grade (Ordinary)	Rs. 12000-375-16500
Senior Time Scale	Rs. 10000-325-15200
Junior Time Scale	Rs. 8000-275-13500

(g) (i) In the Junior Time Scale, officers will be normally appointed as Chief Executive Officers in Cantonments notified under the Cantonments Act, 2006/Defence Estates Officers/Staff appointments etc.

(ii) In the Senior Time Scale, the officers will either be appointed as Chief Executive Officers/Defence Estates Officers of a Circle OR in the Staff appointments etc.

(h) All promotions from Junior Time Scale to higher scales will be done in accordance with Indian Defence Estates Service Rules, 1985 as amended from time to time.

(i) The Indian Defence Estates Service carries with it a definite liability for Service in any part of India as well as for Field Service in India.

(j) A candidate appointed to the service shall be governed by the Indian Defence Estates Service (Group 'A') Rules, 1985 as amended from time to time.

17. The Indian Information Service, Junior Grade (Gr. A).—(a) The Indian Information Service consists of posts all over India including a few abroad in various media organisations (like Press Information Bureau, Doordarshan, All India Radio, Directorate of Advertising & Visual Publicity, Directorate of Field Publicity, etc.) of the Ministry of Information and Broadcasting/Ministry of Defence (Directorate of Public Relations) requiring management skills and competency in dealing with the information and its dissemination for and on behalf of the Government so as to educate, motivate and inform the people through different media on Government policies and programmes and their implementation for the social and economic upliftment of the general masses. The Central Information Service which was constituted with effect from 1st March, 1960 has been renamed as the Indian Information Service in 1987 vide Ministry of I&B's notification No. G.S.R. 153 dated 7-3-1987.

(b) The service has at present the following grades :

Grade	Scale of Pay (Pre-revised)
I.I.S. Group 'A'	
(i) Higher Grade	Rs. 26000 fixed
(ii) Selection Grade	Rs. 22400-525-24500
(iii) Senior Administrative Grade	Rs. 18400-500-22400
(iv) Junior Administrative Grade (Non-Functional- Selection Grade)	Rs. 14300-400-18300
(v) Junior Administrative Grade	Rs. 12000-375-16500
(vi) Senior Grade	Rs. 10000-325-15200
(vii) Junior Grade	Rs. 8000-275-13500

(c) "The remaining vacancies in the Grade and also vacancies in the Higher Grade, Selection Grade, Senior Administrative Grade, Junior Administrative Grade and Senior Grade are filled up by promotion by selection from amongst officers holding duty posts in the next lower grade".

(d) (i) Direct recruits to the Junior Grade will be on probation for two years. During probation, they will be given professional training in the Indian Institute of Mass Communication, New Delhi for a period of 9 months. The period and nature of training will be liable to alteration by Government. During the training, they will have to pass departmental test(s). Failure to pass the departmental test(s) during the training period involves liability to discharge from service or reversion to substantive post, if any, on which the candidate may hold lien.

(ii) On the conclusion of period of probation, Government may confirm the direct recruits in their appointments in accordance with the rules in force. If the work or conduct of an officer on probation is unsatisfactory he will be discharged from service or his period of probation extended for such period as the Government may deem fit. If his work or his conduct is such as to show that he is unlikely to become an efficient officer of the service, he may be discharged forthwith.

(iii) Officers on probation shall start on the minimum of the time scale of Junior Grade Group A and will count their service for increment from the date of joining.

(e) Government may post an officer to hold a field post in any organisation under the Ministry of Information and Broadcasting/Ministry of Defence (Directorate of Public Relations).

(f) As regards leave, pension and other conditions of service Officers of the Indian Information Service will be treated like other Group 'A' and Group 'B' Officers.

18. The Indian Trade Service, Group 'A' (Grade III).—

(a) Appointment to the service will be made on probation for a period of 2 years which may be extended or curtailed subject to the conditions. Successful candidates will be required to undergo prescribed training and instructions and to pass such examinations and test (including examination in Hindi) as a condition to satisfactory completion of probation at such place and in such manner during the period of probation as the Central Government may determine.

(b) If in the opinion of Government the work or conduct of a probationer is unsatisfactory or shows he is unlikely to become efficient, Government may discharge him forthwith or as the case be, revert him to the permanent post if any to which he holds the lien or would hold a lien had it not been suspended under the rules applicable to him prior to his appointment to the service or such orders as they think fit.

(c) On satisfactory completion of his period of probation, Government may confirm the officer in the service if his work or conduct has in the opinion of Government been unsatisfactory, Government may either, discharge him from

the service or extend the period of probation for such further period subject to certain conditions as Government may think fit :

Provided that in cases where it is proposed to extend the period of probation, the Government shall give notice in writing of its intention to do so to the officer.

(d) An officer appointed to the Grade III of the Service shall be liable to service anywhere in India or outside. Officers if deputed shall be liable to serve in any other Ministry or Department of the Government of India or Corporation and Industrial Undertaking of Government.

(e) Scale of pay (pre-revised) :

Sl. No.	Grade	Scale of Pay
1.	Sr. Administrative Grade (Addl. DGFT)	Rs. 18400-500-24500
2.	Selection Grade (Non-Functional)	Rs. 14300-400-18300
	Grade I (Joint Director General of Foreign Trade) & Jt. Director (E.P.)	Rs. 12000-375-16500
	Grade II (Deputy Director General of Foreign Trade) & Deputy Director (E.P.)	Rs. 10000-325-15200
	Grade III (Assistant Director General of Foreign Trade)	Rs. 8000-275-13500

The service in all the five grades is controlled by the Ministry of Commerce. The Directorate General of Foreign Trade, New Delhi which is an attached office of the Ministry of Commerce, Government of India, is the user organisation of the service.

Officers belonging to Grade III of the service will normally be heads of Sections while officers of Grade II will normally be in charge of branches consisting of one or more Sections.

Officers belonging to Grade III of the service will be eligible for promotion to Grade II of the service in accordance with the rules in force time to time.

Officers belonging to Grade II of the service will be eligible for appointment to Grade I of the service or to other higher administrative posts in the Central Government or in Corporation/Undertaking of the Government.

Officers belonging to Grade I of the service will be eligible for appointment to non-functional Selection Grade and for promotion to Sr. Administrative Grade (Addl. DGFT) in accordance with the rules in force from time to time.

(f) Direct Recruitment to Grade III of the service is made to fill 50 per cent permanent vacancies in that Grade in accordance with the Recruitment Rules for the service through Combined Civil Services Examination conducted by UPSC. The remaining 50% vacancies are filled through promotion from amongst feeder grades.

(g) **Provident Funds**—Officers appointed in the Grade III of Indian Trade Service shall be eligible to join the General Provident Fund (Central Services) and shall be governed by the rules in force regulating the Fund.

(h) **Leave**—Officer appointed to the Grade III of Indian Trade Services will be governed by the CCS (Leave) Rules, 1972 as amended from time to time.

