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UNION PUBLIC SERVICE COMMISSION

EXAMINATION NOTICE NO. 01/2025 GEOL **Dated 04.09.2024**

(LAST DATE FOR SUBMISSION OF APPLICATIONS: 24.09.2024

COMBINED GEO-SCIENTIST EXAMINATION, 2025

(COMMISSION'S WEBSITE: www.upsc.gov.in)

IMPORTANT

1. CANDIDATES TO ENSURE THEIR ELIGIBILITIY FOR THE EXAMINATION:

All candidates (male/female/transgender) are requested to carefully read the Rules of Combined Geo-Scientist Examination notified by the Government (Ministry of Mines) and the Notice of Examination derived from these Rules. Candidates applying for the Examination should ensure that they fulfill all eligibility conditions for admission to the Examination. Their admission at all the stages of the Examination will be purely provisional subject to satisfying the prescribed eligibility conditions.

Mere issue of Admission Certificate to the candidate will not imply that his/her candidature has been finally cleared by the Commission.

Verification of eligibility conditions with reference to original documents is taken up only after the candidate has qualified for Interview/Personality Test.

2. HOW TO APPLY :

Candidates are required to apply online only by using the website https://upsconline.nic.in. It is essential for the applicant to register himself/herself first at One Time Registration (OTR) platform, available on the Commission's website, and then proceed for filling up the online application for the examination. OTR has to be registered only once in life time. This can be done anytime throughout the year. If the candidate is already registered, he/she can proceed straightway for filling up the online application for the examination.

A candidate who is willing to apply for Combined Geo-Scientist Examination shall be required to apply on-line and submit the requisite information and supporting documents towards various claims, such as date of birth, category [viz. SC/ST/OBC/ EWS/PwBD/Ex-Servicemen], educational qualification, etc. as may be sought by the Commission along with the Online Application Form. The failure to provide the required information/documents along with the Online Application Form or within the correction-window, if any, provided by the Commission will entail cancellation of candidature for the examination.

2.1 Modification in OTR Profile: In case, the candidate wants to effect any change in his/her OTR profile, it shall be allowed only once in the lifetime after the registration at OTR platform. The change in OTR profile data shall be available till expiry of 7 days from the next day after the closure of application window of his/her first final application for any Examination of the Commission. In the case, the candidate after registration of OTR applies for the first time in this examination last date of modification of OTR would be 01.10.2024.

2.2 Modification in application form (Other than OTR Profile): The Commission has also decided to extend the facility of making correction(s) in any field(s) of the application form for this examination from next day of the closure of the application window of this Examination. This window will remain open for 7 days from the date of opening of the same, i.e., from 25.09.2024 to 01.10.2024 In case a candidate wants to carry out any change in his/her OTR profile during this period, then he/she should login to the OTR platform and do the needful accordingly. In other words, no change in the OTR profile can be made by visiting the window for Modification in application form.

Brief instructions for filling up online applications are given in Appendix-IIA. Detailed instructions are available on the above mentioned website.

2.3 The candidates will not be allowed to withdraw their applications after the submission of the same.

3. Candidate should have details of one Photo ID Card viz. Aadhaar Card/Voter Card/PAN Card/Passport/Driving Licence/Any other Photo ID Card issued by the State/Central Government. The details of this Photo ID Card will have to be provided by the candidate while filling up the online application form. The candidates will have to upload a scanned copy of the Photo ID whose details have been provided in the online application by him/her. This Photo ID Card will be used for all future referencing and the candidate is advised to carry this Photo ID Card while appearing for Examination/ Personality Test.

4. LAST DATE OF SUBMISSION OF APPLICATIONS: The Online Applications can be filled up to **24th September, 2024 till 18.00 Hours**.

5. The eligible candidates shall be issued an e-Admission Certificate on the last working day of the preceding week of the date of examination. The e-Admission Certificate will be made available in the UPSC website [https://upsconline.nic.in] for downloading by candidates. No Admission Certificate will be sent by post. All the applicants are required to provide valid active E-Mail I.D. while filling up Online Application Form as the Commission may use electronic mode for contacting them at different stages of examination process.

