

**THE HIMACHAL PRADESH ADMINISTRATIVE SERVICE
RULES, 1973**

DEPARTMENT OF PERSONNEL (A)

NOTIFICATION

Shimla-2, the 15th March, 1973

No. 7-5/73-DP(Apptt.).- In exercise of the powers conferred by the proviso to Article 309 of the Constitution of India and all other powers enabling him in this behalf, the Governor of Himachal Pradesh is pleased to make the following rules for regulating the recruitment and conditions of service of persons appointed to the Himachal Pradesh Administrative Service:-

1. Short title and commencement.- (i) These rules may be called the Himachal Pradesh Administrative Service Rules, 1973.

(ii) They shall come into force with immediate effect.

2. Definitions.- In these rules, unless there is anything repugnant in the subject or the context,-

- (a) "Governor" means the Governor appointed under Article 155 of the Constitution of India for the State of Himachal Pradesh ;
- (b) "Government" means the Government of Himachal Pradesh;
- (c) "Commission" means the Himachal Pradesh Public Service Commission ;
- (d) "Appendix" means an appendix appended to these rules ;
- (e) "Appointment to the Service" means an appointment to a duty post, whether on permanent, temporary or officiating basis, or on probation ;
- (f) "Duty Post" means any post specified in the Appendix I or any other post declared as such by Government and includes a temporary post carrying the same designation as any of the posts specified in that Appendix with an identical scale of pay;
- (g) "Member of the Service" means a person-
 - (i) who, immediately before the commencement of these rules, was appointed to the Himachal Pradesh Administrative Service as constituted with effect from the 25th January, 1971, under section 40(1) of the State of Himachal Pradesh Act, 1970 (Act No. 53 of 1970) read with the Government of India, Ministry of Home Affairs Notification No. G.S.R. 43, dated the 6th January, 1971, and holds a duty post, substantively or on probation, or

- (ii) who is appointed to the service in accordance with the provisions of these rules ;
- (h) "the service" means the Himachal Pradesh Administrative Service; and
- (i) "Recognised University" means any University incorporated by law in India or any other University which is declared by the Government to be a recognised University for the purposes of these rules.

3. Number and character of posts.- (1) Members of the Service shall be eligible for appointment to the posts given in Appendix I and any other post declared by Government as duty post.

(2) ¹[The permanent authorised sanctioned strength of the Service on the commencement of these rules shall be as given in Appendix I or as determined by the Government from time to time.]

²[(3) The permanent authorised sanctioned Strength of the service shall be re-examined at the interval of every five years by a cadre Review Committee to be constituted by the Government and make such alterations as it deem fit for determining the authorised sanctioned strength of the service.]

³[4. Nationality of candidates :

(1) A candidate for appointment to the service must be-

- (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, Sri Lanka, East African countries of Kenya, Uganda, the United Republic of Tanzania (formerly Tanganyika and Zanzibar), Zambia, Malawi, Zaire and Ethiopia with the intention of permanently settling in India:

1. Subs. vide Not. No. 1-28/69-Apptt., dated 21.2.1974, published in R.H.P., dated 25.5.1974, p. 885-886, effective from 15.3.1973.

2. Sub-rule (3) added vide Not No. Per (A-IV)-F(11)-2/84-II, dated 13.7.1998, published in R.H.P. Extra., dated

3. Rule 4 subs. vide Not. No. PER(A-1)A(3)1/81, dated 26.6.1981, published in R.H.P., dated 25.7.1981, p. 1076. w.e.f. 26.6.1981.

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/ State Government.

(2) A candidate in whose case a certificate of eligibility is necessary may be admitted to an examination or interview conducted by the Himachal Pradesh Public Service Commission or other recruiting authority, but the offer of appointment may be given only after the necessary eligibility certificate has been issued to him by the Government of India/Government of Himachal Pradesh.]

5. Disqualification for Selection as candidate.- 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 the service ; provided that the 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.

6. Member to be appointed by the Governor of Himachal Pradesh from among selected candidates.- Members of the service shall be appointed by the Governor from time to time as required from among selected candidates whose names have been duly entered in accordance with these rules in one or other of the registers of selected candidates to be maintained under these rules:

Provided that nothing herein shall affect the appointment to the service of members who were allocated to Himachal Pradesh under notification No. S.O. 439, dated the 24th January, 1971, issued by Government of India, Ministry of Home Affairs under sub-section (4) of section 40 of the State of Himachal Pradesh Act, 1970 (53 of 1970):

Provided further that the officers on Select List framed under Delhi, Himachal Pradesh, Andaman and Nicobar Islands, Civil Service Rules, 1965, before 25th January, 1971, and appointed to officiate against the duty posts before the commencement of these rules, shall continue to hold such officiating appointments, irrespective of the fact whether posts held by them are earmarked for any of the registers mentioned under Rule 8, till they are regularly appointed to the service in accordance with these rules or till the candidates become available for appointment to the service from the said registers or till their names are removed from the Select List, whichever is earlier.

¹[Provided further that appointments to this Service shall be subject to

such rules, instructions or orders regarding reservations in the Services for persons belonging to Scheduled Castes or Scheduled Tribes or for certain other classes of citizens as may be adopted or issued by the Himachal Pradesh Government from time to time.]

7. Mode of recruitment.- ²[(1) Appointment to the duty posts in the service (Himachal Pradesh Administrative Service) shall be made in the following manner:-

- (a) 50 percent by direct recruitment;
- (b) 22 percent from the Tehsildars who are substantively borne on the cadre of Tehsildars of Revenue Department and have two years continuous service in the grade both, officiating and substantive;] and
- (c) 28 per cent from the substantive holders of the following categories of posts who have two years continuous service in the grade both officiating and substantive:-
 - (1) Block Development Officer
 - (2) District Panchayat Officer.
 - ³[(3) Manager, District Industries Centre.]
 - (4) Section Officer of the Himachal Pradesh Secretariat
 - (5) District Welfare -cum- Probation Officers.
 - (6) Assistant Registrar, Co-operative Societies.
 - (7) Excise and Taxation Officer of the Departmental Cadre.
 - (8) Assistant Chief Electoral Officer/Electoral Officer:
 - (9) District Employment Officers.
 - (10) District Treasury Officers.
 - 11. District Food and Supplies Controller.
 - 12. Assistant Controller, Weights and Measures.
 - 13. Principal, Panchayati Raj, Training Institutions.

¹[XX]

(2) For purposes of calculating vacancies according to the percentages as prescribed in sub-rule(1), the duty posts held either substantively or on probation in a regular manner before the commencement of these rules by the Himachal Pradesh Administrative Service Officers, shall be excluded:

Provided that the posts available against direct quota on the commencement of these rules, shall be filled over a period of four years.

8. Registers to be maintained.- The following registers of selected candidates shall be maintained by the Chief Secretary, namely:-

- (a) Register A-I of Tehsildars selected as candidates ;
- (b) Register A-II of officers mentioned in clause (c) of sub-rule (1) of rule 7, selected as candidates ;
- (c) Register B of persons selected as candidates as a result of competitive examination.

9. ²[Selection Committee- (1) Recruitment under clauses (b) and (c) of sub-rule (1) of rule 7 shall be made on the recommendation of a Selection Committee (hereinafter referred to as the Committee) consisting of :-

- (i) The Chairman or a member of the Commission .. Chairman
- (ii) The Chief Secretary or the Secretary to the Government in the Chief Secretary's Branch ..Member
- (iii) The Financial Commissioner to Government of Himachal Pradesh (but only for the meeting to be held in March, 1974, the Agricultural Production Commissioner, Himachal Pradesh shall be the member instead of Financial Commissioner) .. Member.

¹(2) (i)The Committee shall consider from time to time the cases of officers eligible for appointment to the service who have opted for consideration for promotion excepting those officers who have been debarred from consideration on terms of Rule 17 and prepare two separate lists of officers according to the percentage fixed under clauses (b) and (c) of sub-rule(1) of rule 7. Each list shall contain the names of the selected candidates twice the number of vacancies available at the time of selection and likely to occur during the next year for each category under clause (b) and (c) of sub-rule (i).]

(ii) The selection for inclusion in the lists shall be based on merit and suitability in all respects for appointment to the service with due regard to seniority.

(iii) For purposes of selection of candidates under clause (c) of sub-rule (i) of rule 7 a combined seniority list of all the categories of officers mentioned thereunder shall be prepared on the basis of their length of regular service in the grade.

²[(iv) For the preparation of the combined seniority list under clause (iii), the following principles shall be observed even if it may involve a departure from the principle of length of regular service as mentioned in the said clause (iii):-

- (a) Inter-se seniority of officers within each category shall be maintained.
- (b) For the determination of the inter-se seniority of the incumbents of the posts of the categories mentioned in

clause (c) of sub-rule (1) of rule 7 (including the proviso) of the main rules, deemed dates as understood for the purpose of the KLM formula as used in the integration of the services after the re-organisation of the Punjab in 1966, shall be made use of wherever necessary.

- (c) Wherever in the categories mentioned in clause (c) of sub-rule (1) of rule 7 (including the proviso) of the main Rules, more than one category of posts exist in some Departments and wherever in the notified Recruitment and Promotion Rules of the Department, a channel of promotion was/is provided from one category of such posts to another within the same Department, the eligible incumbents of the lower category shall be placed enblock below the eligible incumbents of the higher category before 'deemed dates' under the KLM formula as laid down in (b) above are applied.
- ¹[(d) In case of Officers who have had held on an officiating or substantive basis, more than one post included in Rule 7(1) (c) (Including the Proviso) of the main Rules, the date of appointment in the lowest of such category/ post shall be taken into account for determining seniority within the Department according to sub-rule (c) of Rule 9(2) (iv) irrespective of the fact whether the officer has/ has not his/ her lien in such post/ category.]
- (e) In cases where two or more officers have equal length of regular service in the grade determined on the basis of date of appointment/deemed date, the seniority shall be determined according to their age, the elder officer shall be considered senior to the younger one.
- (f) In case of any doubt or difficulty in the preparation of combined seniority list, the matter shall be decided by the Selection Committee in its discretion and such decision(s) of the Selection Committee shall be final.

Note.- For the removal of doubts, it is declared that any selection/ appointment made to the service under the main Rules on the basis of the recommendations of the Selection Committee shall be deemed always to have been valid and in accordance with these rules which shall be deemed to have come into force on 15th March, 1973 ; provided that the selection/ appointment so made are in conformity with these rules].

(3) The names of persons included in the lists shall be arranged in the order of merit.

(4) The lists so prepared along with the relevant record shall be forwarded by the Committee to the Government. The Government shall send the lists along with the record to the Commission and obtain its concurrence whereafter the lists shall be considered final.

(5) These lists shall remain operative for one year from the date of their approval by the Commission.

²**[9-A. Officiating Appointments.-** (1) The officers approved for officiating appointments under rule 25 of the DHANI Civil Service Rules, 1965, who have not been regularly appointed to Himachal Pradesh Administrative Service, as on the date of the commencement of these rules, shall be appointed to the Himachal Pradesh Administrative Service subject to the condition that they are found fit by the Selection Committee :

Provided that the Officers who are found unfit by the Selection Committee shall be reverted to their substantive posts.

(2) The officers to be appointed under clause (1) above will appear in the seniority list of Himachal Pradesh Administrative Service Officers en bloc below the junior-most officer of the Himachal Pradesh Administrative Service, as on the date of the commencement of these rules, and seniority inter se of these officers will be in the order in which their names appear in the list referred to in clause (1):

Provided that the officers belonging to the Himachal Pradesh Tehsildari Service may be fixed in their positions in the roster, should that be more beneficial to them.

(3) These rules shall have effect notwithstanding anything else contained in the Himachal Pradesh Administrative Service Rules, or any other rules, orders/ instructions governing the Service.]

10. Competitive examination to be held yearly for selection of candidates for Register B.-¹[(1) A competitive examination hereinafter called "the examination" the regulations of which are contained in Appendix-III to these rules shall be held at any place in Himachal Pradesh each year as and when notified from time to time for the purpose of selection by competition of as many candidates for the service, as the Governor may determine:]

Provided that the date of examination may be changed by the Government if warranted by circumstances.

(2) Notice of the date fixed for the examination shall be published in the Himachal Pradesh Gazette.

11. Admission of candidates to the competitive examination.- (1) Applications for permission to sit at the competitive examination will be called by the Commission and shall be made in the

manner and form prescribed, and accompanied by such documents/papers as may be required by the Commission in this behalf.

(2) Unless the Governor otherwise directs, no person shall be permitted to sit at the examination-

¹[(a) who has not attained the age of twenty one years and will have attained the age of thirty four years on or before the 1st day of January of the year, in which the application(s) are invited by the Commission for competitive examination :]

²[Provided that a candidate belonging to SCs/Tribes/Backward Classes as declared by the Himachal Pradesh Government from time to time/ Children/ grand children of freedom fighters will be entitled to deduct from their age such period as may, from time to time, be allowed by Government in respect of his/her entry into service under the State.]

This concession allowed to Scheduled Castes/Tribes will also apply to candidates of [Backward classes as declared by the Himachal Pradesh Government from time to time:]

Provided further that candidates who have not attained the age of 28 years on the 1st of January, 1972 shall be eligible to sit in the first examination to be conducted by the Commission after the commencement of these rules.

(b) who does not possess a Bachelor's degree or its equivalent of a recognised University ; and

(c) ³[Who does not by the closing date of receipt of applications to be notified by the Commission send a crossed Indian Postal Order for sixty rupees or in the case of Scheduled Castes/ Tribes / other Backward Classes as declared by the Government of Himachal Pradesh from time to time, one fourth of this amount on account of examination fee, which in no circumstances will be refunded or held over for the subsequent examination:]

¹[Provided that there shall be no limit to the chances to appear in the Competitive examination in respect of candidates belonging to OBCs/SCs/STs of Himachal Pradesh as declared by the Government from time to time, Wards of Freedom Fighter of Himachal Pradesh and Ex-servicemen candidates. The General category candidates shall be eligible to avail six chances to be counted from 1984 examination.]

²[(3) A Government servant who is holding substantive/officiating appointment in Himachal Pradesh Government or the High Court or any Court Subordinate thereto and employees of the Public Sector Undertakings/ Corporations/Autonomous Bodies which are wholly or substantially owned

and controlled by the Himachal Pradesh Government, shall be eligible to appear in the examination if he/she possesses a bachelor's degree or its equivalent of the recognised university, and has not attained the age of 42 years on the first day of January of the year in which the applications are invited by the Commission for the competitive examination. Any person who is eligible under this sub-rule and wishes to appear in the examination shall submit his/her application in the prescribed form through the Head of office to the Secretary to the Himachal Pradesh Public Service Commission :. The candidates belonging to the general category shall be eligible to avail six chances including those which he/she might have availed under sub-rule (2) from the 1984 examination and there shall be no limit of chances for appearing in the competitive examination in respect of reserved categories of SCs./STs./OBCs as declared by the Government of Himachal Pradesh vide orders/instructions issued separately from time to time:]

3[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]

Provided that the Himachal Pradesh Government employees who have already availed of one/two chance(s) under this sub-rule, but could not avail of the second/third chance because of age limit of 40 years, can also appear in the examination to be held in 1976.

Note-I- A candidate, who has appeared at an examination the passing of which would render him eligible to appear at this examination but has not been informed of result, may apply for admission to the examination. A candidate who intends to appear at such a qualifying examination may also apply, provided the qualifying examination is completed before the commencement of this examination. Such candidates will be admitted to the examination, if otherwise eligible, but the admission would be deemed to be provisional and subject to cancellation, if they do not produce proof of having passed the examination as soon as passed and in any case not later than two months after the commencement of this examination. This concession allowed to the Scheduled castes/ tribes shall also apply to candidates of Backward Classes belonging to or residing in Himachal Pradesh.

¹[*Note-II* : Candidates who have passed the final professional M.B.B.S. or any other Medical Examination equivalent thereto, but have not completed their internship by the time of submission of their applications for the H.A.S. etc. Examination will be provisionally admitted to the Examination provided they submit along with their applications a copy of certificate from 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 Degree.]

²[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]

³[XXXXXXXXXXXXXXXXXXXXXXXXXXXX]

12. Selection of candidates for Register B.- Subject to the provisions of rule 13, the Governor may include in register B in order of merit the names of such number of candidates as he may from time to time determine from amongst those who have been declared as qualified in the examination, by the Commission:

Provided that for purpose of ensuring adequate representation of qualified Scheduled Castes/ Tribes candidates, their names may be brought on Register B, in order of merit inter se irrespective of their position on the list of qualified candidates as a whole.

13. Selected candidates for Register B to be declared fit by standing Medical Board before appointment.- No candidate selected by the Governor under the provisions of rule 12 shall be appointed to the service unless he appears for medical examination before the Standing Medical Board and has been declared by such Board to be physically fit for the duties which he will have to perform as a member of the service.

Note I.- The regulations for the medical examination of candidates are contained in Appendix IV of these rules.

Note II.- A selected candidate who fails without sufficient reason on which the decision of the Governor shall be final, to appear before the Standing Medical Board on the date for which he is called, is liable to have his name removed from the list of selected candidates for register B.