(i) **Medical Attendance**—Officers of the Grade III of Indian Trade Service will be governed by the Civil Service (Medical Attendance) Rules, 1944 as amended from time to time.

(j) **Retirement benefits**—Officers of the Grade III of Indian Trade Service will be governed by the CCS (Pension) Rules, 1972 as amended from time to time.

(k) **Central Government Employees Group Insurance Scheme, 1980**—Officers appointed to the Grade III of Indian Trade Service will be governed by the Central Government Employees Group Insurance Scheme, 1980.

19. Indian Corporate Law Service.—(a) Appointments will be made on probation for a period of two years which may be extended subject to certain conditions. Successful candidates will be required to undergo prescribed training at such places and in such manner and pass such examination during the period of probation as the Central Government may determine.

(b) If in the opinion of Government, the work or conduct of a probationer is unsatisfactory or shows that he is unlikely to become efficient, Government may discharge him forthwith or, as the case may be, revert to the permanent post, on which he holds a lien or would hold a lien had it not been suspended under the rules applicable to him prior to his appointment to the Service.

(c) On satisfactory completion of his period of probation, Government may confirm the officer in the Service or if his work or conduct has, in the opinion of Government, been unsatisfactory, Government may either, discharge him from the Service or may extend his period of probation for such further period, subject to certain conditions as Government may think fit.

(d) An officer belonging to the Indian Corporate Law Service will be liable to serve anywhere in India or abroad under the Central Government.

(e) **Scales of pay** :—

Grade	Scale of Pay (Pre-revised)
(i) Junior Time Scale	Rs. 8000-275-13500
(ii) Senior Time Scale	Rs. 10000-325-15200
(iii) Junior Administrative Grade	Rs. 12000-375-16500
(iv) Junior Administrative Grade (Non Functional Selection Grade)	Rs. 14300-400-18300
(v) Senior Administrative Grade	Rs. 18400-500-22400
(vi) Higher Administrative Grade	Rs. 22400-24500

Dearness allowance will be admissible in accordance with the orders issued by the Central Government from time to time.

A probationer will start on the junior time scale and be permitted to count the period spent on probation towards leave, pension or increment in the time scale.

(f) The conditions of service of the members of the Service will be regulated in accordance with the Indian Corporate Law Service Rules, 2008. The conditions of service of the members of the Service in respect of matters for which no provision has been made in the Indian Corporate Law Service Rules, 2008 shall be the same as are applicable from time to time, to the Group 'A' Officers of the Central Civil Service.

20. The Armed Forces Headquarters Civil Service, Section Officers, Grade, Group B.

(a) Armed Forces Headquarters Civil Service, has at present the following grades :—

Sl. No.	Grade	Name of Pay Band/ Scale	Corresponding Pay Band/Scale	Corresponding Grade pay
1.	Principal Director (Group A)	PB-4	37400-67000 Pre-revised (Rs. 18400-500-22400)	10000
2.	Director (Group A)	PB-4	37400-67000 Pre-revised (Rs. 14300-400-18300)	8700
3.	Joint Director (Group A)	PB-3	15600-39100 Pre-revised (Rs. 12000-375-16500)	7600
4.	Deputy Director (Group A)	PB-3	15600-39100 Pre-revised (Rs. 10000-325-15200)	6600
5.	Section Officer (Group B Gazetted)	PB-2	(i) 9300-34800 (on initial Appointment) Pre-revised (Rs. 7500-250-12000)	4800
		PB-3	(ii) 15600-39100 Pre-revised (Rs. 8000-275-13500) (Non-functional scale/grade pay on completion of 4 years approved service subject to vigilance clearance)	5400 (Non-functional grade pay)
6.	Assistant (Group B Non-Gazetted)	PB-2	9300-34800 Pre-revised (Rs. 7450-225-11500)	4600

The above Service caters to the Integrated Headquarters of the Ministry of Defence (Army, Navy and Air), Defence Staff Headquarters and the Inter Service Organisations under the Ministry of Defence.

Direct Recruitment is made to the Section Officers Grade and to the Assistant Grade only.

(b) During the period of probation, or any extension thereof, officers may be required to undergo such courses of training and instructions and to pass such examinations and tests, as it may deem fit, as a condition to satisfactory completion of the probation. (Rule 10-I(4) of AFHQ Civil Service Rules, 2001).

(c) For any other matter relating to probation, the members of the service shall be governed by the instructions issued by the Government in this regard from time to time. (Rule 10-I(5) of AFHQ Civil Service Rules, 2001).

(d) In Armed Forces, Headquarters and Inter-Service Organisations of the Ministry of Defence, Section Officers will normally be heads of Sections while, Deputy Directors will normally be incharge of one or more Sections.

(e) Section Officers Grade will be eligible for promotion to the Grade of Deputy Directors in accordance with the rules in force from time to time in this behalf.

(f) Deputy Directors of the Armed Forces Headquarters Civil Service will be eligible for appointment to the Joint Director Grade of the Service and to other administrative post in accordance with the rules in force from time to time in this behalf.

(g) Joint Directors of the Armed Forces Headquarters Civil Service will be eligible for appointment to the post of Director of the Service and to other administrative posts in accordance with the rules in force from time to time in this behalf.

(h) Armed Forces Headquarters Civil Service has three posts of Principal Director [Group 'A', PB-4, 37400-67000, Grade Pay Rs. 10000 Pre-revised (Rs. 18400-500-22400)] above the level of Director. These three posts are filled by promotions from amongst Directors with three years approved service.

(i) As regards leave, pension and other conditions of service officers of the Armed Forces Headquarters Civil Service will be governed by the rules, regulations and orders in force from time to time in respect of civilians paid from Defence Service Estimates.

21. NCT of Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Civil Service—Group-B

(a) Appointments will be made on probation for a period of two years, which may be extended at the discretion of the competent authority. Candidates appointed on probation will be required to undergo such training and pass such departmental tests as the Central Government may prescribe.

(b) If in the opinion of the Government, the work or conduct of an Officer appointed to the Service on probation is found unsatisfactory or shows that he is unlikely to become an efficient Government servant, the Central Government may discharge him forthwith without assigning any reasons.

(c) An officer who has been declared to have satisfactorily completed the period of his probation shall be confirmed in the Service. However, if his work or conduct has, in the opinion of the Central Government, been found unsatisfactory, the Central Government may either discharge him from the service or may extend his period of probation for such further period as it may think fit.