6. PENALTY FOR WRONG ANSWERS (in Objective Type Papers) :

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Candidates should note that there will be penalty (**Negative Marking**) for wrong answers marked by a candidate in the Objective Type Question Papers.

7. SPECIAL INSTRUCTIONS :

Candidates are advised to read carefully "Special Instructions to the candidates for Objective Type Test and Conventional Type Test" (Appendix III - Part A and Part B).

The Preliminary Examination for Combined Geo-Scientist Examination for two Objective Type papers will be conducted on OMR Sheet.

8. FACILITATION COUNTER FOR GUIDANCE OF CANDIDATES :

In case of any guidance/information/clarification regarding their applications, candidature etc. candidates can contact UPSC's Facilitation Counter near 'C' Gate of its campus in person or over **Telephone No. 011-23385271/011-23381125/01123098543** on working days between 10.00 hrs and 17.00 hrs.

9. Mobile Phones Banned:

(a) The use of any mobile phone (even in switched off mode), pager or any electronic equipment or programmable device or storage media like pen drive, smart watches etc. or camera or blue tooth devices or any other equipment or related accessories either in working or switched off mode capable of being used as a communication device during the Examination is strictly prohibited. Any infringement of these instructions shall entail disciplinary action including ban from future Examinations.

(b) Candidates are advised in their own interest not to bring any of the banned item including mobile phones or any valuable/costly items to the venue of the Examination, as arrangement for safe-keeping cannot be assured. Commission will not be responsible for any loss in this regard.

10. Online Question Paper Representation Portal (QPRep):

The Commission has introduced a time frame of 7 days (a week) i.e. from the next day of the Examination Date to 6.00 p.m. of the 7th day is fixed for the candidates to make representations to the Commission on the questions asked in the Papers of the Examination. Such representation must be submitted through the "Online Question Paper Representation Portal (QPRep)" only by accessing the URL http://upsconline.nic.in/miscellaneous/QPRep/. No representation by email/post/hand or by any other mode shall be accepted and the Commission shall not involve into any correspondence with the candidates in this regard. No representation shall be accepted under any circumstances after this window of 7 days is over.

11. Instruction in respect of uploading of Photograph while filling up online application form :-

(a) The photograph, uploaded by candidate should not be more than **10 days old** from the start of the online application process (i.e. the application commencement date).

(b) Ensure **that the name of candidate** and the **date on which the photograph was taken** are clearly mentioned on the photograph.

(c) The candidate's **face** should occupy **3/4th of the space** in the photograph.

(d) The candidates must ensure that their appearance must match with their photograph at each stage of the Examination Process i.e. at the time of Preliminary (stage-I), Main (stage-II) and Interview/Personality Test. For instance, if a candidate uploads a bearded photograph, he must appear with the same look in the Preliminary, Main and Interview/Personality Test. Same would be the case with spectacles, moustaches, etc.

12. The candidates should reach the venue of the Examination well in time at least 30 minutes prior to the commencement of each session of the Examination. No late entry will be allowed inside the Exam-venue under any circumstances.

(A) **No. 4/1/2024 E.I (B) :** The Union Public Service Commission will hold a Screening Test for selection to Combined Geo-Scientist (Main) Examination, 2025 through Combined Geo-Scientist (Preliminary) Examination, 2025 which will be held on 9th February, 2025 in accordance with the Rules published by the Ministry of Mines in the Gazette of India dated the 4th September, 2024.