14. Governor of Himachal Pradesh may remove name of selected candidates.- The Governor may at any time order the removal of the name of any person from a register of selected candidates for any reason which he may deem fit.

15. Appointment of registered candidates to the service.- The Governor shall make appointments to the service in pursuance of Rule 6 and subject to provisions of sub-rule (5) of rule 9 and rule 12 from among candidates entered on the various registers in rotation as follows:-

- | | |
|------------------------|---------------|
| 1. From Register B | One candidate |
| 2. From Register A-I | One candidate |
| 3. From Register B | One candidate |
| 4. From Register A-II | One candidate |
| 5. From Register B | One candidate |
| 6. From Register A-I | One candidate |
| 7. From Register B | One candidate |
| 8. From Register A-II | One candidate |
| 9. From Register B | One candidate |
| 10. From Register A-I | One candidate |
| 11. From Register B | One candidate |
| 12. From Register A-II | One candidate |

13. From Register B	One candidate
14. From Register A-I	One candidate
15. From Register B	One candidate
16. From Register A-II	One candidate
17. From Register B	One candidate
18. From Register A-II	One candidate

and thereafter in the same rotation beginning again from register B:

Provided that all such appointments shall in the first instance be either officiating or substantive provisional :

¹[Provided that percentage of Officers belonging to particular register shall not exceed that provided in rule 7. The roster will continue to be operative as usual, but the particular roster point of a particular category shall be deemed to have been extinguished in case the prescribed percentage of the said category has already been reached at that point of time. The roster point for the said particular category will, however, be considered for revival at the next point earmarked for that category and in case at that point too there is excess in percentage for that category, the revival of the roster will be postponed to the next point and so on, the real revival being at the stage at which the actual representation to that category falls short of the prescribed percentage.]

16. Order of appointment of candidates on the same Register.-

Subject to the provisions of rule 15, candidates on different registers shall be appointed to the service in the order of their selection as candidates.

17. Consequence of failure to join when appointed .-

²[Notwithstanding anything to the contrary contained in any other Rule of instructions of the Government, if a candidate, on appointment to a particular post is unable for any reason, other than the orders of the Government to join his appointment within three months from the date of receipt of orders, or within the extension granted for joining on justifiable grounds, he/she shall be ineligible for appointment to the service (HPAS).]

18. Seniority of members of the service.- The seniority of officers appointed to the service shall be determined in accordance with the order of their appointment to the service ; provided that-

- (a) if the order of appointment of any candidate is cancelled under the provisions of rule 17, and such candidate is subsequently appointed to the service the date of his appointment to the service for the purpose of this rule shall be the date of such subsequent appointment ;
- (b) if any officer appointed to the service fails to qualify himself for substantive permanent appointment within the prescribed period of probation the Governor may

determine whether the date of his appointment for the purpose of this rule shall be postponed by a period not exceeding the period by which such officer's substantive permanent appointment is delayed beyond the prescribed period of probation ;

- (c) the seniority of those Himachal Pradesh Administrative Service Officers allocated to Himachal Pradesh under sub-section (4) of section 40 of the State of Himachal Pradesh, Act, 1970 whose seniority has been finalised and circulated under various letters issued by the Government of India shall remain un-changed.

19. Candidates to pass the departmental examination within two years of Selection.- Every candidate shall within two years from the date of his appointment to the service pass by the prescribed standard the departmental examination from time to time prescribed for Himachal Pradesh Administrative Service, and if any candidate fails so to pass the departmental examination, his name shall be removed from the register of candidates or, if in the mean time he has been appointed to the service, he shall be removed from the service.

(2) Every person holding a duty post under second proviso to Rule 6 shall also be required to pass the departmental examination within a period of two years from the commencement of these rules.

(3) Persons appointed to the service under proviso one to rule 6 shall also be required to pass within the period of their probation, the departmental examination in the subject (s) in which they have not already qualified under the DHANI Civil Service Rules, 1965 :

Provided that the Governor, may in exceptional cases, and for reasons to be recorded in writing exempt any candidate/ person from passing the whole or any portion of the departmental examination or may extend the period within which the candidate/ person shall so pass the examination.

¹[(4) The candidate appointed from Register A-I or Register A-II who has attained the age of 55 years on the date of his appointment to the Himachal Pradesh Administrative Service on officiating or substantive provisional basis under rule 15 shall not be required to pass the Departmental Examination as prescribed for the Himachal Pradesh Administrative Service under the Himachal Pradesh Departmental Examination Rules, 1976 for the purpose of confirmation and grant of second and subsequent increments after the first increment.]

20. Period of probation and training of candidates on appointment.- Candidates on first appointment to the service shall

remain on probation for a period, in the case of candidates appointed from Register A-I or Register A-II, of eighteen months, and in the case of candidates appointed from Register B, of three years and during such period of probation shall, except in the case of candidates appointed from the Register A-I, obtain a certificate of proficiency in riding from such person or persons as may be nominated by the Governor for this purpose and further shall in the case of candidates appointed from Register A-I undergo such training as the Governor may direct, or, in the case of candidates appointed from other registers including officers holding duty posts under second proviso to rule 6, undergo revenue, settlement, judicial, treasury and general training ; provided-

- (a) that the Governor may, if he thinks fit, exempt a candidate from under going wholly or in part revenue, settlement, judicial, treasury and general training ;
- ¹[(b) that the candidate appointed from Register A-I or A-II, who has attained the age of 55 years on the date of his appointment to Himachal Pradesh Administrative Service either on officiating or substantive provisional basis under Rule 15, shall be deemed to be exempted from undergoing the training prescribed for the service;]
- (c) that any candidate may, if he so chooses, with the permission of the Governor, begin his training before appointment to the service, and the Governor may, if he thinks fit, reduce such candidate's period of probation accordingly ;
- (d) that the Governor may, if he thinks fit, extend the period of probation of any candidate ; and

²[Provided further that the continuous service rendered up to ³[31.3.1998] by a member of Himachal Pradesh Administrative Service, prior to appointment to the said service under rule 15 on regular basis as selected list officer of the Himachal Pradesh Administrative Service against duty posts of Himachal Pradesh Administrative Service/ such ex-cadre posts included in Himachal Pradesh Administrative Service or against deputation reserve of Himachal Pradesh Administrative Service which were declared as such on or before ⁴[31.3.1998], shall be taken into account for period of probation.]

21. Officer on probation liable to removal or reversion for unsatisfactory work or conduct.- Any officer appointed to the service under these rules may during the period of his probation be removed from the service under the orders of the Governor, or reverted to his

former appointment if in the opinion of the Governor his work or conduct is unsatisfactory.

22. Substantive permanent appointment.- On the completion of the period of probation prescribed by, or determined by the Governor under the provisions of rules 19 and 20, a member of the service shall be qualified for substantive permanent appointment ; provided he has passed the departmental examination by the prescribed standard.

23. Pay of the service.- ¹[(1) (a) Members of the service/officers officiating in HPAS purely on temporary basis, shall be entitled to pay on scale prescribed by Government from time to time :

²[Provided that no member of the service/ officer officiating in HPAS purely on temporary basis shall be entitled to draw his subsequent annual increments after the first annual increment unless he passes, by the prescribed standard the departmental examination, excepting those who had been appointed from Register A-I or A-II to the service or on after attaining the age of 55 years].

Explanation.-

- (i) The stoppage of increment for failure to pass the departmental examination shall not be considered to be a penalty.
- (ii) The increment or increments shall be released retrospectively to a member of the service/ officer officiating in HPAS purely on temporary basis after he has passed the departmental examination]

(b) The pay of members of the service will be fixed where necessary under the provisions of the rules in force in Himachal Pradesh from time to time; Provided that where the increment of a member is withheld for his failure to pass the departmental examination he shall not be entitled, before he passes the departmental examination by the prescribed standard, to the re-fixation of pay on the basis of enhancement in his substantive or officiating pay in the time scale of the post held by him prior to his appointment to the service. However, during this period he may be allowed his substantive pay from time to time if the same happens to be more than his officiating pay in the service.

³[(2) Members of the service shall be eligible for appointment permanently or provisionally or on officiating basis to a selection grade and on such appointment shall be entitled to pay on a scale sanctioned by Government from time to time.

(3) The criterion of eligibility for appointment in the selection grade shall be such as may be determined by the Government from time to time.

(4) The number of appointments in the selection grade shall be such percentage of posts, as may be fixed by the Government from time to time:

Provided that the continuous service rendered by a member of the Himachal Pradesh Administrative Service prior to his appointment to the said service under rule 15, as a select list officer of the defunct DHANICS/ HPAS/ such ex-cadre posts, which have now been included in Himachal Pradesh Administrative Service shall be taken into account for determining the length of service for the award of selection grade of the said service :

Provided further that military service of the ex-servicemen who have been appointed to Himachal Pradesh Administrative Service against reserved vacancies under Demobilised Indian Armed Forces Personnel (Reservation of vacancies in Himachal Pradesh Administrative Service) Rules, 1974, which has been taken into account for fixing the seniority in the Himachal Pradesh Administrative Service shall be taken into account for determining the minimum length of service for appointment to the selection grade of the said service (HPAS):]

¹[Provided further that the continuous service rendered up to ²[31.3.98] by a member of Himachal Pradesh Administrative Service, prior to appointment to the said service under rule 15 on regular basis as select list officer of Himachal Pradesh Service/against deputy posts of Himachal Pradesh Administrative Service /ex-cadre posts in Himachal Pradesh Administrative Service or against deputation reserve of Himachal Pradesh Administrative Service which were declared as such on or before ³[31.3.1998] shall be taken into account for determining the length of service for award of selection grade.]

(5) A member of the service while holding any of the posts specified in column 2 of Appendix II to these rules shall be entitled to the special pay noted against such post in column 3 of that Appendix or as sanctioned by Government from time to time in addition to pay to which he is entitled under sub-rule (1) or sub-rule (2).

¹[XX]

Note.- Pension of the members of the Himachal Pradesh Administrative Service will be regulated by the Pension Rules as in force in Himachal Pradesh from time to time.

24. Liability for vaccination and re-vaccination.- Every member of the service shall get himself vaccinated and re-vaccinated when the Government so direct by special or general order.

25. Publication of grounds for dismissal.- If a member of the service is dismissed by the Governor for any mis-conduct in respect of which there has been a departmental inquiry or a prosecution in a criminal court, the Governor may publish the reasons for such dismissal if he is of opinion that such publication is required in public interest.

26. Matters not expressly provided in these rules.- In respect of all matters not specifically mentioned in these rules, the members of the service shall be governed by such general rules as may have been or may hereafter be framed by the Government under the provisions of the Constitution of India in this respect.

27. General powers to relax rules.-Power to relax.- Where the Government is of the opinion that it is necessary or expedient so to do, it may, by order, for reasons to be recorded in writing, relax any of the provisions of these rules with respect to any class or category of persons in consultation with the Commission.

28. Interpretation.- If any question arises relating to the interpretation of these rules, the same shall be decided by the Government.

29. Repeal and Savings.- (1) The "DHANI" Civil Service Rules, 1965, which were made applicable to Himachal Pradesh Administrative Service under Section 40 (6) of the State of Himachal Pradesh Act, 1970 (Act No. 53 of 1970) are hereby repealed.

(2) Notwithstanding such repeal anything done or any action taken under the Delhi, Himachal Pradesh, Andaman and Nicobar Island Civil Service Rules, 1965, shall be deemed to have been validly done or taken under these rules.

[APPENDIX-I

(Rule-3)

SI No.	Designation	No. pf posts.
--------	-------------	---------------

(1)	(2)	(3)
—		
¹ [1.	Deputy Secretary	3(Three)
2.	Under Secretary	4(four)
² [3.	Sub-Divisional Officers(Civil)	41(Forty one)]
³ [4.	Assistant Commissioner to Deputy Commissioner	11(eleven)]
⁴ [5.	XXX	
6.	Land Acquisition Officer	8(eight)
⁵ [7.	Officer on Special Duty	1 (one)
8.	Regional Transport Officer	2(two)
9.	⁶ [Deputy Excise and Taxation Commissioner]	1(one)
10.	Deputy Excise and Taxation Commissioner	1(one)
11.	⁷ [XXX]	
12.	Deputy Registrar, Co-operative Societies	2(two)
13.	¹ [XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	
14.	Deputy Director, Panchayati Raj	1(one)
15.	Deputy Director, Welfare	1(one)
16.	Deputy Director, Industries	1(one)
17.	General Manager, District Industrial Centre	1(one)
18.	Deputy Director (R.I.D)	1(one)
19.	Under Secretary, Himachal Pradesh Public Service Commission.	1(one)
² [20.	Sub-Divisional Officer (Civil) Urban, Shimla	1(one)]
21.	Deputy Director, land Records &Consolidation of Holdings	1(one)
³ [22.	Extra Assistant Settlement Officer.	1(one)
23.	Assistant Commissioner, Land Reforms.	1(one)
24.	Special Officer Colonisation.	1(one)
25.	Collector, Forest.	1(one)
26.	Relief and Rehabilitation Officer	1(one)
27.	Settlement Officer (Consolidation)	1(one)
28.	Under Secretary, (Administrative Reforms)	1(one)

29.	Director, Departmental Enquiries	1(one)
30.	Under Secretary(Vigilance)	1(one)
31.	Deputy Chief Electoral Officer	1(one)
32.	State Editor (Gazetteers)	1(one)
33.	Secretary, State Transport Authority	1(one)
⁴ [34.	Additional District Magistrates	10(ten)]
35.	Liaison Officer for Himachal Pradesh at Delhi	1(one)
¹ [36.	Assistant Commissioner/Divisional Officer	1(one)]
² [37.	Assistant Settlement Officers	3(three)]
38.	Additional/Joint/Deputy Director, H.P Institute of Public Administration.	1(one)

Total= 110
(one hundred and ten)

³[Assistant Commissioner (Leave Reserve)] 10%

Training Reserve 10%

Deputation Reserve 12 1/2% 36 (thirty six)

Total permanent Authorised sanctioned strength 146

Provided that the posts of Additional/Joint/Deputy Director, Himachal Pradesh Institute of Public Administration and Settlement Officer, Kinnaur at Sr. No. 36 and 38 shall be treated to have been included in the cadre with effect from the dates these posts are vacated by the present incumbents.

Note.- 50% posts of the following posts in the Himachal Pradesh Secretariat shall be manned by the Himachal Pradesh A. S. Officers:-

1.	Under Secretaries	13
2.	Under Secretary (Admin. Reforms)	01
3.	Under Secretary (Vigilance)	01
4.	Director Departmental Enquiries.	01

Total 16

⁴[Foot Note-I The Himachal Pradesh Administrative Service Officers, who have been appointed to the selection grade of the service (HPAS) when posted in the Headquarters offices of Head of Departments, shall be designated as Joint Directors/Joint Registrars etc. whereas the other HPAS Officers shall be designated as Deputy Directors/ Deputy Registrars etc.]

¹[Foot No.-II The Himachal Pradesh Service Officers appointed to the selection grade of the service when posted in the Himachal Pradesh Secretariat/ Himachal Pradesh Public Service Commission shall be designated as Deputy Secretaries to the Government/Commission.]

Shimla-2, the 12th August, 1983.

No. PER(A-1)B(1)11/80-Vol.II.- The Governor of Himachal Pradesh is pleased to declare the post of Excise and Taxation Officer included at Sr. No. 11 in Appendix-I (Rule 3) of HPAS ., Rules, 1973 with effect from the date of this post is vacated by the present incumbent belonging to H.P.A.S. cadre.

(R.H.P. dated 15.10.1983, p. 1182)

²[APPENDIX-II

[Under Rule 23 (b)5]

Table of posts to which special pay is attached.

-----Sl.No. mensem	Designation of posts	Amount	per
1.	2.	3	
-----		Rs.	
1.	Deputy Secretary	400.00	
2.	Under Secretary	400.00	
3.	Sub-Divisional Officer (Civil)	200.00	
4.	Land Acquisition Officer	200.00	
5.	Officer-on-Special Duty	400.00	
6.	Deputy Excise and Taxation Commissioner	400.00	
7.	Deputy Excise and Taxation Commissioner	400.00	
8.	Collector, Forests	200.00	
9.	Deputy Registrar Co-operative Societies	400.00	
10.	Deputy Director, Panchayati Raj	400.00	
11.	Deputy Director, Welfare	400.00	

12.	Deputy Director, Industries	400.00
13.	General Manager, District Industries Centre	400.00
14.	Deputy Director (RIM)	400.00
15.	Under Secretary, Himachal Pradesh Public Service Commission	400.00
16.	Sub-Divisional Officer (Civil) Urban, Shimla	200.00
17.	Deputy Director, Land Records and Consolidation of Holdings.	400.00
18.	Assistant Commissioner/Divisional Officer	200.00
19.	Assistant Commissioner, Land Reforms	200.00
20.	Special Officer, Colonisation	400.00
21.	Settlement Officer (Consolidation)	500.00 (w.e.f.1.2.1987)
22.	Under Secretary (Administrative Reforms)	400.00
23.	Director, Departmental Enquiries	400.00
24.	Under Secretary (Vigilance)	400.00
25.	Deputy Chief Electoral Officer	400.00
26.	State Editor (Gazetteers)	400.00
27.	Secretary, State Transport Authority	400.00
28.	Additional District Magistrate	300.00
29.	Liaison Officer for Himachal Pradesh at Delhi	400.00
30.	Assistant Commissioner to Deputy Commissioer	200.00
31.	Assistant Settlement Officer	500.00 (w.e.f. 1.2.1987)
32.	Additional/Joint/Deputy Director, Himachal Pradesh Institute of Public Administration.	400.00

 ----- *N.B.*- The revised rates of Special Pay as specified in this 'Annexure' shall stand revised w.e.f. the date an officer concerned comes over to the revised pay scale or from the date Special Pay has been sanctioned to a particular post whichever is later.]