(d) Grades and scales of pay :—

Sl. No.	Grade of the Service	Name of Pay Band/ Scale	Corresponding Pay Band/Scale	Corresponding Grade Pay
1.	Junior Administrative Grade-I (Group-A)	PB-4	37,400-67,000	8700
2.	Junior Administrative Grade-II (Group-A)	PB-3	15,600-39,100	7600
3.	Selection Grade-I (Group-A)	PB-3	15,600-39,100	6600
4.	Entry Grade (Group-B)	PB-2	(i) 9300-34800 (on initial appointment)	4800
		PB-3	(ii) 15,600-39,100 (on completion of 4 years approved service, subject to vigilance and integrity clearance)	5400

An officer recruited on the results of the Competitive Examination shall, on appointment to the Entry Grade of the Service, draw pay at the minimum of the scale prescribed for initial appointment to the said grade :

Provided that if he held a post, other than a tenure post, under the Central Government or the State Governments prior to his appointment to the Service, his pay shall be regulated under the provisions of the Fundamental Rules.

- (e) Officers of the Service are entitled to get Dearness Pay, Dearness Allowance, City Compensatory Allowance, House Rent Allowance and such other allowances at the rates as may be prescribed by the Central Government from time to time.
- (f) Officers appointed to the Service shall be governed by the provisions of the NCT of Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Civil Service Rules, 2003 and such other regulations or instructions as may be issued by the Central Government from time to time for the purpose of giving effect to these Rules. In regard to matters not specifically covered by the aforesaid Rules or Regulations and Orders, they shall be governed by the Rules or Regulations and Orders

applicable to corresponding officers serving in connection with the affairs of the Union.

22. NCT of Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Police Service—Group-B

- (a) Appointments will be made on probation for a period of two years, which may be extended at the discretion of the competent authority. Candidates appointed on probation will be required to undergo such training and pass such departmental tests as the Central Government may prescribe.
- (b) If in the opinion of the Government, the work or conduct of an Officer appointed to the Service on probation is found unsatisfactory or shows that he is unlikely to become an efficient Government servant, the Central Government may discharge him forthwith without assigning any reasons.
- (c) An officer who has been declared to have satisfactorily completed the period of his probation shall be confirmed in the Service. However, if his work or conduct has, in the opinion of the Central Government, been found unsatisfactory, the Central Government may either discharge him from the service or may extend his period of probation for such further period as it may think fit.
- (d) Grades and scales of pay :—

Sl. No.	Grade of the Service	Name of Pay Band/Scale	Corresponding Pay Band/Scale	Corresponding Grade Pay
1.	Junior Administrative Grade-I (Group-A)	PB-4	37,400-67,000	8700
2.	Junior Administrative Grade-II (Group-A)	PB-3	15,600-39,100	7600
3.	Selection Grade-I (Group-A)	PB-3	15,600-39,100	6600
4.	Entry Grade (Group-B)	PB-2	(i) 9300-34800 (on initial appointment)	4800
		PB-3	(ii) 15,600-39,100 (on completion of 4 years approved service, subject to vigilance and integrity clearance)	5400

An officer recruited on the results of the Competitive Examination shall, on appointment to the Entry Grade of the Service, draw pay at the minimum of the scale prescribed for initial appointment to the said grade :

Provided that if he held a post, other than a tenure post, under the Central Government or the State Governments prior to his appointment to the Service, his pay shall be regulated under the provisions of the Fundamental Rules.

- (e) Officers of the Service are entitled to get Dearness Pay, Dearness Allowance, City Compensatory Allowance, House Rent Allowance and such other allowances at the rates as may be prescribed by the Central Government from time to time.

- (f) Officers appointed to the Service shall be governed by the provisions of the NCT of Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Police Service Rules, 2003 and such other regulations or instructions as may be issued by the Central Government from time to time for the purpose of giving effect to these Rules. In regard to matters not specifically covered by the aforesaid Rules or Regulations or Orders, they shall be governed by the Rules, Regulations and Orders applicable to corresponding officers serving in connection with the affairs of the Union.

23. Pondicherry Civil Service, Group B

- (a) Appointments will be made on probation for a period of two years, which may be extended at the discretion of the competent authority. Candidates appointed on probation will be required to undergo such training and pass such departmental tests as the administrator of the Union Territory of Pondicherry may prescribe.
- (b) If in the opinion of the administrator, the work or conduct of an Officer on probation is unsatisfactory or shows that he is unlikely to become efficient, the administrator may discharge him forthwith or may revert him to his substantive post, if any.
- (c) The officer who has been declared to have satisfactorily completed the period of his probation may be confirmed in the Service. If his work or conduct has in the opinion of the administrator been unsatisfactory, he may either discharge him from the Service or may extend his period of probation for such further period as the administrator may think fit.
- (d) A person recruited on the results of competitive examination shall on appointment to the Service draw pay at the minimum of the scale of pay Rs. 6500-200-10500.
- (e) Scales of pay (Pre-revised) :—
- (i) On initial appointment —Rs. 6500-200-10500
- (ii) On fulfilling the residence requirement of 4 years —Rs. 8000-275-13500
- (iii) On fulfilling the residence requirement of 8 years —Rs. 10000-325-15200
- (iv) On fulfilling the residence requirement of 13 years —Rs. 12000-375-16500
- (v) On fulfilling the residence requirement of 18 years —Rs. 14300-400-18300

A person recruited on the results of the Competitive Examination shall, on appointment to the Service, draw pay in the entry grade scale of pay only :

Provided that if he held a permanent post other than a tenure post in a substantive capacity prior to his appointment to the Service, his pay during the period of his probation in Service shall be regulated under the provisions of sub-rule (1) of Rule 22-B of the Fundamental Rules. The pay and increments in the case of other persons appointed to the Service shall be regulated in accordance with the Fundamental Rules.

- (e) Officers of the Service are eligible for promotion to posts in the senior scale of the Indian Administrative Service in accordance with the Indian Administrative Service (Appointment by Promotion) Regulations, 1955.

- (f) Officers of the Service are governed by Pondicherry Civil Service Rules, 1967 and such other regulations as may be made or instruction issued by Administrator for the purpose of giving effect to those rules.

24. Pondicherry Police Service, Group B

- (a) Appointments will be made on probation for a period of two years, which may be extended at the discretion of the competent authority. Candidates appointed on probation will be required to undergo such training and pass such departmental tests as the administrator of the Union Territory of Pondicherry may prescribe.
- (b) If in the opinion of the administrator the work or conduct of an Officer on probation is unsatisfactory or shows that he is unlikely to become efficient the administrator may discharge him forthwith or may revert him to his substantive post, if any.
- (c) The officer who has been declared to have satisfactorily completed the period of his probation may be confirmed in the Service. If his work or conduct has in the opinion of the administrator been unsatisfactory, he may either discharge him from the Service or may extend his period of probation for such further period as the administrator may think fit.
- (d) An officer belonging to the Service will be required to serve at any place in the Union Territory of Pondicherry.

- (c) Scales of pay (pre-revised) :—

Sl. No.	Grades of the Service	Scales of Pay
1.	Junior Administrative Grade-I (Group-A)	Rs. 14,300-400-18,300
2.	Junior Administrative Grade-II (Group-A)	Rs. 12,000-375-16,500
3.	Selection Grade (Group-'A')	Rs. 10,000-325-15,200
4.	Entry Grade (Group-'B')	Rs. 6,500-200-10,500 (on initial appointment)

A person recruited on the results of Competitive Examination shall, on appointment to the Service, draw pay at the minimum of the time scale.