(B) The Preliminary Examination will be held at the following Centers:

(1) AHMEDABAD (2) BANGALURU (3) BHOPAL (4) CHANDIGARH (5) CHENNAI (6) CUTTACK (7) DELHI (8) DISPUR (9) HYDERABAD (10) JAIPUR (11) JAMMU (12) KOLKATA (13) LUCKNOW (14) MUMBAI (15) PATNA (16) PRAYAGRAJ (ALLAHABAD) (17) SHILLONG (18) SHIMLA (19) THIRUVANANTHAPURAM

The Centres and the dates of holding the Examination as mentioned above are liable to be changed at the discretion of the Commission. Applicants should note that there will be a ceiling on the number of candidates allotted to each of the Centre, except Delhi, Dispur, Kolkata and Ahmedabad. Allotment of Centres will be on the **"first-apply-first-allot"** basis, and once the capacity of a particular Centre is attained, the same will be frozen. Applicants, who cannot get a Centre of their choice due to ceiling, will be required to choose a Centre from the remaining ones. Applicants are, thus, advised that they may apply early so that they could get a Centre of their choice.

NB: Notwithstanding the aforesaid provision, Commission reserves the right to change the Centres at their discretion if the situation demands. Candidates admitted to the Examination

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will be informed of the time table and place or places of Examination. Candidates should note that no request for change of centre will be granted. **All the Examination Centres for the Examination will cater to the examination for Persons with Benchmark Disabilities also.**

(C) PLAN OF EXAMINATION

The Combined Geo-Scientist Examination will consist of three successive stages (vide Appendix I Section-I below):-

Stage-I : Combined Geo-Scientist (Preliminary) Examination (Objective type) having two papers for selection of the candidates for the Combined Geo-Scientist (Main) Examination. Marks secured in the Preliminary Examination will be counted for deciding the final merit;

Stage-II : Combined Geo-Scientist (Main) Examination (Descriptive Type) having three papers for selection of candidates for the Personality Test (Stage-III). Marks secured in the Main Examination will be counted for deciding the final merit; and

Stage-III: Personality Test/Interview

Applications are now invited for the Preliminary Examination only. Candidates who will be declared by the Commission to have qualified in the Preliminary Examination will be allowed to take the Combined Geo-Scientist (Main) Examination. The Main Examination will be held on 21st & 22nd June, 2025 **The Main Examination will be held on the following Centres :**

Bhopal, Chennai, Delhi, Dispur (Guwahati), Hyderabad, Kolkata, Lucknow, Mumbai and Shimla.

2(a). The categories of post to which recruitment is to be made on the results of this examination and the approximate number of vacancies in the various posts are given below:-

Category-I : (Posts in the Geological Survey of India, Ministry of Mines).

(i) Geologist, Group A	:	**16**
(ii) Geophysicist, Group A	:	**06**
(iii) Chemist. Group A	:	**02**

NOTE : Following **4** vacancies are reserved for Persons with Benchmark Disability:

03 vacancies of Geologist { **02** Locomotor disability or Cerebral Palsy {OH(OA/OL) **and 01 HH**} **and 01 vacancy of Geophysicist {HH}**

Category-II: (Posts in the Central Ground Water Board, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation.)

(i) Scientist 'B'(Hydrogeology), Group 'A'	**:**	**13**
(ii) Scientist 'B'(Chemical) Group 'A'	**:**	**01**
(iii)Scientist 'B'(Geophysics) Group 'A'	**:**	**01**
(iv) Assistant Hydrogeologist, Group 'B'	**:**	**31**
(v) Assistant Chemist, Group 'B'	**:**	**04**
(vi) Assistant Geophysicist, Group 'B'	**:**	**11**

NOTE : No vacancies for PwBD category candidates have been reported by the Central Ground Water Board, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation.

The above numbers of vacancies are liable to alteration.

Appointments will be made on a temporary basis in the first instance.

Reservations will be made for candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, Economically Weaker Sections and Persons with Benchmark disability categories in respect of vacancies as may be fixed by the Government.