APPENDIX III
[Rule 10 (1)]

**RULES RELATING TO THE SUBJECTS AND STANDARDS OF THE
COMPETITIVE EXAMINATION OF CANDIDATES FOR THE POST
OF HIMACHAL PRADESH ADMINISTRATIVE SERVICE**

¹[1. (1) The Examination shall include compulsory and optional subjects and every candidate shall take all the compulsory subjects and two of the optional subjects.

(2) A candidate shall specify in his application form the optional subjects he desires to take, but may intimate any change of intention to the Secretary, Himachal Pradesh Public Service Commission not later than the date prescribed for the payment of the examination fee.

2. A candidate shall answer the paper:-

- (i) Urdu in Persian script;
- (ii) Hindi and Sanskrit in Devanagari script;
- (iii) English and English Literature in English; and
- (iv) other subjects in English or Hindi, at the option of the candidate.

²[3. No candidate shall be considered to have qualified the written examination unless he/she obtains at least 40% marks in Hindi and English (Compulsory papers) and 45% marks in the aggregate.]

³[Provided that the number of candidates to be called for the *viva voce*, on the basis of written examination, shall not exceed three (3) times the number of the vacancies notified for recruitment through the examination:

Provided further that in case there is a tie between or amongst the candidates on account of having obtained equal minimum qualifying marks on the basis of written examination, all candidates obtaining equal minimum marks shall be called for *viva voce* test.]

⁴[4. The compulsory and optional subjects and maximum marks fixed for each subject shall be as shown in the statement below:-

COMPULSORY SUBJECTS

¹ [1. Compulsory Subjects	Maximum Marks
(i) English	100
(ii) Hindi	100
(ii) Essay	100
(iv) General Studies	150
2. Optional papers (two)	
(i) First subject	
(Paper-I)	150
(Paper-II)	150
(ii) Second subject	

(Paper-I)	150
(Paper-II)	<u>150</u>
Total 1+2	1050
3. Viva-voce	150
<hr/>	
	Grand Total 1+2+3 1200]
<hr/>	

OPTIONAL SUBJECTS

Sl.No.	Subject
1.	Indian History
2.	Political Science and International Relations.
3.	Mathematics
4.	Statistics
5.	Economics
6.	Commerce and Accountancy
7.	Chemistry
8.	Botany
9.	Zoology
10.	Philosophy
11.	Law
12.	Sociology
13.	Public Administration and Management
14.	Management
15.	Geography
16.	Agriculture
17.	Mechanical Engineering
18.	Electrical Engineering
19.	Civil Engineering
20.	Hindi
21.	Sanskrit
22.	Urdu
23.	English Literature
24.	Psychology
25.	Geology
26.	Physics
27.	Animal Husbandry & Veterinary Science
28.	Anthropology.
29.	Forestry.
30.	Horticulture.

Notes.- (i) Candidates will not be allowed to offer the following combination of subjects:-

- (a) Mathematics and Statistics.

- (b) Of the Engineering subjects, viz., Mechanical Engineering, Electrical Engineering and Civil Engineering not more than one subject.
- (c) Of Language subjects viz., Hindi, Sanskrit, Urdu, and English Literature, not more than one subject.
- (d) Agriculture and Animal Husbandry and Veterinary Science.
- (e) Political Science and International Relations and Public Administration and Management.
- (f) Commerce & Accountancy and Management.
- (g) Sociology and anthropology.
- (h) Management and Public Administration.
- (i) Horticulture and Forestry.
- (j) Horticulture, Agriculture and Animal Husbandry & Veterinary Science.
- (k) Forestry, Agriculture and Animal Husbandry and Veterinary Science.

(ii) The standards and contents of papers in general, shall be similar to those of the Degree level, i.e., B.A. or B.Sc. etc. Examinations of a recognised Indian University.

(iii) All papers shall be of three hours duration.

(iv) Knowledge of customs, manners and dialects of Himachal Pradesh and suitability for appointment in peculiar conditions prevailing in Himachal Pradesh shall be considered as desirable qualifications.]

¹[(v) The Marks obtained in the compulsory papers of English and Hindi will not be counted for over-all ranking though it would be necessary to obtain 40% marks in each of these papers to qualify.

(vi) Marks and ranking will be decided on the basis of marks obtained in all other compulsory and optional papers (excluding marks in English and Hindi papers of the compulsory papers).]

5. If a candidate's handwriting is not easily legible, a deduction may be made on this account from the total marks otherwise accruing to him/her."

6. Credit will be given for good English/Hindi including orderly, effective and exact expression combined with the economy of words, in all subjects of the examination and not only in subjects which are especially devoted to English/Hindi.

^{7. 2}[The names of candidates who are called for a viva voce test shall be arranged in order of merit on the basis of the aggregate marks obtained at the examination.]

Note.- In the event of a tie, order of merit shall be determined in accordance with highest marks secured in the ³[Viva voce and] should the marks in the viva voce of the candidates who tie be equal, then the order of merit shall be decided in accordance with the highest marks obtained by such candidates in the aggregate of the compulsory subjects.

¹[**DETAILED SYLLABUS FOR**
THE HIMACHAL PRADESH ADMINISTRATIVE SERVICE
COMPETITIVE EXAMINATION
COMPULSORY SUBJECTS
ENGLISH

⁴[Candidates will be required to answer questions designed to test their understanding of English and workman like use of words. Some of the questions will be devised to test also their reasoning power, their capacity to perceive implications and their ability to distinguish between the important and the less important and to write an essay. Passages will usually be set for summary or precis. Credit will be given for concise and effective expression.]

HINDI IN DEVANAGARI SCRIPT

- ¹[(i) Translation of an English passage into Hindi.
- (ii) Explanation of Hindi passage in Prose and Poetry in the same language.
- (iii) Idioms, corrections, etc.]

²[**GENERAL STUDIES**]

Knowledge of current events of National and International Importance and of such matter of everyday observation and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject. The paper will also include questions on Modern History (From 1857 onwards) of India, Indian Culture, Indian Policy, Indian Economy and Geography of India of such nature as candidates should be able to answer without special study and questions on the teachings of Mahatma Gandhi.

VIVA VOCE

The candidates will be interviewed by the Commission 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 the services, or service for which he has applied to the Commission.

The test is intended to judge the mental calibre of 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, care and logical

exposition, balance of judgements, variety and depth of interest, ability for social cohesion and leadership, intellectual and moral integrity.

³[ESSAY

Candidates will be required to write an Essay either in English or in Hindi language on a specific topic. The choice of subject 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.]

AGRICULTURE

Paper-I

Ecology and its relevance to man, natural resources, their management and conservation. Physical and social environment as factors of crop distribution and production. Climatic elements as factors of crop growth, impact of changing environment ¹[crops and cropping pattern] plants as indicators of environments. Environmental pollution and associated hazards to crops, animals and humans.

Cropping patterns in different agro-climatic zones of the country-impact of high yielding and short duration varieties on shifts in cropping patterns. ²[Concepts and principles of multiple cropping,] multistorey, relay and inter- cropping and their importance in relation to food production ;

Package of practices for production of important cereals, pulses, oil-seeds, fibre, sugar and commercial crops grown during ³[Kharif and Rabi] seasons in different regions of the country.

Weeds, their characteristics, dissemination and association with various crops, their multiplication, cultural, biological and ⁴[chemical and integrated control of weeds].

Processes and factors of soil formation, classification of Indian soils including modern concepts, mineral and organic constituents of soils and their role in maintaining soil productivity. Problem soils, extent and distribution in India and their reclamation. Essential plants nutrients and other beneficial elements in soils and plants, their occurrence, factors affecting their distribution, ⁵[availability,] functions and cycling in soils. ⁶[Symbiotic and non-symbiotic nitrogen fixation. Principles of soils fertility and its evaluation for judicious fertilizer use.

⁷[Water shed management] soil conservation planning on watershed basis. Erosion and runoff management in hilly, foot-hills and valley lands processes and factors affecting them. ⁸[Dry land agriculture, its problems and crop production techniques.]

Water use efficiency in relation to crop production, criteria for scheduling irrigation, ways and means of reducing ¹[losses of water.]

Farm management, scope, importance and characteristics, farm planning and budgeting. Economics of different types of farming systems.

²[Extension techniques], methods of evaluation of extension programmes, socio-economic survey and status of big ³[small and marginal farmers] training programmes for extension workers, ⁴[training and extension programmes.]

Paper-II

Heredity and variation, Models Law of inheritance, Chromosomal theory of inheritance. Cytoplasmic inheritance, quantitative characters.

Origin and domestication of field crop. Morphology and patterns of variations in varieties and related species of important field crops, causes and utilization of variations in crop improvement.

Application of the principles of plant breeding to the improvement of major field crops, methods of breeding of self and cross pollinated crops. Introduction, selection, hybridization, heterosis and its exploitation. Male sterility and self incomparability, utilization of mutation and polyploidy in breeding.

⁵[Seed technology, importance, types of seed and their production, processing and testing of seeds of crops and seed certification regulation.]

Climatic requirements and cultivation of major fruits, plants and vegetable crops with special reference to commercial fruits and vegetables, the package of practices and the scientific basis for the same.

Handling and marketing problems of fruits and vegetables, principle methods of preservation of important fruits and vegetable products, processing techniques and equipment. Role of fruits and vegetable in human nutrition, landscape and floriculture including raising of ornamental plants and design and layout of lawns and gardens.

Disease and pests of fields, vegetable, orchard and plantation crops of India and measures to control these. Causes and classification of plant diseases. Principles of plant disease control including exclusion, eradication, immunization and protection. Biological control of pests and diseases, integrated management of pests and disease. Pesticides and their formulations, plant protection equipment, their care and maintenance.

Growth and development of vegetable crops.- Physiology of dormancy and germination of vegetable seeds and tubers. Tissue culture techniques.

¹[**Post-harvest technology**].- Maturity and ripening process and factors affecting them. Quality evaluation for fresh market and processing. Factors responsible in deterioration of harvested fruits and vegetables, role of growth substances and irradiation in decay control, respiration and

transpiration, storage of fresh fruits and vegetables theories of chilling injury and symptoms of chilly injured. Modified gas storage.

ANIMAL HUSBANDRY AND VETERINARY SCIENCE

Paper-I

1. Animal Nutrition:

Energy sources, energy metabolism and requirements for maintenance and production of milk, meat, eggs and work. Evaluation of feeds as sources of energy.

1.1 Advanced studies in Nutrition.- Protein-sources of protein, metabolism and synthesis, protein, quantity and quality in relation to requirements. Energy protein rations in a ration.

1.2 Advanced studies in Nutrition Minerals.- Sources, functions, requirements and inter-relationship of the basic mineral nutrients including trace elements.

1.3 Vitamins, Hormones and Growth Stimulating substances.- Sources, functions, requirements and inter-relationship with minerals.

1.4 Advanced Ruminant Nutrition.- Dairy Cattle.- Nutrients and their metabolism with reference to milk production and its composition. Nutrient requirements for calves, heifers, dry and milking cows and buffaloes. Limitations of various feeding systems.

1.5 Advanced Non-Ruminant Nutrition-Poultry.- Nutrients and their metabolism with reference to poultry, meat and egg production. Nutrient requirements and formulation and broilers at different ages.

1.6 Advanced Non-Ruminant Nutrition-Swine.- Nutrients and their metabolism with special reference to growth and quality of meat production. Nutrient requirements and feed formulation for baby- growing and finishing pigs.

1.7 Advanced Applied Animal Nutrition.- A critical review and evaluation of feed experiments, digestibility and balance studies. Feeding standards and measure of feed energy Nutrient requirements for growth, maintenance and production Balanced rations.

2. Animal Physiology:

2.1 Growth and Animal Production.- Pre-natal and post-natal growth, maturation growth curves, measures of growth factors affecting growth, conformation, body composition, meat quality.

2.2 Milk Production and Reproduction and Digestion.- Current status of hormonal control of mammary development, milk secretion and milk ejection. Composition of milk of cows and buffaloes. Male and female reproduction organs, their components and functions. Digestive organs and their functions.

2.3 Environmental Physiology.- Physiological relations and their regulation mechanisms of adoption, environmental factors and regulatory mechanism involved in animal behaviour, methods of controlling climatic stress.

2.4 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 preservation composition of diluents, sperm concentration transport of diluted semen, deep freezing techniques in cows, sheep and goats, swine and poultry.

3. Livestock Production and Management:

3.1 Commercial Dairy Farming .- Comparison of dairy farming in India with advanced countries. Dairying under mixed farming and as a specialised farming, economic dairy farming, starting of a dairy farm. Capital and land requirement, organisation of the dairy farm, procurement of goods, opportunities in dairy farming factors determining the efficiency of dairy animal, herd recording, budgeting, cost of milk production, pricing policy, personnel management.

3.2 Feeding practices of dairy cattle.- Developing practical and economic rations for dairy cattle, supply of greens throughout the year, field and fodder requirements of Dairy Farm, feeding regimes for day and young stock and bulls, heifers and breeding animals, new trends in feeding young and adult stock, feeding records.

3.3 General problems of sheep, goat, pigs and poultry management.

3.4 Feeding of animals under drought conditions.

4 . Milk Technology:

4.1 Organization of rural milk procurement, collection and transport of raw milk.

4.2 Quality, testing and grading raw milk, quality storage grades of whole milk, skimmed milk and cream.

4.3 Processing, packaging, storing, distributing, marketing detects and their control and nutritive properties of the following milks.- Pasteurized, standardized, toned, double toned, sterilized, homogenized, reconstituted, recombined, filled and flavoured milks.

4.4 Milk product technology.- Selection of raw materials, assembling, production, processing, storing, distributing and marketing milk products such as butter, ghee, khoa, chhana, cheese, condensed evaporated dried milk and baby foods, ice-cream and kulfi, by-products, whey products, butter milk, lactose and casein, testing, grading, judging milk products- ISI and Agmark specifications, legal standards, quality control, nutritive properties, packaging processing and operational control, Costs.

4.5 Preparation of cultured milks, cultures and their management. Vitamin-D, soft and other special milks.

4.6 Legal standards, sanitation requirement for clean and safe milk and for the milk plant equipment.

Paper-II

1. Genetics and Animal Breeding.- Probability applied to Mendelian inheritance. Hardy-Weinberg Law, Concept and measurement of inbreeding and heterozygosity-Wright's approach in contrast to Malecost's Estimation of Parameters and Measurements, Fishers theorem of natural selection, polymorphism, polygenic systems and inheritance of quantitative traits, Casual components of variation Biometrical Models and covariance between relatives. The theory of Patho efficient applied to quantitative genetic analysis, Heritability, repeatability and selection models.

1.1 Population Genetics applied to Animal Breeding.- Population vs. individual, population size and factors changing it, Gene number and their estimation in farm animals, gene frequency and zygetic frequency and forces changing them, mean and variance approach to equilibrium under different situations, sub-division of phenotypic variance, estimation of additive, non-additive genetic and environmental variances in animal population, Mendelism and blending inheritance, genetic nature of differences between species, races, breeds and other subspecific grouping and the grouping and the origin of group differences, resemblances between relatives.

1.2 Breeding systems.- Heritability repeatability, genetics and environmental correlations, methods of estimation and the precisions of estimates of animal data, review of biometrical relations between relatives, mating systems, inbreeding, out-breeding and uses, phenotypic assertive mating aids to selections family structure of animal population under non-random mating systems, breeding for threshold traits, selection index, its precision, general and specific combining ability, choice of effective breeding plants.

Different types and methods of selection, their effectiveness and limitations, selection indices construction of selection in retrospect, evaluation of genetic gains through selection, correlated response in animal experimentations.

Approach to estimation of general and specific combining ability, Diallete, fractional Diallete crosses, reciprocal recurrent selection, inbreeding and hydridization.

2. Health and Hygiene.- Anatomy of ox and fowl. Histological technique, freezing, paraffin, embedding etc. Preparation and staining of blood films.

2.1 Common histological stains, Embryology of a cow.

2.2 Physiology of Blood and its circulation, respiration, excretion, Endocrine glands in health and disease.

2.3 General knowledge of pharmacology and therapeutics of drugs.

2.4 Vety-Hygiene with respect of water, air and habitation.

2.5 Most common cattle and poultry diseases, their mode of infection, prevention and treatment etc. Immunity General principles and problems of meat inspection jurisprudence of Vet. practice.