Provided that if he held a permanent post other than a tenure post in a substantive capacity prior to his appointment to the Service, his pay during the period of his probation in Service shall be regulated under the provisions of sub-rule (1) of Rule 22-B of the Fundamental Rules. The pay and increments in the case of other persons appointed to the Service shall be regulated in accordance with the Fundamental Rules.

- (f) Officers of the Service are governed by Pondicherry Police Service Rules, 1972 and such other regulations as may be made or instruction issued by Administrator for the purpose of giving effect to those rules.

Note : Nature of duties in the participating Services varies with the post held by the officer, i.e. assignments are different for different post held by the officer.

APPENDIX III

REGULATIONS RELATING TO THE PHYSICAL EXAMINATIONS OF CANDIDATES

The regulations are published for the convenience of candidates and enable them to ascertain the probability of their possessing the required physical standard. The regulations are also intended to provide guidelines to the medical examiners.

Note 1.—The Medical Board while conducting medical examination of the candidates who have applied against the posts reserved for physically disabled category will keep in mind the eligibility criteria for availing the reservation under physically disabled quota shall be the same prescribed under relevant provisions of the Persons with Disabilities (equal opportunity, protection of right and full participation) Act, 1995.

Note 2.—Further Government may also constitute Special Medical Board(s)/Appellate Medical Board to issue the Disability Certificate in the prescribed form to physically disabled candidates and also to conduct the regular medical examination of physically disabled candidates in terms of these regulations.

Blind candidates shall be eligible only for selection/appointment in posts which are identified as suitable for them in the Brochure on Reservations and Concessions for physically handicapped in Central Government services.

2. (a) The Government of India reserve to themselves absolute discretion to reject or accept any candidate after considering the report of the Medical Board.

The classification of various Services under the two categories, namely "Technical" and "Non-Technical" will be as under :—

A. TECHNICAL

- (1) Indian Railway Traffic Service.
- (2) Indian Police Service and other Central Police Services Group 'A' and 'B'.
- (3) Group 'A' Posts in the Railway Protection Force.

B. NON-TECHNICAL

IAS, IFS, IA and AS, IRS (Customs and Central Excise), Indian Civil Accounts Service, Indian Railway Accounts Service, Indian Railway Personnel Service, Indian Defence Accounts Service, Indian Revenue Service (IT), Indian Ordnance Factories Services, Group A, Indian Postal Service, Indian Defence Estates Service Group A, Indian P&T Accounts and Finance Service, Group A and other Central Civil Services Group A and B.

1. To be passed as fit for appointment, a candidate must be in good mental and bodily health and free from any physical defect likely to interfere with the efficient performance of the duties on his appointment.

"2. (a) In the matter of co-relation of age limit, height and chest girth of candidates of India (including Anglo-Indian race), it is left to the Medical Board to use whatever correlation figure are considered most suitable as a guide in the examination of the candidates. If there be any disproportion with regard to height, weight and chest girth, the candidates should be hospitalised for investigation and X-ray of the chest taken before the candidate is declared fit or not fit by the Board."

(b) However, for certain services minimum standard for height and chest girth without which candidates cannot be accepted, are as follows:—

	Height	Chest girth fully expanded	Expansion
(1)	(2)	(3)	(4)
(1) Indian Railway Traffic Service(s)	152 cm*	84 cm	5 cm (for men)
	150 cm*	79 cm	5 cm (for women)
(2) Indian Police Service, Group 'A' Post in Railway Protection Force and other Central Police Services Group 'A' & Group 'B'	165 cm	84 cm	5 cm (for men)
	150 cm**	79 cm	5 cm (for women)

*The minimum height prescribed is relaxable in the case of candidates belonging to Scheduled Tribes and to races such as Gorkhas, Garhwalis, Assamese, Kumaonis, Nagaland Tribal etc. whose average height is distinctly lower.

**The following relaxed minimum height standard in case of candidates belonging to the Scheduled Tribes and to the races such as Gorkhas, Assamese, Kumaonis, Nagaland are applicable to Indian Police Service and Group 'A,' Group 'B' Police Services and Group 'A' Post in Railway Protection Force.

Men	160 cms.
Women	145 cms.

3. The candidate's height will be measured as follows:—

He will remove his shoes and be placed against the standard with his feet together and the weight thrown on the heels and not on the toe or other sides of the feet. He will stand erect without rigidity and with heels calves buttocks and shoulder touching the standard; the chin will be depressed to bring the vertex of the head level under the horizontal bar and the height will be recorded in centimetres and parts of a centimetre to halves.

4. The candidate's chest will be measured as follows :

He will be made to stand erect with his feet together and to raise arms over his head. The tape will be so adjusted round the chest that its upper edge touches the inferior angles of the shoulder blades behind and lies in the same horizontal plane when the tape is taken round the chest. The arms will then be lowered to hang loosely by the side and care will be taken that the shoulders are not thrown upwards or backwards so as to displace the tape. The candidate will then be directed to take a deep inspiration several times and the maximum expansion of the chest will be carefully noted and the minimum and maximum will then be recorded in centimetres 84—89, 86—93.5 etc. In recording the measurements fractions of less than half a centimetre should not be noted.

N.B.—The height and chest of the candidates should be measured twice before coming to a final decision.

5. The candidate will also be weighed and his weight recorded in kilograms; fractions of half a kilogram should not be noted.

6. (a) The candidate's eye-sight will be tested in accordance with the following rules. The result of each test will be recorded:

(i) **General**—The candidate's eyes will be submitted to a general examination directed to the detection of any disease or abnormality. The candidate will be rejected if he suffers from any morbid conditions of eye, eyelids or contiguous structure of such a sort as to render or are likely at future date to render him unfit for service.

(ii) **Visual Acuity**—The examination for determining the acuteness of visions includes two tests—one for distant the other for near vision. Each eye will be examined separately.

(b) There shall be no limit for maximum naked eye vision but the naked eye vision of the candidates shall however be recorded by the Medical Board or other medical authority in every case, as it will furnish the basic information in regard to the condition of the eye.

(c) The following standards are prescribed for distant and near vision with or without glasses for different types of services.

(d) (i) In respect of the Technical service mentioned above and any other service concerned with the safety of public the total amount of Myopia (including the cylinder) shall not exceed minus 4.00 D. Total amount of Hypermetropia (including the cylinder) shall not exceed plus 4.00 D :

Provided that in case a candidate in respect of the services classified as "Technical" (other than the Services under the Ministry of Railways) is found unfit on grounds of high myopia the matter shall be referred to a special board of three ophthalmologists to declare whether this myopia is pathological or not. In case it is not pathological, the candidate shall be declared fit, provided he fulfils the visual requirements otherwise.