A candidate will be eligible to get the benefit of community reservation only in case the particular caste to which the candidates belong is included in the list of reserved communities issued by the Central Government. The candidates will be eligible to get the benefit of the Economically Weaker Section reservation only in case the candidate meets the criteria issued by the Central Government and in possession of such eligibility certification. If a candidate indicates in his/her application form for Combined Geo-Scientist Examination that he/she belongs to General category but subsequently writes to the Commission to change his/her category to a reserved one, such request shall not be entertained by the Commission. Further, once a candidate has chosen a reserved category, no request shall be entertained for change to other reserved category viz. SC to ST, ST to SC, OBC to SC/ST or SC/ST to OBC, SC to EWS, EWS to SC, ST to EWS, EWS to ST, OBC to EWS, EWS to OBC. No reserved category candidates other than those who qualified each stage of the Examination on General standard, shall be allowed to change (on their request or as decided by the Commission/Government based on the documents submitted by them) their category from Reserved to Unreserved or claim the vacancies for UR category after the declaration of final result by UPSC. In cases where such candidates do not qualify on General Standard, their candidature shall be cancelled.

Further no Person with Benchmark Disabilities (PwBD) of any subcategory thereunder shall be allowed to change his/her sub-category of disability.

While the above principle will be followed in general, there may be a few cases where there was a gap not more than 3 months between the issuance of a Government Notification enlisting a particular community in the list of any of the reserved communities and the date of submission of the

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application by the candidate. In such cases the request of change of community from general to reserved may be considered by the Commission on merit. In case of a candidate unfortunately becoming person with benchmark disability during the course of the examination process, the candidate should produce valid documents showing him/her acquiring a disability to the extent of 40% or more as defined under the Rights of Persons with Disabilities Act, 2016 to enable him/her to get the benefits of reservation earmarked for persons with benchmark disability provided he/she otherwise remains eligible for Geologist, Group 'A', Geophysicist, Group 'A', Chemist, Group 'A' and Scientist 'B'(Hydrogeology) Group 'A', Scientist 'B'(Chemical) Group 'A' and Scientist 'B'(Geophysics) Group 'A', Assistant Hydrogeologist Group 'B', Assistant Chemist Group 'B' and Assistant Geophysicist Group 'B' posts as per Rule 21 of the Rules of the Combined Geo-Scientist Examination, 2025.

Candidates seeking reservation/relaxation benefits available for SC/ST/OBC/EWSs/PwBD/ Ex-servicemen must ensure that they are entitled to such reservation/relaxation as per eligibility prescribed in the Rules/Notice. They should also be in possession of all the requisite certificates in the prescribed format in support of their claim as stipulated in the Rules/Notice for such benefits, by the closing date of the application.

A candidate of CGSE 2025 will be eligible to get the benefit of the Economically Weaker Section reservation only in case the candidate meets the criteria issued by the Central Government and is in possession of requisite Income & Asset Certificate based on the income for Financial Year (FY) 2023-2024 and issued on/after 01.04.2024 (after the completion of FY 2023-2024) but not later than the closing date of the application for Combined Geo-Scientist (Preliminary) Examination-2025 i.e. 24th September, 2024

The OBC candidates applying for CGSE 2025 must produce OBC (Non-Creamy Layer) certificate based on the Income for the Financial Year (FY) 2023-2024, 2022-2023 and 2021-2022 and issued on/after 01.04.2024 (after the completion of FY 2023-24) but not later than the closing date of the application for Combined Geo-Scientist (Preliminary) Examination- 2025 i.e. 24th September, 2024.

2(b). A candidate may apply for admission to the Stage-I of Combined Geo-Scientist (Preliminary) Examination through the On-line Application Form in respect of any one or both the categories, mentioned in Para 2(a) above. If a candidate wishes to be admitted for both the categories, he/she need to fill in only one application. He/She will be required to pay the fee mentioned in para 4 below once only and will not be required to pay separate fee for each of the categories for which he/she applies.

A candidate may compete for any one or both the categories of Posts for which he/she is eligible in terms of Rules.

N.B: (i) : No request for making subsequent addition/alteration in the details indicated by a candidate in his/her Online Application Form will be entertained by the Commission. Nonetheless, during currency of the Application Window of the Examination, the candidates have the option of editing the information given by them in the Application Form except for 'Name', 'Father's Name', 'Mother's Name', 'Date of Birth' and 'Centre'.