2.6 Milk hygiene.

3. Meat Hygiene:

3.1 Zoonosis, Diseases transmitted from animals to man.

3.2 Duties and role of Veterinarians in a slaughter house to provide their meat that is produced under ideal hygienic conditions.

3.3 By-products from slaughter houses and their economic utilisation.

3.4 Methods of collection, preservation and processing of hormonal glands for medicinal use.

4. Extension :

4.1 Extension. Different methods adopted to educate farmers under rural conditions.

4.2 Utilisation of fallen animals for profit-extension education etc.

4.3 Define Trysem. Different possibilities and methods to provide self employment to educated youth under rural conditions.

4.4 Cross breeding as a method of upgrading the local cattle.

ANTHROPOLOGY

PAPER-I

FOUNDATION OF ANTHROPOLOGY

Section I is compulsory. Candidates may offer either Section II-A or II-B.

Section-I

1. Meaning and scope of Anthropology and its main branches.- (1) Social-Cultural Anthropology ; (2) Physical Anthropology; (3) Area ecological Anthropology ; (4) Linguistic- Anthropology ; (5) Applied Anthropology.

II. Community and Society Institutions, group and association ; Culture and civilization ; band and tribe.

III. Marriage.- The problems of universal definition ; incest and prohibited categories; preferential forms of marriage ; marriage payments ; the family as the corner stone of human society; universality and the family ; functions of the family; diverse forms of family-nuclear, extended, joint etc. Stability and charge in the family.

IV. Kinship.- Decent, residence, alliance, kins terms and kinship behaviour, lineage and clan.

V. Economic Anthropology.- Meaning and scope ; modes of ex-change; barter and ceremonial exchange ; reciprocity and redistribution ; market and trade.

VI. Political Anthropology.- Meaning and scope. The locus and power and the functions of legitimate authority in different societies. Difference between State and stateless political systems. Nation-building processes in new State, law and justice in simpler societies.

VII. Origins of religions; animism and animatism. Difference between religions and magic. Totemism and Tabbo.

VIII. Fieldwork and fieldwork traditions in Anthropology.

Section-II A

1. Foundations of the theory of organic evolution.- Lamarckism, Darwinism and the Synthetic theory ; Human evolution ; biological and cultural dimensions. Micro-evolution.

2. The order Primate. A comparative study of Primates with special reference to the anthropoid apes and man.

3. Fossil evidence for human evolution.- Dryopithecus, Ramapithecus, Australopit keeines, Homo erectus (Pithecanthropines), Homo-Sapiens neanderthalaensis and Homo sapiens.

4. Genetics.- Definition. The Medalian principles and its application to human populations.

5. Racial differentiation of man and bases of racial classification-morphological, serological and genetic. Role of heredity and environment in the formation of races.

The effects of nutrition, breeding and hybridization.

Section-II B

1. Technique, method and methodology distinguished.

2. Meaning of evolution-biological and socio-cultural. The basic assumptions of 19th century evolutionism. The comparative method Contemporary trends in evolutionary studies.

3. Diffusion and diffusionism- American distributionism and historical ethnology of the German speaking ethnologists. The attack on "the"

comparative method by diffusionists and Franz Bees. The nature, purpose and methods of comparison in social-cultural anthropology ; Radcliffe-Brown, Eggan, Oscar Lewis and Sarana.

4. Patterns, basic personality construct and modal personality. The relevance of anthropological approach to national character studies. Recent trends in psychological anthropology.

5. Function and cause, Malinowski's contribution to functionalism in social anthropology. Function and structure : Radcliffe- Brown, Firth, Fortes and Nadel.

6. Structuralism in linguistics and in social anthropology. Levistraus and Leach in viewing social structure as a model. The structuralist method in the study of myth. New Ethnography and formal semantic analysis.

7. Norms and Values. Values as a category of anthropological description. Values of anthropologist and anthropology as a source of values. Cultural relativism and the issue of universal values.

8. Social anthropology and history. Scientific and humanistic studies distinguished. A critical examination of the plea for the unity of method of the natural and social sciences. The nature and logic of anthropological field work method and its autonomy.

PAPER-II

INDIAN ANTHROPOLOGY

Palaeolithic, Mesolithic, Neditic, Protohistoric (Indus civilization) dimensions of Indian culture.

Distribution of racial and linguistic elements in Indian population.

The basis of Indian social system : Varna, Ashram Purushartha, Caste, Joint family.

The growth of Indian anthropology. Distinctiveness of anthropological contribution in the study of tribal and peasant sections of the Indian population. The basic concepts used. Great Tradition and Little Tradition ; Sacred complex universalization and parochialization ; Sanskritization and Westernization ; Dominant caste ; Tribe-caste continuum Nature-Man-Spirit complex.

Ethnographic profiles of Indian tribes ; racial linguistic and socio-economic characteristics.

Problems of tribal peoples: Land-alienation, indebtedness, lack of educational facilities, shifting-cultivation, migration, forests and tribal, unemployment, agricultural labour. Special problems of hunting and food-gathering and other minor tribes.

The problems of culture-contact ; impact of urbanization and industrialization; depopulation, regionalism, economic and psychological frustrations.

History of tribal administration. The constitutional safeguards for the scheduled tribes. Policies, plans, programmes of tribal development and their implementation. The response of the tribal people to the Government measures for them. The different approaches to tribal problems. The role of anthropology in tribal development.

The constitutional provisions regarding the scheduled castes. Social disabilities suffered by the scheduled castes and the socio-economic problems faced by them.

Issues relating to national integration.

BOTANY

PAPER-I

(MICROBIOLOGY, PATHOLOGY, PLANT GROUPS AND THEIR MORPHOLOGY, ANATOMY, TAXONOMY, EMBRYOLOGY OF ANGIOSPERMS)

1. Microbiology.- (Viruses and Bacteria) Their structure, classification, reproduction and physiology. Mode of infection of viruses and bacteria. Role of microbes in industry and agriculture.

2. Pathology.- Knowledge of common and important plant diseases caused by Fungi and Bacteria. (Special reference to diseases common in Himachal Pradesh) Mode of infection of fungi and control of diseases.

3. Plant Groups.- Classification, structure, reproduction, Life History and Economic importance of Algae, Fungi Bryophytes Pteridophytes and Gymnosperms (including comparative study of various groups). A general knowledge of distribution of important genera of principal sub-division of above groups in India (Emphasis of Western Himalayas).

4. Morphology, Anatomy, embryology and Taxonomy of Angio-sperms.- Morphology and Anatomy of Stem, Root Lead (Excluding anomalous growth). Tissue and Tissue system. Structure of anther & ovule. Fertilization and development of Seed. Classification of Angio-sperms. Principles of nomenclature. Modern trends in Taxonomy. A general knowledge of following families of Angiosperms.

Ranunculaceae, Cruciferae, Malvaceae, Rutaceae, Rosaceae, Legum-inosae, Cucurbitaceae, Umbelliferae, Compositae, Solanaceae, Labiatae, Eupharbiaceae, Liliaceae and Gramineae.

PAPER-II

**CELL BIOLOGY, GENETICS AND EVOLUTION, PHYSIOLOGY,
ECOLOGY AND ECONOMIC BOTANY**

Cell Biology.- Cell as a unit of structure and function, Ultra-structure of cell and its various organelles. Chromosomes-The physical and chemical structure, its behaviour during mitosis and meiosis.

Genetics and Evolution.- Pre and post Mendelian concept of Genetics. Development of gene concept. Genetic code. Nucleic Acids, their structure and role in reproduction and Protein bio-synthesis, Mutations. role of Mutations in Plant Breeding (wheat, gram, tobacco, cotton only). Organic Evolution-evidences and theories.

Physiology.- Photosynthesis, Absorption and conduction of water, Transpiration, mineral absorption, Role of Elements, enzymic Respiration, fermentation, Growth, Photoperiodism and Vernalization, Plant Hormones, their types and role. Dormancy of seeds.

Plant Ecology.- Its scope, plant communities, Plant succession, factors, Applied ecology with special reference to pollution and conservation.

Economic Botany.- Importance of Plants. Important plants yielding food, fibre, wood and drug.

CIVIL ENGINEERING

PAPER- I

(A) THEORY AND DESIGN OF STRUCTURES

(a) Theory :

Principle of superposition, reciprocal theorem, unsymmetrical bending.

Determinate and indeterminate structures, simple and space frames, degrees of freedom, virtual work, energy theorems, deflection of trusses, redundant frames, three moment equation, slope deflection and moment distribution methods. Column analogy, energy methods, approximate and numerical methods.

Moving loads-Shearing force and bending moment diagrams, influence lines for simple and continuous beams and frames.

Analysis of determinate and indeterminate arches, spandrel braced arch.

Matrix methods of analysis, stiffness and flexibility matrix. Elements of plastic analysis.

(b) Steel Design:

Factors of safety and load factor, design of tension, compression and flexural members, built up beams and plate girders, semi-rigid and rigid connections.

Design of stanchions, slab and gusseted bases, crane and gantry girders, roof trusses, industrial and multi storeyed building, water tanks.

Plastic design of continuous frames and portals.

(c) R.C. Design :

Design of slabs, simple and continuous beams, columns, footings single and combined, raft foundations, elevated water tanks, encased beams and columns, ultimate load design.

Methods and system of prestressing, anchorages, losses in prestress design of prestressed girders, ultimate load design.

(B) FLUID MECHANICS AND HYDRAULIC ENGINEERING

Dynamics of fluid flow equations of continuity, energy and momentum Bernoulli's theorem, cavitation, Velocity potential and stream function, rotational and irrotational flow, free and forced vortices, flownet.

Dimensional analysis and its application to practical problems.

Viscous flow.- Flow between static and moving parallel plates, flow through circular tubes, film lubrication, velocity distribution in laminar and turbulent flow, boundary layer.

Incompressible flow through pipes.- Laminar and turbulent flow, critical velocity, losses, Stanton diagram. Hydraulic and energy grade lines, siphons, pipe net forces on pipe bends.

Compressible flow.- Adiabatic and isentropic flow, subsonic and supersonic velocity, Mach number, shock waves, water hammer.

Open channel flow.- Uniform and non-uniform flow, best hydraulic cross-section. Specific energy and critical depth gradually varied flow, classification of surface profiles, control sections, standing wave flume, surges and waves, hydraulic jump.

Design of canals.- Unlined channels in alluvium, the critical tractive stress, principles of sediment transport regime theories, lined channels, hydraulic design and cost analysis drainage behind lining.

Canal structures.- Designs of regulation work, cross drainage and communication work-cross regulators, head regulator, canal falls, aqueducts, metering flumes etc., canal outlets.

Diversion Head works.- Principles of design of different parts on impermeable and permeable foundations, Khosla's theory, energy dissipation, sediment exclusion.

Dams.- Design of rigid dams, earth dams, forces acting on dams, stability analysis.

Design of Spillways, Wells and Tubewells.

(c) SOIL MECHANICS AND FOUNDATION ENGINEERING

Soil Mechanics.- Original classification of soil, atterburglimits, void ratio, moisture contents, permeability, laboratory and field tests. Seepage and flow nets, flow under hydraulic structures, uplift and quick san condition, Unconfined and direct shear tests, triaxial test, earth pressure theories, stability of slopes, theories of soil consolidation, rate of settlement. Total and effective stress analysis, pressure distribution in soils, Boussinasque and Westerguard theories. Soil stabilisation.

Foundation Engineering. Bearing capacity of footings, piles and wells, design of retaining walls, sheet piles and caissons.

PAPER-II

Note.- A candidate shall answer question only from any two parts.

PART-A

BUILDING CONSTRUCTIONS

Building materials and constructions.- Timber, stones, brick, sand, surkhi, mortar, concrete, paints and varnishes, plastics, etc.

Detailing of walls, floors, roofs, ceilings, staircases, doors and windows. Finishing of buildings- plastering, pointing, painting etc. Use of building codes, ventilation, air conditioning, lighting and accoustics.

Building estimates and specifications construction scheduling PERT and CPM methods.

PART-B

RAILWAYS AND HIGHWAYS ENGINEERING

(a) Railways.- Permanent way, ballast, sleeper, chairs and fastenings, points and crossing, different types of turn outs, cross-overs setting out of points.

Maintenance of track, super elevation, creep of rain, ruling gradients, track resistance, tractive effort, curve resistance.

Station yards and machinery, station buildings, platform sidings, turn tables.

Signals and inter locking, level crossings.

(b) Roads and Runways.- Classification of roads, planning, geometric design of flexible and rigid pavements, sub-bases and wearing surfaces. Traffic engineering and traffic surveys, intersections road signs, signals and markings.

PART-C

WATER RESOURCES ENGINEERING

Hydrology.- Hydrologic cycle, precipitation, evaporation, transpiration and infiltration hydrograph units, hydrograph flood estimation and frequency.

Planning for Water Resources.- Ground and surface water resources, surface flows, single and multipurpose projects, storage capacity, reservoir losses, reservoir silting, flood routing. Benefit cost ratio. General principles of optimisation.

Water requirements for crops.- Quality of irrigation water, consumptive use of water, water depth and frequency of irrigation, duty of water, irrigation methods and efficiencies.

Distribution system for canal irrigation.- Determination of required channel capacity, channel losses, alignment of main and distributary channels.

Water logging.- Its causes and control, design of drainage system, soil salinity.

River training.- Principles and methods.

Storage works.- Types of dams (including earth dams) and their characteristics, principles of design, criteria for stability. Foundation treatment, joints and galleries. Control of seepage.

Spillways.- Different types and their suitability, energy dissipation spillway crest gates.

PART-D

SANITATION AND WATER SUPPLY

Sanitation.- Site and orientation of buildings, ventilation and damp proof course, house drainage, conservancy and water borne system of waste disposal. Sanitary appliances-latrines and urinals.

Disposal of sanitary sewage, industrial waste, storm sewage separate and combined system. Flow through sewers, design of sewers, sewer appurtenances- Manholes, inlets, junctions, syphon, ejection etc., Sewer treatment working principles, units, chambers, sedimentation tank etc. Activated sludge process, septic tank, disposal of sludge. Rural sanitation, environment pollution and ecology.

Water Supply.- Estimation of water resources, ground water hydraulics, predicting demand of water. Impurities of water, physical, chemical and bacteriological analysis water borne diseases.

Intake of water.- Pumping and gravity schemes. Water treatment. Principles of settling, coagulation, flocculation and sedimentation. Slow, rapid and pressure filters, softening, removal of taste, odour and salinity.

Water distribution.- Layout storage, hydraulic pipelines, pipe fittings, pumping station and their operations.

COMMERCE AND ACCOUNTANCY

PAPER-I

BOOK-KEEPING AND ACCOUNTANCY

Accounting structure.- Accounting equations. Special purpose subsidiary books, basic accounting concept and conventions. Nature of final accounts and accounting concepts of income. Costs and avenues. Analysis of changes in income. Bills of exchange, de-recoatopm. Reserves and sinking funds.

Error and their rectification, average due date and account current.

Consignment and joint ventures, sectional and self balancing Ledgers.- Single entry system. Income and Expenditures and Receipts and Payments accounts. Partnership accounts (including admission, retirement and dissolution of partners).

Business organisation and management Business organisation.- Nature of business and its evolution. Comparative study of the forms of business organisation-single proprietorship. Partnership.

Company, business combinations.- Channels of distribution-retail, Wholesale, selections of channels of distribution. Financing of home trade, personal setting. Advertising, Credit and Collections, Transportation and storage-forms of Transportation. Service, selections of mode of transportations, co-ordination in various mode of transportation, types of storage, characteristics of adequate storage facilities, Principles of insurance, Fire-Marino and Life, Nature of Management, Functions of Management, Financial Management. Types methods and sources of Finance, Capital structure, internal management, line, line-staff, functional decentralisation of authority. Personnel Management, Recruitment, Selection, Placement, Training, Job evaluation and Merit rating.

Business Statistics.- Definition, scope, functions and limitations of statistics collection of primary and secondary data editing, classification and tabulation of data.

Presentation of data through diagrams and graphs.- One dimensional, two dimensional and three dimensional diagrams, graphs on natural and semi-logarithmic scale. Time series, graphs, frequency. Ogive Curves and Galthons Method of locating median.

Measures of central tendency.- Arithmetic mean, geometric mean, harmonic mean, Mode and Median for grouped and ungrouped data, measures

of disparison, range, quartile deviation, Mean and Standard Deviations, Co-efficient of disparison, co-efficient of variation.

SKEWNESS AND CO-EFFICIENT OF SKEWNESS

Correlation analysis.- Simple correlation between two variables (ground and ungrouped data), rank correlation and correlation of concurrent deviation.

Construction of index number.- Purpose and problems fixed and Chain Base Methods, Choice of averages.

Analysis of time series, components of time series (Absolute and relative) Secular Trend, Cyclical, Seasonal and irregular fluctuations, Isolation of Trend.

Free-hand curve method moving average method.- Semi-average method and least square method (Fitting straight lines only).

Indian Statistics.- Sources of statistical data relating to agriculture Industry, population, Trade and Prices Statistical Organisations at the Centre and in the States.

Commercial Law.- Indian law relating to contracts (including Bailment, Pledge, Indemnity, Guarantee and Agency), Partnership Act.