(ii) In every case of myopia, fundus examination should be carried out and the results recorded. In the event of pathological condition being present which is likely to be progressive and affect the efficiency of the candidate, he/she should be declared unfit.

(e) **Field of Vision** : The field of vision shall be tested in respect of all services by the confrontation method. When such test gives unsatisfactory or doubtful result the field of vision should be determined on the perimeter.

CLASS OF SERVICE

	IPS and other Police Services, Group 'A' and 'B' and IRTS/RPF (Technical Services)		IAS, IFS and Other Central Civil Services, Group 'A' and 'B' (Non-technical Services)	
	Better eye (corrected vision)	Worse eye	Better eye (corrected vision)	Worse eye
1. Distant vision	6/6 or 6/9	6/12 or 6/9	6/6 or 6/9	6/18 to Nil or 6/12
2. Near vision	J1**	J2**	J1** J2	J3 to Nil** J2
3. Types of corrections permitted	Spectacles		Spectacles 10L* Radial Keratotomy*/Lasik Laser Surgery	
4. Limits of refractive error permitted	+4.00 D (including cylinder)-Non-Pathological Myopia +4.00 D (including cylinder) (Hypermetropia)		None but without Pathological Myopia	
5. Colour vision requirements	High Grade		Low Grade	
6. Binocular vision needed	Yes		No	

*To be referred to a Special Board of Ophthalmologists.

** Near vision for Railway Services viz., IRTS, IRAS, IRPS and RPF is J1 in better eye and J11 in worse eye.

(f) **Night Blindness** : Broadly there are two types of night blindness : (1) as a result of Vitamin A deficiency and (2) as a result of Organic disease of Retina—common cause being Retinitis Pigmentosa. In (1) the fundus is normal, generally seen in younger age group and ill-nourished persons and improves by large doses of Vitamin A. In (2) the fundus is often involved and mere fundus examination will reveal the condition in majority of cases. The patient in this category is an adult and may not suffer from malnutrition. Persons seeking employment for higher posts in the Government will fall in this category. For both (1) and (2) dark adaptation test will reveal the condition. For (2) Specially when fundus is not involved Electro-Retinography is required to be done. Both these tests (dark adaptation and retinography) are time-consuming and require as a routine test in a medical check up. Because of these specialized set up, and equipment and thus are not possible as a technical considerations, it is for the Ministry/Department to indicate if these tests for night blindness are required to be done. This will depend upon the job requirement and nature of duties to be performed by the prospective Government employees.

For Railway Services (IRTS, IRAS, IRPS and RPF)—Night blindness need not be tested as a routine but only in special cases. No standard test for the testing of night blindness or dark adaption is prescribed. The Medical Board should be given the discretion to improvise such rough test e.g. recording of visual acuity with reduced illumination or by making the candidate recognise various objects in a darkened room after he has been there for 20 to 30 minutes. "Candidates" own statements should not always be relied upon but they should be given due consideration.

(g) **Colour Vision** : The testing of colour vision shall be essential in respect of the Technical Services mentioned above. As regards the Non-Technical Services/posts the Ministry/Department concerned will have to inform the Medical Board that the candidate is for a service requiring colour vision examination or not.

Colour perception should be graded into higher and lower grade depending upon the size of aperture in the lantern as described in the table below :—

Grade	Higher Grade Colour Perception	Lower Grade Colour Perception
1	2	3
1. Distance between the lamp and candidate	16 ft	16 ft
2. Size of aperture	1.3 mm.	13 mm.
3. Time of exposure	5 seconds	5 seconds

For the IPS and other Police Services, Group 'A' and 'B' Indian Railway Traffic Service Group A posts in the Railway Protection Force and for other Services concerned with the safety of the public, higher grade of colour vision is essential but for others lower, grade of colour vision should be considered sufficient.

Satisfactory colour vision constitutes, recognition with ease and without hesitation of signal red, green and yellow colours. The use of Ishihara's plates, shown in good light and a suitable Edrige Green's lantern shall be considered quite dependable for testing colour vision. While either of the two tests may ordinarily be considered sufficient in respect of services concerned with road, rail and air traffic, it is essential to carry out the lantern test. In doubtful cases where a candidate fails to qualify when tested by only one of the two tests, both the tests should be employed. However, both the Ishihara's plates and Edrige Green's lantern shall be used for testing colour vision of candidates for appointment to the Indian Railway Traffic Service and Group 'A' posts in the Railway Protection Force.

(h) Ocular condition other than visual acuity—

(i) Any organic disease or a progressive refractive error, which is likely to result in lowering visual acuity, should be considered a disqualification.

(ii) **Squint** : For technical services where the presence of binocular vision is essential squint, even if the vision acuity in each eye is of the prescribed standard should be considered a disqualification. For other service the presence of squint should not be considered as a disqualification if the visual acuity is of the prescribed standards. For Railways technical services binocular vision is essential.

(iii) If a person has one eye or if he has one eye which has normal vision and the other eye is ambylopic or has subnormal vision the usual effect is that the person is lacking stereoscopic vision for perception of depth. Such vision is not necessary for many civil posts. The medical board may recommend as fit, such persons provided the normal eye has—

(i) 6/6 distant vision J/I near vision with or without glasses provided the error in any meridian is not more than 4 dioptres for distant vision.

(ii) has full field of vision.

(iii) normal colour vision wherever required :

Provided the board is satisfied that the candidate can perform all the functions for the particular job in question.

The above relaxed standard of visual acuity will NOT apply to candidates for posts/services classified as "TECHNICAL" The Ministry/Department concerned will have to inform the medical board that the candidate is for a "TECHNICAL" post or not.

- (iv) Contact Lenses : During the medical examination of candidate, the use of contact lenses is not to be allowed. It is necessary that when conducting eye test the illumination of the typed letters for distant vision should have an illumination of 15 foot-candles.

GUIDELINES FOR SPECIAL OPHTHALMIC BOARD :

Special Ophthalmic Board for eye examination shall consist of 3 Ophthalmologists :

- (a) Cases where the Medical Board has recorded visual function within normal prescribed limits but suspects a disease of progressive and organic nature, which is likely to cause damage to the visual function should refer the candidate to a Special Ophthalmic Board for opinion as part of the first Medical Board.
- (b) All cases of any type of surgery on eyes, IOL, refractive corneal surgery, doubtful cases of colour defect should be referred to special Ophthalmic Board.
- (c) In such cases where a candidate is found to be having high myopia or high hypermetropia the Central Standing Medical Board/State Medical Board should immediately refer the candidates for a special Board of three Ophthalmologists constituted by the Medical Superintendent of the hospital/A.M.O. with the head of the Department of Ophthalmology of the Hospital or the senior most ophthalmologist as the Chairman of the special Board. The Ophthalmologist/Medical Officer who has conducted the preliminary ophthalmic examination cannot be a part of the Special Board.