N.B:(ii) : The selection of candidates for the posts of Geologist, Geophysicist and Chemist in GSI in the Ministry of Mines and Scientist 'B'(Hydrogeology) Group 'A', Scientist 'B'(Chemical) Group 'A', Scientist 'B'(Geophysics) Group 'A', Assistant Hydrogeologist Group 'B', Assistant Chemist Group 'B' and Assistant Geophysicist Group 'B' in CGWB, in CGWB in the Ministry of Water Resources shall be strictly in accordance with their merit position in each category and number of vacancies separately.

3. ELIGIBILITY CONDITIONS :

(I) Nationality

A candidate must be either:

(a) a Citizen of India, or

(b) a subject of Nepal, or

(c) a subject of Bhutan, or

(d) a Tibetan refugee who came over to India before the 1st January, 1962 with the intention of permanently settling in India. or

(e) a person of Indian origin who has migrated from Pakistan, Burma, Sri Lanka or East African Countries of Kenya, Uganda, the United Republic of Tanzania, Zambia, Malawi, Zaire and Ethiopia or from Vietnam with the intention of permanently settling in India.

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

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

(II) Age Limits: (a) A candidate must have attained the age of 21 years and must not have attained the age of 32 years on the first day of the month of January of the year in which the Examination is to be held [i.e. as on 1st January, 2025] i.e. he/she must have been born not earlier than 2nd January, 1993 and not later than 1st January, 2004.NB: **Candidates should ensure that they meet the age eligibility criteria for each post mentioned above for which they are applying.**

(b) The upper age limit will be relaxable upto a maximum of **7 years** in the case of Government servants, if they are employed in a Department mentioned in Column I below and apply for the corresponding post mentioned in column II.

Column I	Column II
Geological Survey of India	(i) Geologist Group 'A' (ii) Geophysicist Group 'A' (iii)Chemist Group 'A'
Central Ground Water Board	(i) Scientist 'B' (Hydrogeology) Group 'A'. (ii) Scientist 'B' (Chemical) Group 'A'. (iii)Scientist 'B' (Geophysics) Group 'A'. (iv) Assistant Hydrogeologist, Group 'B' (v) Assistant Chemist, Group 'B' (vi) Assistant Geophysicist, Group 'B'

(c) The upper age limit prescribed above will be further relaxable as follows:

(i) Upto a maximum of five years if a candidate belongs to a Scheduled Caste or a Scheduled Tribe.

(ii) Upto a maximum of three years in the case of candidate belonging to Other Backward Classes who are eligible to avail of reservation applicable to such candidates.

(iii) Upto a maximum of three years in the case of Defence Services Personnel disabled in operations during hostilities with any foreign country or in a disturbed area and released as a consequence thereof:

(iv) Upto a maximum of five years in the case of Ex-Servicemen including Commissioned Officers and ECOs/SSCOs who have rendered at least five years Military Service as on 1st January, 2025 and have been released (i) on completion of assignment (including those whose assignment is due to be completed within one year from 1st January, 2025) otherwise than by way of dismissal or discharge on account of misconduct or inefficiency, or (ii) on account of physical disability attributable to Military Service or (iii) on invalidment.

(v) Upto a maximum of 5 years in the case of ECOs/SSCOs who have completed an initial period of assignment of 5 years Military Service as on 1st January, 2025 and whose assignment has been extended beyond 5 years and in whose case the Ministry of Defence issue a certificate that they can apply for civil employment and that they will be released on 3 month's notice on selection from the date of receipt of offer of appointment.

(vi) Upto a maximum of 10 years in the case of blind, deaf-mute and orthopedically handicapped persons. up to a maximum of 10 years in the case of (a) blindness and low vision; (b) deaf and hard of hearing; (c) locomotor disability including cerebral palsy, leprosy cured, dwarfism, acid attack victims and muscular dystrophy; (d) autism, intellectual disability, specific learning disability and mental illness; and (e) multiple disabilities from amongst persons under clauses (a) to (d) including deaf-blindness.