Sale of goods, Negotiable instruments and insolvency and Arbitration Act.

PAPER-II

MONEY, BANKING AND INTERNATIONAL TRADE

Money.- Definition and functions, Role in capitalist and socialist economy. Classification, paper money, methods of issue monetary standards, value of money, its meaning and measurement of changes., Determination of the value of money quantity theory. The Fishers and Cambridge equations income and expenditure approach. Liquidity theory inflation, open and suppressed, Demand pull and cost push. Monetary institutions money and capital markets policy, its objectives and techniques. Brief history of Indian currency with special emphasis on the present day currency problems in India.

Banks.- Their types and functions, the nature of commercial banking operations, distribution of bank assets, principles and objectives, control banks, the nature of their business, objectives and techniques of central banking.

Indian Banking system.- Commercial banks-State Bank of India and subsidiaries. Foreign banks. The Co-operative banking section. Indigenous banking. Specialised financial institutions. Reserve Bank of India, its functions and a detailed critical study of the policies since 1951.

International Trades.- Theory of comparative cost, balance of payments, foreign exchange. Determination of exchange rates, exchange

fluctuations, their causes and corrective. Tariff and other forms of trade controls. International financial institutions. Contemporary problems of India's international trade value, composition and direction of foreign trade, balance of payment exchange control of export promotional exchange value of rupee-Indian and the International Trade agreement. State trading and financing of trade-foreign exchange crisis and cure.

COMPANY LAW

Company Law.- A study of the provisions of Indian Law regarding companies (excluding winding up proceedings).

Note.- Candidates are expected to be acquainted with general principle of law including amendments made six months before the commencement of the examination.

INCOME TAX AND AUDITING

Income tax.- Law and practice of income definitions, distinction between capital and revenues. Basis of charge or incidence of tax liability. Exempted incomes, heads of incomes, income of other persons included in assessee's total, income computation of total taxable income in regard to income of individuals H.U. Fs and Firms.

Carry forward and set off of losses, depreciation, development rebate and development allowance. Rebate reliefs and deductions- double taxation relief-Advance payment of tax, deduction of tax at source. Income-Tax authorities and administration of the Act regarding Assessment, Appeals, Revisions, Refunds and Penalties.

Auditing.- Its origin, definition, scope, objects and advantages, classes of audits, continuous and completed, Internal Check, internal audit, audit programme, techniques of auditing, vouching, verification of assets and liabilities, depreciation and reserves, divisible profits, conducting investigations, Auditor's report.

Management.- (i) Elements of Management Accounting.

1. Introduction.- Management Accountancy :

Conventions of management.- Accountancy : Organisation for management accountancy, responsibilities of Management Accountancy, Limitation of Management Accountancy.

2. Analysis and Interpretation of Financial statements.- Financial statements and their nature. Importance of financial statement. Analysis for management lending institutions. Investors and others, techniques of analysis, ratios, comparative statements, common size statements and funds flow and cash flow statements.

3. Budgetary Controls.- Meaning of budget. Budgeting and budgetary control. Essentials for effective budgeting preparation of budgets.

Type of budgets. Techniques of budgetary control. Advantages of budgeting limitations.

4. Cost-volume-profit relationship.

5. Application marginal cost equations contribution, PLV ratio break even point margin of safety.

6. Graphical presentation of cost-volume-profit relationship and construction of break even charts alternative forms of charts, their uses and limitations.

7. Construction of Profit graph and its uses, profit graphs for analysis of by products.

(ii) Elements of Management Principles.

1. Introductory-meaning, nature, scope and importance of management in modern world. The managerial revolution scientific management and rationalisation.

2. Brief historical background of management through 19th Century contributions, Bandage, Watt, Owan, etc. scientific approach in management, Taylor Philosophy, Henry Fayol and Urvic human relations approach in management, Elton Mayo and Mary Parker Follet:

3. An elementary knowledge of the functions of management :

(i) Planning

(ii) Organisation

(iii) Co-ordination

(iv) Motivation

(v) Control

Process of decision making (elementary approach).

CHEMISTRY

Note.- The students will be expected to solve simple structural, synthetic, mechanistic, conceptual and numerical problems based on and relevant to the syllabus. They are also expected to be acquainted with the S.I. units.

PAPER-I

Atomic Structure and Chemical bonding.- Quantum theory, Schrodinger equation, particle in a box, hydrogen atom. Hydrogen mole-culeion, hydrogen molecule. Elements of valence bond and molecular obital theories (idea of bonding, non-bonding and antibonding orbitals). Sigma and Pibonds.

Chemical kinetics.- Kinetics of reactions involving free radicals, Kinetics of polymerization and photochemical reactions.

Surface chemistry and catalysis.- Physical absorption isotherms, surface area determination, heterogenous catalysis, acid bases and enzyme catalysis.

Electrochemistry.- Ionic equilibria, Theory of strong electrolytes, Debye, Huckel theory of activity coefficients, electrolytic conduction galvanic cells, membrane equilibria and fuel cells. Electrolysis and over voltage.

Thermodynamics.- Laws of Thermodynamics and application to physio-chemical processes, systems of variable compositions.

Electronic structure of transition metal complexes.- Crystal field theory and modifications, complexes of Placceptor ligands, organometallic compounds of transition metals.

Lanthanides Actinides.- Separation Chemistry, Oxidation state, magnetic properties.

Reaction in non-aqueous solvents.

PAPER-II

PHYSICAL ORGANIC CHEMISTRY

Electronic displacements.- Inductive, electrometric, mesomeric and hyper conjugative effects. Electrophiles, nucleophiles and free radicals, Resonance and its application to organic compounds. Effect of structure on the dissociation constants of organic acids and basis. Hydrogen bond and its effects on the properties of organic compounds.

Modern concepts of organic reaction mechanisms, addition, substitution, elimination and rearrangement. Reaction involving free radicals. Mechanisms of aromatic substitution. Benzene intermediates.

Aliphatic Chemistry.- Chemistry of simple organic compounds belonging to the following classes-alkanes. Alkynes. Alkyl halides, alcohols, thiols, aldehydes, Ketones, acids and their derivatives, ethers amines, amino acids, hydroxy acids, unsaturated acids, dibasic acids.

Synthetic uses of the following :-

Acetoacetic and malonic esters, organometallic compounds of magnesium and lithium, ketene, carbon and diazomethane.

Carbohydrates.- Classification, configuration and general reactions of simple monosaccharide chemistry of glucose, fructose and sucrose.

Stereo Chemistry.- Elements of symmetry and simple symmetry operation, Optical and geometrical isomerism in simple organic molecules E.Z. and R.S. notations. Conformations of simple organic molecules. Stereochemistry of inorganic coordination compounds.

Aromatic Chemistry.- Benzene, toluene and their homologues, hydroxy, nitro and amino derivatives, sulphonic acids. Naphthalenes, Benzol

dehyde. Salicylaldehyde, acetophenone. Benzonic pathalic, salicylic, cinnamic and mandelic acids, Reduction products of nitrobenzene, Diazonium salts and their synthetic uses.

Structure, synthesis and important reactions of naphthalenes anthracene, Phenanthrene, Pyridine and quinoline.

Basic concepts regarding the following materials of economic and medical importance.- Cellulose and starch, coal tar, chemicals, organic polymers. Oils and fats, petrochemicals, vitamins, Hormones, alkaloids (fermentation products including antibiotics, proteins.)

Organic Photochemistry.- Energy level diagrams, quantum yield, Photochemistry of simple organic molecules.

Polymers.- Physical chemistry of Polymers. Molecular weight averages and group analysis sedimentation light scattering and viscosity of Polymer solutions.

Alloys and inter-metallic compounds.

ECONOMICS

PAPER-I

1. Economics choice, consumer behaviour. Producer behaviour and market forms.

2. Investment decisions and determination of income and employment. Macro-economic models of income, distribution and growth.

3. Banking, objectives and instruments of central banking and credit policies in a planned developing economy.

4. Types of taxes and their impacts on the economy. The impacts of the size and the content of budgets. Objectives and instruments of budgetary and fiscal policy in a planned developing economy.

5. International trade, tariffs, the rate of exchange, the balance of payments.

International monetary and banking institutions.

PAPER-II

1. The Indian Economy.

2. Guiding principles of Indian economic policy.- Planned growth and distributive justice. Eradication of poverty.

The institutional frame-work of the Indian economy federal Government structure, Agricultural and industrial sectors-Public and private sectors.

National Income.- 1. Its sectoral and regional distribution, extent and incidence of poverty.

2. Agricultural production :
Agricultural Policy.
Land reforms technological change. Relationship with the industrial sector.
3. Industrial production :
Industrial Policy
Public and Private Sectors.

Regional distribution.- Control of monopolies and monopolistic practices.

4. Pricing policies for agricultural and industrial outputs. Procurement and public distribution.

5. Budgetary trends and fiscal policy.

6. Monetary and credit trends and policy.- Banking and other financial institutions.

7. Foreign trade and the balance of payments.

8. Indian Planning.- Objectives, strategy, experiences and problems.

ELECTRICAL ENGINEERING

NET WORK :

Steady state analysis of d.c. and a.c. networks, network theorems, Matrix algebra, networks functions transient response, frequency response, Laplace transform, Fourier series and Fourier transform, frequency spectral polezero concept, elementary network synthesis.

STATISTS AND MAGNETICS :

Analysis of electrostatic and magnafestatic fields, Laplace and Poisson Equations, solution of boundaries value problems, Maxwell's equations, electromagnetic wave propagation, ground and space waves, propagation between earth station and satellites.

MEASUREMENTS :

Basic methods of measurements, standards, error analysis, indicating instruments, cathode, ray oscilloscope, measurement of voltage, current, power, resistance, inductance, capacitance, time, frequency and flux, electronic metres.

ELECTRONICS :

Vacuum and semiconductor devices, equivalent circuits transistor parameters, determination of current and voltage gain and input and output

impedances, biasing techniques, single and multi-stage, audio and radio small signal and large signal amplifiers and their analysis, feedback amplifiers and oscillators, wave shaping circuits and time base generators analysis of different types of multivibrator and their uses, digital circuits.

ELECTRICAL MACHINES :

Generation of e.m.f.m.m.f., and torque in rotating machines, motor and generator characteristics of d.c., synchronous and induction machines, equivalent circuits, commutation, parallel operation, phasor diagrams and equivalent circuits of power transformer, determination of performance and efficiency, auto-transformers, 3-phase transformers.

PAPER-II

SECTION-A

CONTROL SYSTEM :

Mathematical modelling of dynamic linear control systems, block diagrams and signal flow graphs, transient response, steady state error, stability, frequency response techniques, root-locus techniques, series compensation.

INDUSTRIAL ELECTRONICS :

Principles and design of single phase and polyphase rectifiers controlled rectification, smoothing filters, regulated power supplies, speed control circuits for drives, invertors, d.c. to d.c. conversion, choppers, timbers and welding curcuilts.

SECTION-B

HEAVY CURRENTS

ELECTRICAL MACHINES :

Induction Machine.- Rotating magnetic field polyphase motor, principle of operation, phaser diagram, Torque slip characteristic, equivalent circuit and determination of its parameters, circle diagram, starters, speed control double cage motor, induction generator, theory, phaser diagram characteristics and application of single phase motors. Application of two phase induction motor.

Synchronomous Machines.- e.m.f. equation phase and circle diagrams, operation on infinite bus, synchronizing power operating characteristics and performance by different methods, sudden short circuit and analysis of oscillogram to determine machine reactance and time contents, motor characteristics and performance, methods of starting applications.

Special Machines.- Amplidyne and metadyne, operating characteristics and their applications.

Power systems and protection.- General layout and economics of different types of power stations, base load, peak-load and pumped storage plants, economics of different systems of d.c. and a.c. power distribution. Transmission line parameter calculation concept of G.M.D., short, medium and long transmission line, insulators, voltage distribution in a string of insulators and grading. Environmental effects on insulators. Fault calculation by symmetrical components, load flow analysis and economic operation, steady state and transient stability, switch-gear. Methods of arc extinction, re-striking and recovery voltage, testing of circuit breaker, protective relays, protective schemes for power system equipment C.T. and P.T. surges in transmission lines, travelling waves and protection.

Utilisation.- Industrial drives electric motors for various drives and estimates of their rapping behaviour of motors during starting acceleration, braking and reversing operations, schemes of speed control for d.c. and induction motors.

Economics and other aspects of different systems of rail traction, mechanics of train movement and estimation of power and energy requirements and motor ratings, characteristics of traction motors, dielectric and induction heating.

OR

SECTION-C

LIGHT CURRENTS

Communication systems generation and detection of amplitude-frequency-phase and pulse-modulate signals using oscillators. Modulators and demodulators, comparison of modulated systems, noise problems, channel efficiency sampling theorem, sound and vision broadcast transmitting and receiving systems, antennas, feeders and receiving circuits, transmission line at audio, radio and ultra high frequencies.

Microwaves-Electromagnetic waves in guided media, wave guide components, cavity resonators, microwave tubes and solid-state devices, microwave generators and amplifiers, filters microwave measuring technique, microwave radiation pattern, communication and antenna systems, radio aids to navigation.

D.C. Amplifiers.- Direct coupled amplifiers, difference amplifiers, chopper and analog computation.

ENGLISH LITERATURE

PAPER-I

Candidates will be expected to show a general knowledge of the History of English literature from the time of Chaucer to the end of the reign of Queen Victoria, with special reference to the works of the following authors:-

Shakespeare, Milton, Dryden, Johnson, Wordsworth, Keats, Dickens, Tennyson, Arnold and Hardy.

PAPER-II

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

1. Shakespear	As you like it
2. Milton	Paradise Lost
3. Wordsworth	The Prelude
4. Dickens	David Copperfield
5. Hardy	Jude the Obscure
6. 1[Yeats] and	Easter 1916, The Second Coming among School Children
7. T.S. Eliot	The Waste Land
8. D.H. Lawrence	The Rainbow

²[FORESTRY

PAPER-I

Forest's types in India and their distribution, Factors influencing vegetation, Natural and artificial regeneration of forests. collection, storage and viability tests of forest seeds. Seed germinations and pre-sowing treatments. Nursery practices- selection and preparation of site, Management of nurseries. Afforestation Site, selection and preparation, selection of stock, time and method of planting. Tending operation, cost and financing.

Silviculture systems.- Clear felling, uniform shelterwood, selection and coppice. Choice of silvicultural system.

Binominal nomenclature systems of classification, Growth habitants and silvicultural characters, phenology and regeneration method of Cedrus Deodarda pinus roxburghiu, picea, smithiana, abies pindrow, quercus spp. Shorea, rubustra, Grewia optiva Celtis australis, Delebrated sissou, Tectiona, grandis Acaciac catechu, Bauhinia roriegata and Bamboo spp.

Social forestry.- Objective, scope and necessity, place of social forestry in the National Forest Policy, Species for social forest, utilization of products derived from social forestry plantations, Social forestry in Himachal Pradesh. Van Mahotsava and Chipko Movement.

Classification of forest, soil, their physical and chemical properties. Social erosion process and factors responsible. Soil conservation methods, Watershed management and water harvesting structures. Role of forests in watershed management. Social survey and land capability classes. Problems of forest soil and their improvement.

Principles and concepts of Tree Improvement methods and techniques. Role of biotechnology in forestry. Forest ecosystems. Ecological succession in forest, nutrient cycling. Herbaria-principles and its

establishment, Types of grasslands of India with special reference to Himachal Pradesh.

Measurement of trees.- Diameter, girth, height, from bark thickness, crown width and crown length, Measurement of stands- diameter, height, age and volume. Forest enumeration. Sample plot, layout and measurements. Estimation of growth and yield stands. Canopy density yield tables preparation and its application. Introduction and use of remote sensing. Forest inventories.

History of forest development in India. Forest policy of 1894, 1952 and amendment of 1988. Forest Law its necessity, and Indian Forest Act, 1927, the Forest Conservation Act, 1980.

FORESTRY

PAPER-II:

Logging.- Fellissing, converon, transportation, Forest depots, saw milling Defects of wood, Wood seasoning, Wood preservation, Composite wood, Wood based industries-pulp and paper, furniture, katha and catch, oleoresin, charcoal, rayon. Distribution, chemical constituents and parts of plants used for medicinal and aromatic values. Tannings, dyes, poisonous, insecticidal and insect repellants plants, Cultines of Wild fruits and weeds possessing economic values.

Insect pest and diseases responsible for damaging forest, nurseries. Problems of weeds in forest nursery and plantation. Weed control, Forest fire- its harmful and beneficial effects Fire control methods. Fire fighting devices and extinguishing chemicals, Modern methods of forest fire control.

Forestry extension education in community development, organisational set up of forestry development publicity of forestry works and its role in the implementation of forestry projects.

Cost benefit analysis of forest operations, Socio-economic analysis of forest productivity, relationship between tribal and forest, Determination of opetional rotation of roasts crops, Marketing of forest products and its role in economy, Market analysis of forest produce.

Different methods of forest survey in hilly terrain. Forest roads designing, estimation construction and maintenance. Retaining and breast wall constructions, Design and construction of timber bridges.