The examination by the special Board should preferably be done on the same day. Whenever it is not possible to convene the special Board of three Ophthalmologists on the day of the medical examination by the Central Standing Medical Board/State Medical Board, the special Board may be convened at an earliest possible date.

The Special Ophthalmic Board may carry out detailed investigations before arriving at their decision.

The Medical Board's report may not be deemed as complete unless it includes the report of the Special Board for all such cases which are referred to it.

GUIDELINE FOR REPORTING ON BORDER LINE UNFIT CASES

In Border line cases of substandard visual acuity, subnormal colour vision, the test will be repeated after 15 minutes by the Board before declaring a person unfit.

7. Blood pressure

The Board will use its discretion regarding Blood Pressure. A rough method of calculating normal maximum systolic pressure is as follows :—

- (i) with Young subjects 15—25 years of age the average is about 100 plus the age.
- (ii) with subjects over 25 years of age the general rule of 110 plus half the age seems quite satisfactory.

N.B.—As a general rule any systolic pressure over 140 mm. and diastolic over 90 mm. should be regarded as suspicious and the candidate should be hospitalised by the Board before giving their final opinion regarding the candidate's fitness or otherwise. The hospitalisation report should indicate whether the rise in blood pressure is of a transient nature due to excitement etc. or whether it is due to any organic disease. In all such cases X-ray and electrocardiographic examination of heart and blood urea clearance test should also be done as a routine. The final decision as to fitness or otherwise of a candidate will however, rest with the medical board only.

Method of taking Blood Pressure

The mercury manometer type of instrument should be used as a rule. The measurement should not be taken within fifteen minutes of any exercise or excitement. Provided the patient and particularly his arm is relaxed he may be either lying or sitting. The arm is supported comfortably at the patient's side in a more or less horizontal position. The arm should be freed from the cloth to the shoulder. The cuff completely deflated should be applied with the middle of the rubber over the inner side of the arm and its lower edge an inch or two above the bend of the elbow. The following returns of cloth bandage should spread evenly over the bag to avoid bulging during inflation.

The brachial artery is located by palpitation at the bend of the elbow and the stethoscope is then applied lightly and centrally over it below but not in contact with the cuff. The cuff is inflated to about 200 mm. Hg. and then slowly deflated. The level at which the column stands when soft successive sound are heard represents the Systolic Pressure. When more air is allowed to escape the sound will be heard to increase in intensity. The level at which the well heard clear sound change to soft muffed fading sounds represents the diastolic pressure. The measurements should be taken in a fairly brief period of time as prolonged pressure of the cuff is irritating to the patient and will vitiate the reading. Rechecking if necessary should be done only a few minutes after complete deflation of the cuff. Sometimes as the cuff is deflated sounds are heard at a certain level they may disappear as pressure falls and reappear at a still lower level. This silent Gap may cause error in readings.

8. The urine (passed in the presence of the examiner) should be examined and the results recorded. Where a Medical Board finds sugar present in candidate's urine by the usual chemical tests the Board will proceed with the examination with all its other aspects and will also specially note any signs or symptoms suggestive of diabetes. If except for the glycosuria the Board finds the candidate conforms to the

standard of medical fitness required they may pass the candidate fit, subject to the glycosuria being non-diabetic and the Board will refer the case to a specified specialist in Medicine who has hospital and laboratory facilities at his disposal. The Medical Specialist will carry out whatever examinations clinical and laboratory, he considers necessary including a standard blood sugar tolerance test, and will submit his opinion to the Medical Board upon which the Medical Board will base its final opinion. "fit" or "unfit". The candidate will not be required to appear in person before the Board on the second occasion. To exclude the effect of medication it may be necessary to retain a candidate for several days in hospital under strict supervision.

9. A woman candidate who as a result of tests is found to be pregnant of 12 weeks standing or over should be declared temporarily unfit until the confinement is over. She should be re-examined for fitness certificate six weeks after the date of confinement, subject to the production of a medical certificate of fitness from a registered medical practitioner.

10. The following additional points should be observed :—

- (a) that the candidate's hearing in each ear is good and that there is no sign of disease of the ear. In case it is defective the candidate should be got examined by the ear specialist; provided that if the defect in hearing is remediable by operation or by use of a hearing aid a candidate cannot be declared unfit on that account provided he/she has no progressive disease in the ear. This provision is not applicable in the case of Railway Services. The following are the guidelines for the medical examining authority in this regard.—
- | | | |
|--|--|---|
| (1) Marked or total deafness in one ear, other ear being normal. | Fit for non-technical jobs if the deafness is up to 30 Decibel in higher frequency. | |
| (2) Perceptive deafness in both ears in which some improvement is possible by a hearing aid. | Fit in respect of both technical and non-technical jobs if the deafness is up to 30 Decibel in speech frequencies of 1000—4000. | |
| (3) Perforation of tympanic membrane of central or marginal type. | (i) One ear normal other ear perforation of tympanic membrane present. Temporarily unfit. Under improved conditions of Ear Surgery a candidate with marginal or other perforation in both ears should be given a chance by declaring him temporarily unfit and then he | may be considered under 4(ii) below.
(ii) Marginal or attic perforation in both ears unfit.
(iii) Central perforation both ears—Temporarily unfit.
(i) Either ear normal hearing other ear mastoid cavity—Fit for both technical and non-technical jobs.
(ii) Mastoid cavity of both sides. Unfit for technical jobs. Fit for non-technical jobs if hearing improves to 30 Decibel in either ear with or without hearing aid. |
| | (4) Ears with mastoid cavity subnormal hearing on one side/on both sides. | |
| | (5) Persistently discharging ear operated/unoperated | Temporarily Unfit for both technical and non-technical jobs. |
| | (6) Chronic Inflammatory/allergic condition of nose with or without bony deformities of nasal Septum. | (i) A decision will be taken as per circumstances of individual cases.
(ii) If deviated nasal Septum is present with Symptoms—Temporarily unfit. |
| | (7) Chronic Inflammatory conditions of tonsils and or Larynx. | (i) Chronic Inflammatory conditions of tonsils and/or Larynx—Fit.
(ii) Hoarseness of voice of severe degree if present then Temporarily unfit. |
| | (8) Benign or locally Malignant tumours of the E.N.T. | (i) Benign tumours—Temporarily unfit.
(ii) Malignant Tumour—unfit. |
| | (9) Otosclerosis | If the hearing is within 30 Decibels after operation or with the help of hearing aid—Fit. |
| | (10) Congenital defects of ear, nose or throat. | (i) If not interfering with functions—Fit.
(ii) Stuttering of severe degree—Unfit. |
| | (11) Nasal/poly | Temporarily Unfit. |

- (b) that his speech is without impediment;
- (c) that his teeth are in good order and that he is provided with dentures where necessary for effective mastication (well filled teeth will be considered as sound);
- (d) that the chest is well formed and his chest expansion sufficient and that the hearts and lungs are sound;
- (e) that there is no evidence of any abdominal disease;
- (f) that he is not ruptured;
- (g) that he does not suffer from hydrocele, varicose veins or piles;
- (h) that his limbs, hands and feet are well formed and developed and that there is free and perfect motion of all joints;
- (i) that he does not suffer from any inveterate skin disease;
- (j) that there is no congenital malformation or defect;
- (k) that he does not bear traces of acute or chronic disease pointing to an impaired constitution;
- (l) that he bears marks of efficient vaccination; and
- (m) that he is free from communicable disease.