Note I:—Candidates belonging to the Scheduled Castes and the Scheduled Tribes and the Other Backward Classes who are also covered under any other clauses of Para 3(II)(d) above, viz. those coming under the category of Ex-servicemen and Persons with Benchmark Disabilities will be eligible for grant of cumulative age-relaxation under both the categories.

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

NOTE III- The age concession under Para 3(II)(d)(iv) and (v) will be admissible to Ex-servicemen i.e. a person who has served in any rank whether as combatant or non-combatant in the Regular Army, Navy and Air Force of the Indian Union and who either has been retired or relieved or discharged from such service whether at his own request or being relieved by the employer after earning his or her pension.

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NOTE IV- Notwithstanding the provision of age-relaxation under para 3(II)(d)(vi) above, a person with benchmark disability will be considered eligible for appointment only if he/she (after such physical examination as the Government or appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned Services/ posts to be allocated to the persons with benchmark disabilities by the Government.

Note V- The details of Functional Classification (FC) and Physical Requirements (PR) of each service is indicated in this Notice which are identified and prescribed by the respective Cadre Controlling Authorities (CCAs) as per the provisions of Section 33 and 34 of the Rights of Persons with Disabilities Act, 2016. Only those category (ies) of disability (ies) mentioned in the Notice shall apply for the Examination under Persons with Benchmark Disability (PwBD) categories. Therefore, the candidates belonging to the Persons with Benchmark Disability categories are advised to read it carefully before applying for the Examination.

Save as provided above the age limits prescribed can in no case be relaxed. The date of birth accepted by the Commission is that entered in the Matriculation or Secondary School Leaving Certificate or in a certificate recognised by an Indian University as equivalent to Matriculation or in an extract from a Register of Matriculates maintained by a University which must be certified by the proper authority of the University or in the Higher Secondary or an equivalent examination certificate. These certificates are required to be submitted only after the declaration of the result of the Main Examination.

No other document relating to age like horoscopes, affidavits, birth extracts from Municipal Corporation, service records and the like will be accepted. The expression Matriculation/Higher Secondary Examination Certificate in this part of the instruction includes the alternative certificate mentioned above.

NOTE I:- Candidates should note that only the Date of Birth as recorded in the Matriculation/Higher Secondary Examination Certificate or an equivalent certificate as on the date of submission of applications will be accepted by the Commission and no subsequent request for its change will be considered or granted.

NOTE II:- Candidates should also note that once a Date of Birth has been claimed by them and entered in the records of the Commission for the purpose of admission to an Examination**,** no change will be allowed subsequently (or at any other Examination of the Commission) on any ground whatsoever.

NOTE III :-The candidates should exercise due care while entering their date of birth in online application form for the Examination. If on verification at any subsequent stage, any variation is found in their date of birth from the one entered in their matriculation or equivalent examination certificate, disciplinary action will be taken against them by the Commission under the Rules.

N.B. - (i) The candidature of a person who is admitted to the Examination under the age concession mentioned in para 3(II)(c) above, shall be cancelled, if after submitting his/her application, he/she resigns from service or his/her services are terminated by his/her department/office, either before or after taking the Examination. He/she will, however, continue to be eligible if he/she is retrenched from the service or post after submitting the application.

(ii) A candidate who, after submitting his/her application to his/her department is transferred to other department/office will be eligible to compete under departmental age concession for the post(s), for which he/she would have been eligible, but for his/her transfer, provided his/her application, duly recommended, has been forwarded by his/her parent Department.

All communication in this regard should contain the following particulars:-

1. NAME AND YEAR OF THE EXAMINATION
2. REGISTRATION I.D. (RID)
3. ROLL NUMBER (IF RECEIVED)
4. NAME OF CANDIDATE (IN FULL AND IN BLOCK LETTERS)
5. COMPLETE POSTAL ADDRESS AS GIVEN IN THE APPLICATION.
6. VALID AND ACTIVE EMAIL-ID.