Endangered species of wild life. wild life conservation dn zoo management, Ecological basis of wild life management National parks. Sanctuaries and biosphere reserves of India. the Wild life Protection Act, 1972. Wild life in Himachal Pradesh. Special projects for Wild life conservation in India.

GEOGRAPHY

PAPER-I

Physical and Human Geography of the world, Principles of Physical Geography comprising of detailed study of the lithosphere, hydrosphere and atmosphere leading upto the modern views regarding cycle concepts, isostasy processes of mountain formation, weather phenomena surface and sub-surface movement of ocean-waters etc.

Principles of Human Geography comprising of detailed study of the distribution of man on the basis of cultures, race, religion etc. environment and mode of life, population trends and population movements.

PAPER-II

PHYSICAL, ECONOMIC AND REGIONAL GEOGRAPHY OF INDIA

- (i) Structure, relief, climate and soils.
- (ii) Population and its problems.
- (iii) Agriculture, agrarian problems and programmes.
- (iv) Irrigation and River Valley Projects.
- (v) Power and Mineral Resources.
- (vi) Industries and industrial development of India under the plans, regions of India, basis of the division. A study of the regional divisions.

GEOLOGY

PAPER-I

Physical Geology and Geomorphology.- Origin, structure, interior and age of the earth geosynclines and mountains. Isostasy. Origin of continents and oceans. Continental drift. Seismology, volcanology. Geological action of surface agencies.

Structural and fields Geology.- Common structures of igneous, sedimentary and metamorphic rocks, study of folds. Faults, unconformities joints and thrusts, Elementary ideas of method of geological surveying and mapping.

Stratigraphy and Palaemology.- Principles of Stratigraphy, Indian Stratigraphy. Lithological and Chronological sub-division of Geological record. Fossils nature and its mode of preservation, bearing or organic evolution, Invertebrate and plant fossils.

PAPER-II

Crystallography and Mineralogy.- Elements of crystal forms and symmetry Laws of Crystallography. Crystal systems and classes, crystal habits, twinning. Stereographic projections. Physical, chemical and optical properties of minerals, study of more important rock-forming and economic minerals regarding their chemical, physical, chemical and optical properties of minerals, study of more important rock-forming and economic minerals

regarding their chemical, physical properties, crystallographic and optical characters, alteration, occurrence and commercial uses.

Economic Geology.- Theories of orogenesis. Classification, geology occurrence, localities and resources of chief metallic and non-metallic minerals of India, Mineral industries in India. Principles of Geophysical prospecting and ore dressing.

Petrology.- Origin, constitution, structure and classification of igneous sedimentary and metamorphic rocks, Study of common Indian rock types.

HINDI

PAPER-I

PART-A

HISTORY OF HINDI LANGUAGE

- (i) Evolution of Avadhi Braj Bhasa as literary Language during the Medieval period.
- (ii) Evolution of Khari Boli Hindi as literary Languages during the 19th century.
- (iii) Standardization of Hindi Language with Devanagari script.
- (iv) Major dialects of Hindi and their inter-relationship.
- (v) Significant grammatical features of standard Hindi.

PART-B

HISTORY OF HINDI LITERATURE

(i) Chief characteristics of the major periods of Hindi literature viz. Adī kal, Bhakti Kal, Riti Kal, Bhartendu Kal and Dwivedi Kal.

(ii) Significant features of the main literary trends and tendencies in Modern Hindi viz., Chhayavad, Rahasyavad, Pragativad, Prayogvad, Nayi Kavita, Nayi Kahani, Akavita.

(iii) Rise of Novel and Realism in Modern Hindi.

(iv) A brief history of theatre and drama in Hindi.

PAPER-II

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

Kabir Kabir Granthavali by Shyam Sunder Dass (200 stanzas from the beginning).

Surdas Bhramara Geet Saar (200 stanzas from the beginning only).

Tulsi Das	From Ramcharitmanas (Ayodhyakand only) Kavitavali (Uttarakand only).
Bharatendu	Andher Nagari.
Harishchandra	
Prem Chand	Godan, Mansarovar (Bhag Ek).
Jayashanker Prasad	Chandragupta.
Suryakant Tripathi Nirala	Anamika (Saroj Smriti, Ram- ki-Shakti Pooja only)
S.H.Vatsyan Agyeya	Shekahar-Ek-Jeevni (Two Parts).
Gajanan Madhav Muktibodh	Chand-ka-Mukh Tera Hai (Andhere mein only).

1[HORTICULTURE

PAPER-I

Fruit industry in India and its potential. General Principles of cultivation. Methods of propagation. Physiological basis of rooting. Special plant growing structures-mist propagation, green house and glass house. Promising roots stocks for fruit crops. Plant growth regulator, retardants and inhibitors relating to flowering, sex expression, fruit set fruit development and ripening. Dormancy and rest period. Pollination and fruit set. Growth and fruiting habits of fruits and nut species Part-henocarp. Orchard management practices manures and manuring, Irrigation, training and pruning, High density plantings. Fruit thinning and fruit drop.

Origin, history, morphological description, climatic requirements and production techniques of important temperate, sub-tropical fruit crops, Important pests, diseases and physiological disorders, and their management, Integrated management of pests and diseases. Harvesting and harvest maturity indices, Handling and marketing problems of major fruits, Special problems of production.

Principal methods of preservation. Important fruit and vegetable products. Processing techniques and equipments. Wastes from processing factory and their impact on environment. By-products and utilization. Nutritive value of fresh and processed fruits and vegetables. Standards of fruit and vegetable products.

Economic principles in fruit and vegetable production. Use of planning and budgeting techniques; Efficiency measures of orchard management.

Extension education and its importance. Methods of evaluation of extension programmes. Socio-economic survey and status of different categories of farmers. Training programmes for extension workers, Lab to Land and T&V programmes.

HORTICULTURE PAPER-II

Importance, nutritive value and classification of vegetables, types of vegetable gardening, Principles of vegetables cultivation including nursery Management Climatic requirement and cultivation of mahor summer and winter vegetable crops. Off-season vegetable production. Diseases and pests of vegetable cross and measures of control.

Weeds, their characteristic and association with various vegetable crops. Cultural, biological and chemical control of weeds.

Principles of plant breeding in the improvement of mahor vegetable crops Methods of breeding of self, cross-pollinated and vegetatively propagated crops. Seed technology and its importance, Production, processing testing and marketing of vegetable seeds.

Plant physiology and its significance, Growth and development factors affecting, growth, absorption and translocation of water, transpiration of water economy. Modern concepts of photosynthesis and reparation.

Processes and factors of soil formation. Mineral and organic constituents of soil and their rule in maintaining soil productivity. Plant nutrient elements in soils and their availability. Nitrogenous, phosphatic, polassic and micronutrient fertilizers and their use. Problems soils their reclamation, Water conservation and watershed management. Water use efficiency in relation to crop production. Criteria or scheduling irrigation, ways and means of reducing runoff losses.

Importance and scope of floriculture, landscaping and interioscaping. History theory and principles of landscape plantings and lawns. Beautification of slops, frost and waste lands, Layout of home gardens and public parks. Proration of ornamentals, Cultural requirement of ornamental trees, shrubs, climbers, bulbs and annuals for winter and summer season, Production technology and post harvest management of cult flowers, bulbs, house plants and bedding plants.]

INDIAN HISTORY

PAPER-I

The Mauryan Empire :

Mauryan chronology and sources.

Administration of the empire.

Social and economic activity.

Ashoka's policy of Dharma.

2. Political and Economic History of India c. 200 B.C. to A.D. 300. The emergence of Kingdoms in northern and southern India, their geographical and political basis.

The contribution of trade to the development of Indian economy and society.

Indian contacts with Central Asia, West Asia and South-East Asia. The development of Buddhism and the emergence of Bhagvatism.

3. The Gupta period :

Political history of the Gupta Kings.

Agrarian structure and revenue system.

Development of arts, literature, etc.

Development of Vaishnavism, Saivism etc.

4. India in the Seventh century A.D.

Harshavardhana.

The Chalukyas.

The Pallevas.

Northern India, 650-1200, Political and social conditions, the Feudal economy. The chola Empire, the South Indian village system, Sankaracharya. The Turkish conquests and the Delhi Sultanate (1206-1526). The land revenue system and military and administrative organisation. Changes in economy and society. Evolution of Indo-Persian culture literatures and art.

The provincial kingdoms. Polity and society of the Vijayanagram empire.

Religious movements of the 15th and 16th centuries.

PAPER-II

The contest for Northern India, 1526-56. The Sur administration.

The Mughal Empire, 1556-1707, Political history. The mansab and jagir systems. Central and provincial administration. Land revenue. Religious policy.

Indian economy, 16th and 17th centuries. Agriculture and agrarian classes. Towns and commerce. The opening and deveopment of European trade.

Mughal court culture, literature, painting and architecture. Religious trends.

The 18th century, disintegration of the Mughal Empire its succession states (Deccan, Bengal, Awadh). The Marathas from Shivaji to 1803.

(1757-1950) A MODERN INDIA

British Conquest of Bengal, Changing Patterns of British Colonialism, Economic Impact of British Rule. Changes in Agrarian Structure. the permanent settlement, the Ryotwari Ist War of Independence, 1857.

Changes in British Administrative and Economic Policies after 1858, Social Basis of Indian National Movement Programme, Policies, Ideology and Techniques of Political work of the early Nationalists Official Response to early National Movement from Dufferin to Curzon, Religious Reform Movements, Social Reform and Lower Caste Movements and Social Change. The Anti-Partition of Bengal Agitation and Swadeshi Movement. Programmes Policies. Ideology and Techniques of Political work of the Militant Nationalists, Emergence of Revolutionary Terrorism. Rise of Communalism, Emergence of Gandhi in Indian Politics, the first Non-Cooperation Movement, the Swarajist Boycott of Simon Commission and the Nehru Report, Puran Swaraj and the 2nd Civil Disobedience Movement, the State Peoples Movements, Development of Nationalist Foreign Policy, Development of Nationalist Planning ideology. The Congress and other Ministries after 1936, Growth and spread of Communalism in India during the World War-II. The Crips Mission, the Quit India Movement of 1942, the Indian National Army, Post-War Political Development, Achievement of Freedom and the Partition of India, Integration of Indian States.

LAW

Paper-I

(A) Jurisprudence.- Concept of Law, Kinds of Law, Positive Law, administration of Justice, Sources of Law, Elements of Law including legal rights and duties, liability ownership, possession, legal personality and property.

(B) Constitutional Law.- Constitutional Law of India.

(c) International Law.- Nature and source of International Law, History of International Law, International Law and Municipal Law.

Rights and duties of the States.

War.- Declaration, Effects, Self defence, Collective Security, Regional Pacts.

Otiawary of War.- Belligerency and insurgency, Law of Belligerent occupation, Prisoners of war, War criminals.

PAPER-II

(A) Law of Crime (Indian Penal Code):

General Exceptions (Sections 76 to 106) Vicarious liability, Conspiracy (Section 34, 120A and 120B), Section (124A) Offences against public tranquility (Section 141, 142, 146, 149 and 150). Offences affecting human body (Sections 299, 300, 301, 319, 320, 322, 340, 359, 360, 361 and 362).

Offences against property (Sections 378, 383, 390, 391, 399, 403, 405, 415, 420 and 441).

Attempts (Section 511).

(B) Law of Evidence and Indian Evidence Act.

(c) The Himachal Pradesh Land Revenue Act, 1954 (Act No. 6 of 1954), the Himachal Pradesh Tenancy and Land Reforms Act, 1972 (Act No. 8 of 1974), ¹[the Himachal Pradesh Ceilling on Land Holdings Act, 1972 (19 of 1973) and the Himachal Pradesh Village Common Land (Vesting and Utilization) Act, 1974 (18 of 1974).]

MECHANICAL ENGINEERING

PAPER-1

Statics.- Equilibrium in three dimensions. Suspension cables. Principle of virtual work.

Dynamics:- Relative motion, Coriolis force, Motion of a rigid body. Gyroscopic motion. Impulse.

Theory of Machines.- Higher and lower pairs inversions, steering, mechanism, Hooks joint, velocity and acceleration of links, inertia forces. Cams. Conjugate action in gearing and interference, gear trains epicyclic gears. Clutches, belt drives, brakes, dynamometers, fly wheels governors, balancing of rotating and reciprocating masses and multicylinder engines. Free, forced and damped vibration for a single degree of freedom. Degrees of freedom. Critical speed and whirling of shafts.

Mechanics of Solids.- Strees and strain in two dimensions. Mohr's Circle Theories of failure, deflection of beams, buckling of columns combined bending and torsion. Castigliano's theorem. Thick cylinders, rotating disk. Shrink fit. Thermal stresses.

Manufacturing Science.- Merchant's theory, Taylor's equation, Machinability. Unconventional machining methods including EDM, ECM and ultrasonic machining. Use of lastars and plasmas. Analysis of forming processes. High velocity forming. Explosive forming. Surface roughness, gauging, comparators, jigs and fixtures.

Production Management.- Work simplification, work sampling value engineering. Line balancing, work station design storage space requirement. ABC analysis, Economic order quantity including finite production rate, Graphical and simplex methods for linear programming, transportation model elementary queuing theory , quality control and its uses in product design. Use of X.R.P. and C charts, Single sampling plans, operating characteristics curves. Average sample size, Regression analysis.

PAPER-II

Thermodynamics.- Applications of the first and second laws of thermodynamics. Detailed analysis of thermodynamic cycles.

Fluid Mechanics.- Continuity, momentum and energy equations. Velocity distribution in laminar and turbulent flow dimensional analysis. Boundary layer on a flat plate. Adiabatic and isentropic flow, Mach number.

Heat Transfer.- Critical thickness of insulation. Conduction in the presence of heat sources and sinks. Heat transfer from fins. One dimensional unsteady conduction. Time constant for thermocouples, Momentum and energy equations of boundary layers on a flat plate. Dimensionless numbers. Free and forced convection, boiling and condensation. Nature of radiant heat. Stefan Boltzmann law. Configuration factor logarithmic mean temperature difference. Heat exchanger effectiveness and number of transfer units.

Energy Conversion.- Combustion phenomenon in C.I. and S.I. engines Carburation and fuel injection, Selection of pumps classification of hydraulic turbines, specific speed. Performances of compressors. Analysis of steam and gas turbines. High pressure boilers. Unconventional power systems, including Nuclear power and MHD systems. Utilisation of solar energy.

Environmental Control.- Vapour compression, absorption, steam jet and air refrigeration systems. Properties and characteristics of important refrigerants. Use of psychrometric chart and comfort chart. Estimation of cooling and heating loads. Calculation of supply air state rate. Air conditioning plant layout.

MATHEMATICS

PAPER-I

MATHEMATICS PURE

The subject included will be (1) Algebra, (2) Infinite Sequences and Series, (3) Trigonometry, (4) Theory of equations, (5) Analytic Geometry of two and three dimensions, (6) Analysis and (7) Differential equation.

(1) **Algebra.-** Sets, Union, Intersection difference and complementation properties, Venn Diagram. Properties of natural numbers. Real numbers and their representation by decimals. Complex number Argand Diagram. Cartesian Product. Relation. Mapping. Function as a mapping. Equivalence relation. Groups, Isomorphism of groups. Sub-groups, Normal sub-groups Lagrange's Theorem. Frobenius theorem.

The definitions and illustrations of rings and field. Divisors of zero and Homomorphisms. Vector spaces.

Determinants addition, subtraction, multiplication and inversion, of matrix, Linear homogeneous and non-homogeneous equations, Cayley Hamilton theorem.

Elementary number of theory. Fundamental theorem of arithmetic. Congruences. Theorems of Fermat and Wilson. Inequalities. Arithmetical and Geometrical means. Inequalities of Cauchy. Schwarz, Holder and Minkowsky.

(2) Infinite sequences and series.- Concept of limit infinite series. Convergent, divergent and oscillatory series. Cauchy's general principle of convergence. Comparison and ratio test. Gauss's test. Absolute convergence and de-arrangement of series.

(3) Trigonometry.- De Moivre's theorem for rational index and its applications. Inverse Circular and Hyperbolic functions. Expansion and summation of trigonometrical series. Expressions for sine and cosine in terms of infinite products.

(4) Theory of Equations.- General properties of polynomial equation. Transformation of equations. Nature of the roots of cubic and biquadratic Cardan's solution of the cubic, Resolution of biquadratic into quadratic factors. Location of roots and Newton's method of divisors.

(5) Analytic Geometry of two and three dimensions.- Straight lines Pair of straight lines, Circles, System of circle. Ellips, Parabola, Hyperbola, Reduction of second degree equation to a standard form. Plane, Straight lines, sphere, cone, conoids and their tangent and normal properties (Vector methods will be permissible).

(6) Analysis.- Concept of limit, continuity, derivation, differentiability of a function of one real variable properties of continuous functions. Characterisation of discontinues. Mean value theorems. Evaluation of indeterminate forms. Taylor's and Maclaurin's theorems with Laran's and Cauchy's form of remainders. Maxima and minima of function of one variable. Plane curves, singular points, curvature curve tracing. Envelopes Partial differentiation. Differentiability of function of more than one real variable. Standard methods of integration. Riemann's definition of definite-integral of continuous function. Fundamental theorem of integral calculus. First mean value of theorem of integral calculus. Rectification, quadrature volumes and surfaces of solids of revolution and their applications.