11. Radiographic examination of the chest of candidate for detecting any abnormality of the heart and lungs, which may not be apparent by ordinary physical examination will be done at the time when he is called for the Personality Test by the Union Public Service Commission.

The decision of the Chairman of the Central Standing Medical Board (conducting the medical examination of the concerned candidate) about the fitness of the candidate shall be final.

In case of doubt regarding health of a candidate the Chairman of the Medical Board may consult a suitable Hospital specialist to decide the issue of fitness or unfitness of the candidate for Government Service e.g. if a candidate is suspected to be suffering from any mental defect or aberration, the Chairman of the Board may consult a Hospital Psychiatrist, Psychologist, etc.

When any defect is found it must be noted in the certificate and the medical examiner should state his opinion whether or not it is likely to interfere with the efficient performance of the duties which will be required of the candidate.

12. The candidates filing an appeal against the decision of the Medical Board have to deposit an appeal fee of Rs. 100.00 in such manner as may be prescribed by the Government of India in this behalf. This fee would be refunded if the candidate is declared fit by the Appellate Medical Board. The candidates may, if they like enclose medical certificate in support of their claim of being fit. Appeals should be submitted within 21 days of the date of the communication in which the decision of the Medical Board is communicated to the candidates; otherwise request for second medical examination by an Appellate Medical Board, will not be entertained. The Medical Examination by the Appellate Medical Board would be arranged at New Delhi only and no travelling allowance or daily allowance will be admissible for the journeys performed in connection with the medical examination. Necessary action to arrange medical examination by Appellate Medical Boards would be taken by the Department of Personnel and Training on receipt of appeal accompanied by the prescribed fee.

MEDICAL BOARD'S REPORT

The following intimation is made for the guidance of the Medical Examination :—

1. The standard of physical fitness to be adopted should make due allowance for the age and length of service, if any of the candidate concerned.

No person will be deemed qualified for admission to the Public Service who shall not satisfy Government or appointing authority as the case may be that he has no disease constitutional affliction, or bodily infirmity, unfitting him or likely to unfit him for that Service.

It should be understood that the question of fitness involves the future as well as present and that one of the main objects of medical examinations is to secure continuous effective service, and in the case of candidates for permanent appointment to prevent early pension or payments in case of pre-mature death. It is at the same time to be noted that the question is one of the likelihood of continuous effective service and the rejection of a candidate need not be advised on account of the presence of a defect which is only a small proportion of cases is found to interfere with continuous effective service.

A Lady Doctor will be co-opted as a member of the Medical Board whenever a woman candidate is to be examined.

Candidate appointed to the Indian Defence Accounts Service are liable for field service in or out of India. In the case of such a candidate the Medical Board should specially record their opinion as to his fitness or otherwise for field service.

The report of the Medical Board should be treated as confidential.

In case where a candidate is declared unfit for appointment in the Government Service the ground for rejection may be communicated to the candidate in broad terms without giving minute details regarding the defects pointed out by the Medical Board.

In case where a Medical Board considers that a minor disability disqualifying a candidate for Government Service can be cured by treatment (medical or surgical) a statement to the effect should be recorded by the Medical Board. There is no objection to a candidate being informed of the Board's opinion to the effect by the appointing authority and when a cure has been effected it will be open to the authority concerned to ask for another Medical Board.

In the case of candidate who are to be declared 'Temporarily Unfit' the period specified for re-examination should not ordinarily exceed six months at the maximum. On re-examination after the specified period these candidates should not be declared temporarily unfit for a further period but a final decision in regard to their fitness for appointment or otherwise should be given.

(a) Candidate's statement and declaration.

The candidate must make the statement required below prior to his Medical Examination and must sign the Declaration appended thereto. His attention is specially directed to the warning contained in the Note below:—

1. State your name in full (in block letters).....
2. (a) State your age and birth place
- (b) Do you belong to races such as Gorkhas, Garhwalis, Assamese, Nagaland Tribes etc. whose average height is distinctly lower, Answer 'Yes' or 'No' and if the answer is 'Yes' state the name of the race.
3. (a) Have you ever had smallpox intermittent or any other fever enlargement or suppuration of glands, spitting of blood, asthma, heart disease, lung disease, fainting attack, rheumatism, appendicitis?

OR

- (b) Any other disease or accident requiring confinement to bed and medical or surgical treatment?
4. When were you last vaccinated?
5. Have you suffered from any form of nervousness due to over work or any other causes.
6. Furnish the following particulars concerning your family :—

Father's age if living and state of health	Father's age at death and cause of death	No. of brothers living and state of health	No. of brothers dead, their age, and causes of death
1	2	3	4
1.			
2.			
3.			

Mother's age if living and state of health	Mother's age at death and cause of death	No. of sisters living their age and state of health	No. of sisters dead, their age, and causes of death
1	2	3	4

7. Have you been examined by a Medical Board before ?
8. If answer to the above is "Yes", please state what service/services you were examined for ?
9. Who was the examining authority ?
10. When and where was the Medical Board held ?
11. Result of the Medical Board's examination if communicated to you or if known.
12. All the above answers are to the best of my knowledge and belief, true and correct and I shall be liable for action under law for any material infirmity in the information furnished by me or suppression of relevant material information. The furnishing of false information or suppression of any factual information would be a disqualification and is likely to render me unfit for employment under the Government. If the fact that false information has been furnished or that there has been suppression of any factual information comes to notice at any time during my service, my services would be liable to the terminated.

Candidate's signature

Signed in my presence

Signature of the Chairman of the Board

PROFORMA

(b) Report of the Medical Board on (name of candidate) Physical Examination.

1. General development : Good _____
 Fair _____ Poor _____
 Nutrition : Thin _____ Average _____
 Obese _____ Height : (Without Shoes) _____
 Weight _____ Best _____
 Weight _____ When _____ any
 recent changes in weight _____
 Temperature _____

Girth of chest :

- (1) After full inspiration
- (2) After full expiration
- 2. Skin : Any obvious disease
- 3. Eyes :

- (1) Any disease.....
- (2) Night blindness.....
- (3) Defect in colour vision.....
- (4) Field of vision.....
- (5) Visual acuity.....
- (6) Fundus examination.....