(iii)Minimum Educational Qualification

A candidate must have:

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(i) For Geologist Group 'A' in Geological Survey of India

Master's degree in Geological Science or Geology or Applied Geology or Geo- Exploration or Mineral Exploration or Engineering Geology or Marine Geology or Earth Science and Resource Management or Oceanography and Coastal Areas Studies or Petroleum Geosciences or Geochemistry from a University incorporated by an Act of the Central or State Legislature in India or an educational institution established by an Act of Parliament or declared to be deemed university under section 3 of the University Grants Commission Act, 1956 (3 of 1956) i.e. recognized University.

(ii) For Geophysicist Group 'A' in Geological Survey of India and Scientist 'B' (Geophysics) Group 'A' & Assistant (Geophysicist) Group 'B' in C.G.W.B.

M.Sc. in Physics or Applied Physics or M.Sc. (Geophysics) or Integrated M.Sc. (Exploration Geophysics) or M.Sc (Applied Geophysics) or M.Sc. (Marine Geophysics) or M.Sc. (Tech.) (Applied Geophysics) from a University incorporated by an Act of Parliament or State Legislature in India or other educational institutes established by an Act of the Parliament or declared to be deemed universities under the University Grants Commission Act, 1956

(iii) For Chemist Group 'A' in Geological Survey of India and Scientist 'B' (Chemical) under C.G.W.B.

M. Sc. in Chemistry or Applied Chemistry or Analytical Chemistry from a University incorporated by an Act of Parliament or State Legislature or other educational Institutes established by an Act of the Parliament or declared to be deemed Universities under section 3 of the University Grants Commission Act, 1956 i.e. recognized University.

(iv) For Scientist 'B' (Hydrogeology) Group 'A' and Assistant (Hydrogeologist) Group 'B' in C.G.W.B.

Master's degree in Geology or applied Geology or Marine Geology or Hydrogeology from a University incorporated by an Act of the Central or State Legislature in India or other educational Institutes established by an act of Parliament or declared to be deemed as Universities under Section 3 of the University Grants Commission Act, 1956.

(v) For Assistant (Chemist) Group 'B' in C.G.W.B.

Master of Science or Integrated Master of Science in Chemistry or Applied Chemistry or Analytical Chemistry or Physical Chemistry or Inorganic Chemistry or Organic Chemistry or Hydro-Chemistry or Industrial Chemistry from a recognized university or institute.

Note I : Qualifications are relaxable at the direction of the Union Public Service Commission for the reasons to be recorded in writing, in the case of candidates otherwise well qualified.

Note II: Master's degree in respective discipline means the post graduate degree or post graduate diploma of minimum two years duration after graduation from aforesaid University or Institute in the respective discipline, whether be it an integrated course or otherwise.

Note III : A candidate who has appeared at an examination, the passing of which would render him/her educationally qualified for this Examination but has not been informed of the result, may apply for admission to the Examination. A candidate who intends to appear at such a qualifying examination may also apply. Such candidates will be admitted to the Examination, if otherwise eligible but their admission would be deemed to be provisional and subject to cancellation . However, all such candidates, who are declared qualified by the Commission for Interview/Personality Test, will be required to produce proof of passing of the requisite qualifying examination within the time limit which is as under:-

The Commission shall provide a window of 15 (Fifteen) days from the date of declaration of result of Main/stage-II part of Combined Geo-Scientist Examination to the candidates qualified for Personality Test/Interview and filled their status of educational qualification. The candidates, who do not have the prescribed Educational qualification at the time of the Online Application, shall be required to update their details and to upload the proof of passing of the requisite qualifying examination on the One Time Registration Module, failing which such candidates will not be allowed to appear in the Personality Test/Interview and his/her candidature will be liable to be cancelled.