(7) Differential Equation.- Formation of ordinary differential equation order and degree. Geometrical demonstration of the existing theorem for $dx/dy = S(x,y)$. First order linear and non-linear equations. Singular points. Singular solutions. Linear differential equations and their important properties. Linear differential equations with constant co-efficient Cauchy-Euler type of equations. Exact differential equations and equations admitting integrating factor. Second order equations. Changing of dependent and independent variables, Solution when integral is known variation of parameters.

PAPER-II

MATHEMATICS APPLIED

The subjects included will be (1) Vector Analysis, (2) Statics, (3) Dynamics and (4) Hydrostatics.

(1) Vector Analysis.- Vector Algebra, Differentiation of Vector function of a scalar variable. Gradient, divergence and curl in cartesian, cylindrical and spherical co-ordinates and their physical interpretation. Higher order derivatives. Vector identities and Vector equations. Gauss and Stokes theorems.

(2) Statics.- Fundamental laws of Newtonian Mechanics. Theory of Dimension. Plan statics. Equilibrium of system of particles. Work and potential energy, Centre of mass and centre of gravity. Frictions, common Catenary Principle of virtual work. Stability of equilibrium. Equilibrium of forces in three dimensions.

Attraction potential of rods, rectangular and circular discs, spherical shell, spherical equipotential surfaces and their properties. Properties of potentials. Green's equivalent stratum. Laplace and Poisson's equations.

(3) Dynamics.- Velocity vector. Relative velocity. Acceleration. Angular velocity. Degrees of freedom and constraints. Rectilinear motions simple harmonic motion. Motion in a plane. Projectiles. Constrained motion. Work and energy, Motion under impulsive forces. Kepler's law, Orbits under central forces. Motion of varying mass. Motion under resistance. Moments and products of inertia. Two dimensional motion of a rigid body under finite and impulsive forces. Compound pendulum.

(4) Hydrostatics.- Pressure of heavy fluids. Equilibrium of fluids under given system of forces. Centre of pressure. Thrust on curved surfaces. Equilibrium of floating bodies. Stability of equilibrium. Pressure of gases and problems relating to atmosphere.

¹[MANAGEMENT

PAPER-I

The Candidate should make study of the development of the field of management as a systematic body of knowledge and acquaint himself adequately with the contributions of leading authorities on the subject. He should study the role, function and behaviour of the manager and relevance of various concepts and theories to the Indian context. Apart from these general concepts, the candidate should study the environment of business and also attempt to understand the tools and techniques of decision making.

The candidate should be given choice to answer any five questions.

Organisational Behaviour and Management Concepts:

Significance of social, psychological factors for understanding organisational behaviour, relevance of theories of motivation, contribution of Maslow, Herzberg, McGregor, McClelland and other leading authorities, research studies and leadership management by objectives, small group and

inter group behaviour, application of these concepts for understanding the managerial role, conflict, and co-operation, work norms, and dynamics of organisational behaviour, organisational change.

Organisational Design.- Classical, neo-classical and open systems, theories of organisation, centralisation, decentralisation, delegation, authority and control, organisational structure, systems and processes, strategies, policies and objectives, decision making, communication and control, management, information system and role of computer in management.

Economic Environment:

National income, analysis and its use in business forecasting, trends structure in Indian Economy, Government programmes and policies, regulatory policies, monetary, fiscal and planning and the impact of such micro-polities on enterprise decisions under different market structures pricing of joint products and prices discrimination capital budgeting applications under Indian conditions, choice of projects and cost benefit analysis, choice of production techniques.

Quantitative Method:

Classical Optimization.- Maxima and minima of single and several variables: optimization and constraints- Application. Linear Programming: Problem of relation- Graphical Solution- Simplex Method, Waiting Lines-MM-I systems, zero sum. Game Theory of 2X2 of 3X3 dimensions. Formulation of transportation and assignment models of linear programming and method of solutions.

Statistical Methods Measures of central tendencies and variations- Application of Binomial, Poisson and Normal distributions. Time series-regression and correlation-Test of Hypotheses-Decisions making under risk. Decision Trees, Replacement Theory, Minimax, Maximum Criterion of Decision Making. Different criterion for selecting optimum strategies.

MANAGEMENT:

PAPER-II

The candidate would be required to attempt five questions but not more than two questions from any one section.

SECTION-I MARKETING MANAGEMENT

Marketing and Economic Development-Marketing Concept and its applicability to the Indian economy-Major tasks of management in the context of developing economy, Rural and Urban marketing their prospects and problems.

Planning and Strategy in the context to domestic and export marketing concept of marketing mix-Market Segmentation and product differentiation strategies-Consumer Motivation and Behaviour-Consumer Behavioural

Models-Product Brand distribution, public distribution system, price and promotion.

Decisions:- Planning and control of marketing programmes-Marketing research and Models-Sales Organisational dynamics-Marketing Information Systems, Marketing audit and control.

Export:- Incentives and promotional strategies-Role of Government, trade association and individual organisation problems and prospects of export marketing.

SECTION-II

Production and Material Management:

Fundamentals of production from management point of view, types of manufacturing systems continuous repetitive, intermittent, Organising for production, long range, forecast and aggregate production planning, plant design, process planning, plant size and scale of operations, location of plant, layout of physical facilities, equipment replacement and maintenance.

Functions of production planning and control routing, loading and scheduling for different types of production systems, assembly line, balancing, machine line balancing.

Role and importance of material management, material handling, value analysis, quality control, waste and scrap disposal, make or buy decision, codifications, standardisation and spare parts inventory, Inventory control-ABC analysis. Economic order quantity recorder point safety stock, two bin system, waste management DGS & D purchase process and procedure.

SECTION-III:

Financial Management:

General tools of financial analysis; ratio analysis, funds flow analysis, cost-volume-profit analysis, cash budgeting financial and operating leverage.

Investment Decision.- Steps in capital expenditure management, criteria for investment appraisal, cost of capital and its application in public and private sectors. Risk analysis in investment decisions, organisational evaluation of capital expenditure management with special reference to India.

Financing Decisions.- Estimating the firms of financial requirements, financial structure determinations, capital markets, institutional mechanism for funds, with special reference to India, security analysis, leasing and sub-contracting.

Working Capital.- Managements: Determining the size of the working capital, managing the managerial attitude towards risk in working

capital, management of cash, inventory and accounts receivables, effects of inflation on working capital management.

Income Determination and Distribution:

Internal financing, determination of dividend policy, implication of inflationary tendencies in determining the dividend policy valuation and dividend policy.

Financial managements in Public Sector with special reference to India.

Performance Budgeting and Principles of Financial Accounting. System of Management Control.

SECTION-IV

Human resource Management:

Characteristics and significance of Human resources, Personal Policies-Manpower. Policy and Planning-Recruitment and Selection Technique-Training and Development. Promotions and transfers, Performance Appraisal-Job Evaluation, Wage and Salary Administration Employee Morals and Motivation, Conflict Management, Management of Change and Development.

Industrial Relations, Economy and Society in India, worker profile and Management style in India, Trade Unionism in India, Labour Bonus Act, Trade Unions Act, Industrial Democracy and Worker Participation in Management. Collective Bargaining, Conciliation and Adjudication, Discipline and Grievances, Handling in Industry.]

PSYCHOLOGY

PAPER- I

Its nature, scope and methods, experimental method in psychology. Factors in human developments, heredity and environment. Motivation feelings and emotions, their nature and development theories of emotions, development of character.

The cognitive processes, sensation, perception learning, memory and forgetting, and thinking.

PAPER-II

Intelligence and abilities.- Concepts and measurement. Personality-nature, determinants, theories and assessment.

Group processes and group effect, crowd behaviour leadership and moral attitudes and prejudice social change.

Concept of abnormality, symptoms and etiology of the main forms of psychoneurotic and psychotic disorders, social pathology and juvenile delinquency-Causes and prevention. Main forms of thera-pheutic techniques.

¹[PUBLIC ADMINISTRATION

PAPER-I

ADMINISTRATIVE THEORY:

I. Basic Premises.- Meaning, scope and significance of Public Administration, arts, science or craft. Its role in developed and developing societies, Ecology of Administration, social, economic cultural, political and legal evaluation of Public Administration as a discipline, Public Administration as an art and a science, New Public Administration.

II. Theories of organisation.- Scientific management(Taylor and his associates); The Bureaucratic theory of organisation(Weber) Classical theory of organisation (Henry Flyol, Luther Gulic and others). The Human Relations Theory of Organisations(Elton Mayo and his Colleagues) Behavioural approach, Systems Approach.

III. Principles of Organisation.- Hierachy, Unity of Command, Authority and Responsibility, Theories of Co-ordinations, Span of Control, Supervision, Centralisation and Decentralisation Delegation.

IV. Public Policy.- Relevance of policy making in Public Administration. The processes of Policy formulation in implementation.

V. Administrative Behaviour.- Decision making with special reference to the contribution of Herbert Simon. Theories of Leadership, Communication, Moral Motivation (Maslow Herzberg), Behavioural approach (Chester Barred) Structural, Functional and Systems approach.

VI. Structure of Organisations.- Chief Executive, Types of Chief Ex-ecutives and their functions, Line, Staff and Auxiliary agencies, Departments, Corporations, Companies, Boards and Commission. Head-quarters and field relationship.

VII. Personnel Administration.- Bureaucracy and Civil Services, Position Classification, Recruitment, Training Career Development, Performance Appraisal, Promotions, Pay and Service conditions Retirement Benefits, Discipline, Employer-Employee Relations, Integrity in Administration, Generalists and Specialists Neutrality and Anonymity.

VIII. Financial Administration.- Concept of Budget Preparation and Execution of the Budget, Performance Budgeting, Legislative Control, Accounts and authit.

IX. Accountability and Control.- The concept of Accountability and Control, Legislative, executive and judicial Control over Administration Citizen and Administration.

X. Administrative Reforms.- O&M, Work Study Work Measurement, Administrative Reforms, Processes and obstacles.

XI. Administrative Law.- Importance of Administrative Law, Principles of Natural Justice, Delegated Legislation, Meaning, Types, Advantages, Safeguards, Administrative Tribunal.

XII. Comparative and Development Administration.- Meaning, Nature and Scope of Comparative Public Administration, Contribution of Fred Rigg with particular reference to the Prismatic-Sale model. The concept, scope and significance of Development Administration. Political Economic and Socio-Cultural Context of Development Administration. The concept of Administrative Development.

PUBLIC ADMINISTRATION

PAPER-II:

Indian Administration:

1. Evolution of Indian Administration.- Kutilya Medawal, British and modern periods.

II. Environmental Setting.- Constitution, Parliamentary Democracy, Federalism, Socialism, Secularism.

III. Political Executive at the Union level.- President, Prime Minister, Council of Ministers-Cabinet Committees.

IV. Structure of Central Administration.- Secretariat, Cabinet Secretariat, Miniseries and Departments, Boards and Commissions Field Organisations.

V. Centre-State Relations.- Legislative, Administrative, Planning and Financial.

VI. Public Services.- All India Services, Central Services, State Services, Local Civil Services, Union and State Public Service Commissions, Constitutional Safeguards Training of Civil Services

VII. Machinery for Planning.- Planning, Plan Formulation at the National Level, National Development council, Planning Commission, Planning Machinery at the State and District levels.

VIII. Public Undertakings.- Forms, Management, Control, Feature and Problems.

IX. Control of Public Expenditure.- Parliamentary Control, Role of the Finance Ministry, Comptroller and Auditor General.

X. Administration of Law and Order.- Role of Central and State Agencies in Maintenance of Law and Order.

XI. State Administration.- Governor, Chief Minister, Council of Ministers, Secretariat, Chief Secretary, Directorates.

XII. District and Local Administration.- Role and Importance, District Collector, Land and Revenue, Law and Order and Developmental

Functions, District rural Development Agency, Special Development Programmes.

XIII. Local Administration.- Panchayati Raj, Urban Local Government, Features, Forms, Problems, Autonomy of Local Bodies.

XIV. Administration for welfare.- Administration for the Welfare of weaker Sections with particular Reference to Scheduled Castes, Scheduled Tribes and Programmes for the Welfare of Women.

XV. Issue Areas in Indian Administration.- With Integrity and Morality-Relationship between Political and Permanent Executives, Generalists and Specialists in Administration Integrity in Administration. Peoples Participation in Administration. Redressal of Citizens. Grievances, Lok Pal and Lok Ayukata, Administrative Reforms in India.

PHILOSOPHY

PAPER-I

Nature of philosophy, its relation to life, thought and culture. History and Theory of Ethics, Eastern and Western, with special reference to the problems of moral standards and their application, moral judgement determinism and free will, moral order and progress, relation between individual societies and the State. Theories of crime and punishment, and relation of Ethics to religion.

PAPER-II

SOCIO-POLITICAL PHILOSOPHY OF RELIGION

1. The following topics with special reference to the Indian context including Indian Constitution :-

Political Ideologies	Democracy, Socialism, Fascism, Theocracy, Communism and Sarvodaya.
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Methods of political action	Constitutionalism, Revolution, Terrorism and Satyagraha.
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2. Tradition, change and modernity with reference to Indian Social Institutions.

3. Philosophy of Religion :

- (a) Theology and Philosophy of Religion.
- (b) Foundations of religious belief. Reason, Revelation, Faith and Mysticism.
- (c) God, Immortality of soul, Liberation and Problem of Evil.
- (d) Equality, Unity and Universality of Religions, Religious tolerance, Conversion, Secularism.

¹[POLITICAL SCIENCE AND INTERNATIONAL RELATIONS**PAPER-I****PART-A**

Political Theory, -Concept of Government, forms of Government, parliamentary and presidential systems, bicameralism, federal and unitary systems, theory of separation of powers, electoral system, sovereignty, power, legitimacy and authority.

PART-B**Indian Nationalist Movement and Constitutional and National Development:**

India's Nationalist Movement and Political Development. The emphasis on this section will be on a thorough knowledge of force and ideas that led to 2[institutional] changes.

There will be no specific question on Acts.

System of Government:

Executive (President, Prime-Minister, Cabinet, Civil Service), Legislature and Judiciary and their inter-relation, State Government structure, directive principles of state policy, amending process, political parties, pressure groups in India.

Note.- The emphasis will be on the study of institutional structure and their actual working.

PAPER-II**PART-A**

1. Cold war.-Origin, development detente, post-cold war world order with special reference to the disintegration of the USSR..

2. Decolonization and the Emergence of New Nations.

3. Concept of Non-alignment.- Development of the Non-alignment Movement, Political and Economic dimensions of Non-Align Movement; changing character of Non-Align Movement in the context of POV-Cold war ear..

4. International Economic order with special reference to North-South dialogue and South-South dialogue.

5. UNO.-Its role in the Developing International order.

Part-B:

1. Government and politics in UK, U.S.A.and China.

Note.- Candidates are required to have the knowledge of the actual working of Executive, Legislature, Judiciary, Political parties and Pressure groups of the Countries mentioned above.]

PHYSICS

PAPER-1

MECHANICS, THERMAL PHYSICS, WAVES AND OSCILLATIONS

Mechanics.- Galilean, transformation, concept of mass and Newton's laws of motion, conservation laws, Motion of rigid bodies, Coriolis Force, Kepler's laws of gravitation, measurement of F. artificial satellites. Fluid motion, Bernoullis theorem circulation, Reynold number, turbulence. Viscosity, surface tension, Elasticity, Relativistic mechanic and simple applications, elements of general relativity.

Thermal Physics.- Perfect gas, Vender Weals equation. Laws of Thermodynamics, Production and measurement of low temperatures. Kinetic theory of gases; Brownian motion. Black body radianic. Planl's law. Specific heat of gases and solids, Thermionic emission. Fermi Dirac and Bose-Einstein distribution laws. Thermal ionization. Elements of irreversible thermodynamics. Solar energy and its utilization.

Waves and Oscillations.- Oscillations with one and two degrees of freedom, forced vibrations and resonance wave motion. Phase and group velocity.

Hyghens Principle.- Reflection, refraction, interference, diffraction and polarization of waves, Optical instruments and resolving power. Multiple beam interference. Ex-M. Wave equation, Freshnels formula, normal and anomalous dispersion coherence. Laser and its application.

PAPER-II

ELECTRICITY, MAGNETISM, ATOMIC PHYSICS AND ELECTRONICS ELECTRICITY AND MAGNETISM

Poisson's and Laplace's equations and simple applications. Dielectric and polarization, capacitors. Dia-para and ferromagnetic materials. Kirchhoff's laws, Faradays laws of electro-magnetic induction L.C.R. circuits alternating currents Maxwell's equations.

Atomic Physics.- Bohr's theory, Electron spin, Lande's factor. Panli's principle. Specture of one-electron system. Zeeman effect, photoelectric effect Elements of X-ray spectra. Compton scattering. Wave particle duality Schrodinyer's equation and simple applications. Uncertainty principle.