Acuity of vision	Naked eye with glasses	Strength of glass sph. cyl. Axis
1	2	3

Distant vision

- RE
- LE

Near vision

- RE
- LE

Hypermetropia (Manifest)

- RE
- LE

- 4. Ears—Inspection..... Hearing :
Right Ear.....
Left Ear.....

- 5. Glands..... Thyroid.....

- 6. Condition of teeth.....

- 7. Respiratory system : Does physical examination reveal anything abnormal in the respiratory organs.....
If yes explain fully.....

8. Circulatory System :

- (a) Heart : Any Organic Lesions..... Rates Standing..... After hopping 25 times..... 2 minutes after hopping

- (b) Blood Pressure :
Systolic..... Diastolic.....

9. Abdomen :

- Girth..... Tenderness.....

Hernia.....

- (a) Palpable Liver Spleen.....
Kidneys..... Tumours.....
Haemorrhoids..... Fistula.....

- 10. Nervous System : Indication of nervous or mental disabilities.....

- 11. Loco Motor System : Any abnormality.....

- 12. Genito Urinary System : Any evidence of Hydrocele, Varicocele etc.

Urine Analysis :

- (a) Physical appearance.....
- (b) Sp Gr.....
- (c) Albumen.....
- (d) Sugar.....
- (e) Casts.....
- (f) Cells.....

- 13. Is there anything in the health of the candidate likely to render him unfit for the efficient discharge of his duties in the service for which he is a candidate ?

Note.—In the case of female candidate, if it is found—that she is pregnant of 12 weeks standing or over, she would be declared temporarily unfit vide Regulation 9.

- 14. (i) State the service for which the candidate has been examined :—

- (a) I.A.S. and I.F.S.
- (b) I.P.S., Central Police Services Group 'A' & 'B' RPF and Delhi and Nicobar Islands Police Service, Deputy Superintendent of Police in C.B.I.
- (c) Central Services, Group A and B.

- (ii) Has he/she been found qualified in all respects, for the efficient and continuous discharges of his/her duties in :

- (a) I.A.S. and I.F.S.
- (b) I.P.S. Central Police Services Group 'A' & 'B' RPF and Delhi and Andaman and Nicobar Islands Police Service. (See especially height, chest girth, eye sight, colour blindness and locomotive system).
- (c) Indian Railway Traffic Service (see specially height, chest, eye sight, colour blindness).
- (d) Other Central Services, Group, A/B.

- (iii) Is the Candidate fit for FIELD SERVICE ?

15. Chest X-Ray Examination.

Note : The Board should record their findings under one of the following three categories :—

- (i) Fit.....
- (ii) Unfit on account of.....
- (iii) Temporarily unfit on account of.....
- (iv) Fit only for specified vacancy reserved for physically impaired.....

Place

Chairman

Signature Member

Date

Member

Seal of the Medical Board

ANNEXURE IV

**A List of Services Identified suitable for Physically Disabled Category along with the
Physical Requirements and Functional Classifications**

Sl. No.	Name of the Service	Category(ies) for which identified	Functional Classification	Physical requirements
1.	Indian Administrative Service	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	BA, OL, OA, BH, MW LB PD	S, ST, W, SE, H, RWT F, PP, L, KC, B, ST, W, H, RWT F, PP, L, KC, B, ST, W, SE, RWT
2.	Indian Foreign Service	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL LV HH	S, ST, W, RW, C, MF, SE
3.	Indian Revenue Service (Customs and Central Excise Gr. A)	(i) Locomotor disability (ii) Hearing impairment	OL, OA HH	S, ST, W, BN, L, SE, ME, RW, H, C.
4.	Indian P and T Accounts and Finance Service Gr. A	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL, LV H.H.	S, W, SE, RW, C
5.	Indian Audit and Accounts Service, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, LV HH	S, ST, W, BN, SE, RW, H, C
6.	Indian Defence Accounts Services, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL LV HH	S, ST, W, BN, SE, RW, C
7.	Indian Revenue Service (IT) Gr. 'A'	(i) Locomotor disability (ii) Hearing impairment	OA, OL, OAL, BL HH	S, ST, W, SE, RW, C
8.	Indian Ordnance Factories Service, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, LV HH	S, ST, W, BN, RW, SE, H, C.
9.	Indian Postal Service, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL B, LV HH	S, ST, W, BN, RW, SE, H, C
10.	Indian Civil Accounts Services, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL LV HH	S, ST, W, SE, RW, H, C
11.	Indian Railway Accounts Services, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL LV HH	S, ST, W, SE, RW, H, C
12.	Indian Railway Personnel Service, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, B, LV HH	S, ST, W, BN, SE, RW, H, C
13.	Indian Railways Traffic Service, Gr. 'A'	(i) Locomotor disability	OA, OL	S, ST, W, SE, RW, H, C
14.	Indian Defence Estates Service, Gr. 'A'	(i) Locomotor disability (ii) Blindness or Low Vision (iii) Hearing impairment	OA, OL, LV HH	S, ST, W, BN, MF, PP, KC, SE, RW, H, C
15.	Indian Information Service, Gr. 'A'	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL B, LV HH	S, ST, W, SE, RW, H, C
16.	Indian Trade Service, Gr. 'A' (Gr. III)	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL LV HH	S, ST, W, BN, MF, SE, RW, H, C
17.	Indian Corporate Law Services	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL LV HH	ST, RW, SE, S, B, H,

Sl. No.	Name of the Service	Category(ies) for which identified	Functional	Physical requirements
18.	Armed Forces Headquarters Civil Service, Gr. 'B' (Section Officers' Grade)	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, LV HH	S, ST, W, BN, MF, SE, RW, C
19.	Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Civil Service, Gr. 'B'	(i) Locomotor disability (ii) Visual impairment (ii) Hearing impairment	OA, OL LV HH	S, ST, W, SE, RW, MF, H, C SE, R, W, H, C
20.	Delhi, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar Haveli Police Service, Gr. 'B'	(i) Locomotor disability (ii) Hearing impairment	OL HH	S, ST, W, BN, PP, KC, MF, SE, R, W, H, C
21.	Pondicherry Civil Service (Group B)	(i) Locomotor disability (ii) Visual impairment (iii) Hearing impairment	OA, OL, OAL, BL, LV LV HH	S, ST, W, SE, RW, HC

Categories of Disabled	OH	Orthopaedically Handicapped
	VH	Visually Handicapped
	HH	Hearing Handicapped
Sub-categories	BL	Both legs
	BA	Both arms
	BLA	Both legs and arms
	OL	One leg
	OA	One arm
	OAL	One arm and One Leg
	MW	Muscular weakness
	B	Blind
	LV	Low vision
	H	Hearing
Physical Requirement	MF	Manipulation by fingers
	PP	Pulling and pushing
	L	Lifting
	KC	Kneeling and Crouching
	BN	Bending
	S	Sitting (on bench or chair)
	ST	Standing
	W	Walking
	SE	Seeing
	H	Hearing/Speaking
	RW	Reading and Writing
	C	Communication