Basic properties and structure of nuclei, mass spectrometry radioactivity, mechanism Band and decay, properties of nutrons, Electron microscope, nuclear fission and reactors, nuclear fusion, cosmic ray showers, pair production. Simple properties of elementary particles. Symmetry in physical laws.

Electronics.- Electron emission from solids, Child-Langmuir Law, Static and dynamic characteristics of diodes, trodes, tetrodes and pentodes ; thyatron Band structure of metals and semiconductor, doped semi-conductor; p-n diodes, transistors.

Simple (vacuum tubes and transistor) circuits for rectification, amplification, oscillation, modulation and detection of r.f. waves. Basic principles of radio reception and transmission. Television. Elementary principles of microscope solid state device.

SANSKRIT

PAPER-I

There will be four sections.-

1. Significant features of the grammar with particular stress on Sandhi, Karka, Samasa and Vachya (Voice)
2. General knowledge of literary history and principal trends of literary criticism. Origin and development of literary genres, including Epic, Drama, Prose, Kavya, Lyric and Anthology.
3. Translation from Hindi to Sanskrit.
4. Short essay in Sanskrit.

PAPER-II

PART-A

General study of the following works :-

- (a) Meghaduta (Kalidass)
- (b) Utteramacharita (Bhavabhuti)
- (c) Mudraraksasa (Visakhadatta)
- (d) Rajatarangini (kalhana)
- (e) Harsacharita (Banabhatta)

PART-B

Evidence of first hand reading of the following selected texts for reading (textual questions will be asked from the prescribed portions only):

1. Kathopanishad I Chapter III Valli-(verses 10 to 15)
2. Bhagwatgita II Chapter (13 to 25 verses)
3. Budhacharita I (1 to 10 verses)
4. Abhijana Shakuntalam (4th act.)
5. Kiratarjuniyam (1st canto)
6. Nitishataka (1 to 10 verses)

7. Kadambari (Sukanasapadesha)
8. Kautilya Arthashastra (2nd and 11th Adhayayas of Ist Adhikarana).

Note to Part B.- Questions carrying minimum of 25 per cent marks should be answered in Sanskrit.

SOCIOLOGY

PAPER-I

Nature and scope of Sociology and its relation to other social sciences- Society its nature and structure. Individual and society, Social interaction, Group behaviour, Culture, Culture and personality, Crowd Behaviour, Leadership Sociolisation.

Institutions and Associations.- Social Values-Traditions, Customs and Modes, Religion, Social Control, Social Disorganization, Society and Adjustments, Human Ecology and population-Growth of population and population Control.

The candidates will be expected to illustrate theory by facts and to analyse problems with the help of theory. They will be expected to be particularly conversant with indian problems.

PAPER-II

SOCIETY IN INDIA

Social stratification.- Caste system and its transformation aspects of ritual, economic and caste status, cultural and structural views about caste, mobility in caste, issues of equality and social justice, caste among the Hindus and the non-Hindus, Casteism, the Backward Classes and the Scheduled Castes, untouchability and its eradication, agrarian and industrial class structure.

Family marriage and kinship, Regional variation in kinship systems and its socio-cultural correlates, changing aspects of kinship, the joint family, its structural and functional aspects and its changing form and disorganisation, marriage among different ethnic groups and economic categories, its changing trend and its future, impact of legislation and socio-economic change upon family and marriage intergenerational gap and youth unrest, changing status of women.

Rural social system and community development, socio-cultural dimensions of the village community, traditional power structure, democratization and leadership, poverty, indebtedness and bonded labour, social consequences of land reforms. Community Development Programme and other planned development projects, and of Green Revolution, new strategies to rural development.

Urban Social Organisations.- Continuity and change in the traditional cases of social organization namely, kinship, caste and religion in the urban context, stratification and mobility in urban communities. Ethnic diversity and community integration, urban neighbourhoods, rural-urban differences in demographic and socio-cultural characteristics and their social consequences, Urbanization and Urbanism.

Social change and modernization, Problem of Rule Conflict, youth unrest, Intergenerational gap, Changing Status of Women, Major sources of social change and of resistance to change impact of the West, reform movements, social movements, industrialization and urbanization, pressure groups, factors of planned change-Five Year Plans, Legislative and executive measures, process of change-Sanskritization, Westernization and Modernization, means of modernization-mass media and education, problem of change and modernization-structural contributions and breakdowns.

Current Social Evils.- Corruption and Nepotism-Smuggling-Black money.

STATISTICS

PAPER-I

(I) Probability.- Classical and Statistical definitions of probability, simple theorms on probability with examples. Conditional probability and statistical independence. Bayer's theorem. Random variables- Discreet and continuous. Probability functions and probability density functions. Probability distribution in one or more varieties. Mathematical expectations. Techebacheffs inequality. Weak-law of large numbers. Simple form of central limit theorem.

(II) Statistical methods.- Compilation, classification, tabulation and diagrammatic representation of various types statistical data.

Concepts of statistical population and frequency curve, measures of central tendency and dispersion, moments and cummulants. Measures of Skewness and Kurtosis. Moment-generating functions, Study of standards probability distributions. Binomial, Poisson, Hypergeometric Normal Negative Binomial Rectangular and log normal distributions. General description of the Pearsenian system of curves.

General properties of a bivariate distribution, bivariate normal distribution. Measures of association and contingency, Correlation and Linear regressior involving two or more variables. Correlation ratio. Inter-class correlation, Bank correlation. Non-linear regression analysis.

Curve fitting by methods of free hand curves, moving average's group average least squares and movements. Orthogonal polynominals and their uses.

(III) Sampling distribution and statistical inference.- Random sample, statistics concepts of sampling distribution and standard error.

Derivation of sampling distribution of mean of independent normal varieties, X^2 and F Statistics, their properties and uses. Derivation of sampling distributions of sample means, variances and correlation coefficient from a vivariate normal population. Derivation (in large samples) and uses pearsonian x^2 .

Theory of Estimation.- Requirements of a good estimates/unbiasedness, consistency, efficiency and sufficiency. Cramer-Rao lower bound to variance of estimates. Best linear unbiased estimates.

Methods of estimation, General descriptions of the methods of moments, Method of maximum likelihood method of least squares and method of minimum x properties of maximum likelihood estimators (without proof). Theory of confidence intervals, sample problems of setting confidence limits.

PAPER-II

Theory of testing of Hypotheses.- Simple and composite hypotheses. Statistical test and critical regions. Two kinds of error, level of significance and power of tests.

Optimum critical regions for simple hypotheses concerning one parameter. Construction of such regions for simple hypotheses relating to a normal population.

Likelihood ratio tests.- Tests involving mean, variance correlation and regression co-efficients in univariable and bivariate normal populations. Simple non-parametric tests, sign, run median, rank and rando-misation tests.

Sequential test of a simple hypotheses against a simple alternative (without derivation).

(1) **Sampling techniques.-** Sampling versus complete enumeration. Principles of sampling. Frames and sampling units. Sampling and non-sampling errors. Simple randoms sampling. Stratified sampling. Cluster sampling, Systematic sampling, description of multi-stage and multiphase sampling. Ratio and regression methods of estimation. Designing of sample surveys with reference to recent large-scale surveys in India.

(II) **Design of experiments.-** Analysis of variance and covariance with equal number of observation in the cells.

Transformation of variate to stabilise variance.

Principles of experimental designs. Completely randomised, randomised block and Latin square designs Missing plot techniques, Factorial experiments with confounding in 2^s ($s=2(1)51$, 3 and 3 designs. Splitpot design. Balanced incomplete designs and simple lattice.

URDU

PAPER-1

(a) Grouping of the New Indo-Aryan Languages-Western Hindi and its dialects-Khari Boli, Braj Bhasha and Haryani-Relationship of Urdu to Khadi-Perso-Arabic elements in Urdu. Development of Urdu from 1200 to 1800 in the North and 1400 to 1700 in the Deccan.

(b) Dakhani Urdu-its origin and development-its significant linguistic features.

(c) The significant features of the Dakhani Urdu literature (1450-1700). The two classical backgrounds of Urdu literature- Perso-Arabic and Indian Mysnavi, Indian tales- the influence of the West of Urdu literature-classical genres-Ghazal, Mysticism, Quisida, Rubai, Qita, Prose, Fiction, Modern genres, Blank Verse, Free verse, Novel. Short Stories, Drama, Literary criticism and Essay.

PAPER-II

This paper will require first hand reading of the text prescribed and will be designed to test the candidates critical ability.

PART-A (Prose)

1. Mir Amman	..	Bagh-O-Bahar
2. Ghalib	..	Khatut-a-Ghalib
3. Holi	..	Muqaddama-a-Sher-O-Shairi.
4. Ruswa	..	Umra-O-Jan Ada.
5. Prem Chand	..	Wardat
6. Abdul Kalam Azad	..	Ghubar-a-Khatir
7. Imtiaz Ali Taj	..	Anar Kali.

PART-B (Poetry)

1. Mir	..	intikhab-a-Kalam-e-Mir
2. Sauda	..	Qasaid (including Hajwiyat)
3. Ghalib	..	Diwan-e-Ghalib
4. Iqbal	..	Bal-a-Gibrali
5. Josh Malihabadi	..	Saif-O-Sabu
6. Firag-Gorakhpuri	..	Ruhe-e-Kainat
7. Faiz	..	Kalam-e-Faiz (complete).

ZOOLOGY

PAPER-I

NON-CHORDATE AND CHORDATE

1. A general survey, classification and relationship of various phyle.

2. **Protozoa.-** Study of structure, life history of Paramaecium, Vorticella, Monocystis, Malarial Parasite, Euglena Trypanosoma.

3. **Porifera.-** Study of structure of cycon, canal system and skeleton in Porifera.
4. **Coelenterata.-** OBELIA AURELIA (structure and life history) Polymorphism in Hydrozoa coral formation, Metagenesis.
5. **Helminthes.-** PLANARIA, FASCIOLA, TAENIA, Parasitism and Parasitic adaptation, Evolution (structure and life history) of Parasitism.
ASCARIS (structure and life History) helminth- in relation to man.
6. **Annelida.-** Neries, Earthworm, Leech (detailed study)
7. **Arthropode.-** Palaemon, Scorpion, Cockroach, Crustacean Larvae, Economic importance of Insects.
8. **Mollusca.-** UNIO, PILA, TORSION and detossion in Gastropoda.
9. **Echinodermata.-** STARFISH, Larnal form of Echinadermata.
10. Structure and bionomics and classification of the following :
Balanoglossus, Herdmania, Branchiostoma/ Scoliodon, Frog, Uromastex, Pigeon, Rabit.
11. Comparative account of the various system of vertebrater (Digestive system, Respiratory system, Nervous system, Receptor system, Circulatory system, Uninogenital system).
12. Retrogressive Memtamorphosis, Coelom in Branchiostoma.

PAPER-II

CELL BIOLOGY, CYTOGENETICS, ANIMAL PHYSIOLOGY, EVOLUTION EMBRYOLOGY AND HISTOLOGY

1. **Cell Biology.-** Cell theory, structure and function of cell and cytohlasmic constituents, structure of Plasma Mumbrane, Endoplasmic reticulum Golgi Bodies Mitochondria, ribosomes nucleus.

Cell Division.- Mitosis and Meiosis.

GENE STRUCTURE AND FUNCTION, WATSON AND CRICK MODEL OF DNA REPLICATION OF DNA

2. **Cytogenetics.-** Mendelian Laws of inheritance, Recombination Multiple Allete, Mutation Natural and Induced Polyploidy, Sexdetermination, Cytoplasmic inheritance.

3. **Physiology.-** Chemical composition of Protoplasm. animal Physiology, Digestion and Absorption Respiration (including Cell Respiration) Kidney and Physiology of Excretions, Physiology of Nervous impulses, Physiology of Muscular contraction, Physiology of Endrocrine gland, Physiology of Osmoregulation.

4. Evolution.- Origin of life, History of Evolutionary thought, Evidences of Evolution (Anatomical, Embryological comparative physiology evidence for geographical distribution, Palaeontological evidence).

Theories of Evolution.- Lamarckism, Neolamarckism, Darwinism, New Darwinism. Hardy Weinberg Law.

5. Embryology and Histology.- Gametogenesis, Fertilization, types of eggs, cleavages, Development upto gastrulation in Branchiostoma, Frog, and Chick. Fate maps of Frog and Chick, metamorphosis in Frog, Formation and fate of Extra embryonic membranes in chick, formation of allantois, amnion and types of Placenta in Mammal.

Histology of the following tissues and organs of Mammal :-

1. Epithelial Tissue, connective tissue (cartilage Bone, Blood and Lymph), Muscular Tissue and Nervous Tissue.

HISTORY OF SKIN, STOMACH, INTESTINE, LIVER, PANCREAS, LUNG, KIDNEY, TESTIS, OVARY, SPLEEN.]

NOTIFICATIONS

Under

**THE HIMACHAL PRADESH ADMINISTRATIVE SERVICE RULES,
1973**

DECLARATION OF DUTY POSTS

PERSONNEL DEPARTMENT

NOTIFICATION

Shimla-171002, the 25th August, 1976

No. 8-136/72-DP(Apptt.).- The Governor, Himachal Pradesh is pleased to declare the following ex-cadre posts as duty posts of Himachal Pradesh Administrative Service temporarily under rule 2(f) of the Himachal Pradesh Administrative Service Rules, 1973 with effect from the dates of posting of Himachal Pradesh Administrative Service officers against these posts till further orders:-

- (1) Assistant Settlement Officer, Kangra.
- (2) Administrative Officer, Medical College, Shimla.
- (3) Project officers for Tribal areas-3 posts (i.e. for Kinnaur/Lahaul and Spiti/ Pangi, Bharmour areas of Chamba district).

(R.H.P. dated 25.9.1976, p. 1468).

Shimla-171002, the 12th August, 1983

No. PER(A-I)-B(1)11/80-Vol. II.- The Governor, Himachal Pradesh, is pleased to declare the post of Excise and Taxation Officer included at Sr. No. 11 in Appendix-I (Rule-3) of H.P.A.S., Rules, 1973 with effect from the date this post is vacated by the present incumbent belonging to H.P.A.S. cadre. -----

(R.H.P. dated 15.10.1983, p. 1182).

Shimla-2, the 23rd January, 1984

No. PER (A-1)-B(2)-1/84.- The Governor, Himachal Pradesh, is pleased to declare the following posts as duty posts of Himachal Pradesh Administrative Service temporarily till these posts are held by the H.P.A.S. Officers, under sub-rule (f) of rule 2 of H.P.A.S. Rules, 1973:-

- (1) S.O. (Consolidation), Bilaspur.
- (2) L.A.O. (industries), Bilaspur.
- (3) Additional Director, Consolidations, Himachal Pradesh
- (4) Under-Secretary (defunct Enquiry Commission).
- (5) Project Officer, Keylong.
- (6) Project Officer, Kalpa.
- (7) Project officer, Bharmour.
- (8) E.A.So. Shimla.
- (9) Deputy Director (Youth Service) Himachal Pradesh
- (10) A.So. Shimla

(R.H.P. Dated 24.3.1984, p. 292).

Shimla-171002, the 2nd November, 1984

No. Per. (A-I)B(1)11/80.- The Governor, Himachal Pradesh, is pleased to declare the post of Land Acquisition Officer (Industries) Headquarters Department of Industries, Himachal Pradesh, as Duty Post of the Himachal Pradesh Administrative Service Temporarily till this post is held by an officer of the Himachal Pradesh Administrative Service under sub-rule (f) of rule 2 of the Himachal Pradesh Administrative Service Rules, 1973.

21.6.1986. p.584).

(R.H.P. dated

Shimla-171002, the 25th April, 1987

No. PER(A-I)B(15)16/84.- The Governor, Himachal Pradesh is pleased to declare two posts of Deputy Excise and Taxation Commissioner (Flying Squad) in the Directorate of Excise and Taxation, Himachal Pradesh, as duty posts of Himachal Pradesh Administrative Services under sub-rule (f) of Rule 2 of the Himachal Pradesh Administrative Service Rules, 1973, till further order.

(R.H.P. Dated 5.9.1992, p. 1271).

Shimla-171002, the 2nd January, 1996.

Per(A-I)B(15)-3/79-II.- The Governor, Himachal Pradesh in exercise of the powers vested in him under Rule 2(f) of the Himachal Pradesh Administrative Service Rules, 1973, is pleased to declare the post of sub-Divisional officer (Civil), Nadaun, District Hamirpur, "duty post" for the Himachal Pradesh Administrative Service w.e.f. 20.11.1995.

(R.H.P.Extra., dated 30.3.1996, p. 346.)

Shimla-171002, the 9th April, 1997.

No. Per (A-1)B(15)-3/79-II.- The Governor, Himachal Pradesh, in exercise of the powers vested in him under Rule 2 (f) of the Himachal Pradesh Administrative Service Rules, 1973, is pleased to declare the following posts as "Duty posts" for the H.P.A.S. w.e.f. 1st March, 1997 :-

1. Deputy Director (Transport) Hqrs., Shimla.
2. Regional Transport Officer, Hqrs. Shimla.
3. Regional Transport Officer, Kullu.
4. Regional Transport Officer, Hamirpur.
5. Regional Transport Officer, Solan.