Note: In this period, all the candidates qualified for Personality Test shall also be provided an option to update Correspondence/Post Address, Higher Qualification, Achievement in different field, Employment Details/Service Experience, Service Allocation, Service Preferences (if qualified for both the categories of posts). The details updated in this window will be treated as final and no request for any change in these fields received through any other mode will be entertained.

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Note IV : A candidate who is otherwise qualified but who possesses the Master's degree from a foreign University approved by the Government may also be admitted to the Examination by the Commission.

Note V : Candidate possessing common qualifications in sub-para (i) can apply for both the posts.

NOTE VI: In exceptional cases the Commission may treat a candidate who does not possess any of the qualifications prescribed in this rule, as educationally qualified provided that he/she has passed examinations conducted by other institutions, the standard of which in the opinion of the Commission, justifies his/ her admission to the Examination.

(IV) PHYSICAL STANDARDS:

Candidates must be physically fit according to physical standards for admission to the Examination as per Regulations given in **Appendix-II** of the rules for the Combined Geo-scientist Examination, 2025 in Gazette of India dated 4th September, 2024

4. FEE:

Candidates (excepting Female/SC/ST/Persons with Benchmark Disability Candidates who are exempted from payment of fee) are required to pay fee of Rs. 200/- (Rupees Two Hundred only), alongwith the submission of On-line Application Form, either by remitting the money in any Branch of State Bank of India or by using Visa/Master/RuPay Credit/Debit Card/UPI Payment or by using Internet Banking of any Bank. Applicants who opt for "Pay by Cash" mode should print the system generated Pay-in-slip during Part II registration and deposit the fee at the counter of SBI Branch on the next working day only. "Pay by Cash" mode will be deactivated at 11:59 p.m. of 23.09.2024 i.e. one day before the closing date of submission of application; however applicants who have generated their Pay-in- Slip before it is deactivated may pay at the counter of SBI Branch during banking hours on the closing date. Such applicants who are unable to pay by cash on the closing date i.e. during banking hours at SBI Branch, for reasons whatsoever, even if holding valid pay-in-slip will have no other offline option but to opt for available online Debit/Credit Card/UPI Payment or Internet Banking payment mode on the closing date i.e. till 6:00 p.m. of 24.09.2024

Note 1: Candidates should note that payment of Examination Fee can be made only through the modes prescribed above. Payment of fee through any other mode is neither valid nor acceptable. Applications submitted without the prescribed fee/mode (unless remission of fee is claimed) shall be summarily rejected.

Note 2: Fee once paid shall not be refunded under any circumstances nor can the fee be held in reserve for any other Examination or Selection.

Note 3: For the applicants in whose case payments details have not been received from the bank, they will be treated as fictitious payment cases and their applications will be rejected in the first instance. A list of all such applicants shall be made available on the Commission website within two weeks after the last day of submission of online application. The applicants shall be required to submit the proof of their fee payment within 10 days from the date of such communication either by hand or by speed post to the Commission. On receipt of documentary proof, genuine fee payment cases will be considered and their applications will be revived, if they are otherwise eligible.

All Female Candidates and candidates belonging to Scheduled Castes/ Scheduled Tribes are not required to pay any fee. No fee exemption is, however, available to OBC/EWS candidates and they are required to pay the prescribed full fee.

Persons with benchmark disability are exempted from the payment of fee provided they are otherwise eligible for appointment to the Posts to be filled on the results of this Examination on the basis of the standards of medical fitness for these Posts (including any concessions specifically extended to the persons with benchmark disability). A person with benchmark disability claiming age relaxation/fee concession will be required by the Commission to submit along with their online application form, a certified copy of the certificate of disability from a Government Hospital/Medical Board in support of his/her claim for being person with benchmark disability.

NOTE: Notwithstanding the aforesaid provision for age relaxation/fee exemption, a person with benchmark disability candidate will be considered to be eligible for appointment only if he/she (after such physical examination as the Government or the appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned Services/Posts to be allocated to Persons with benchmark disability candidates by the Government.

Note : Applications without the prescribed Fee (Unless remission of Fee is claimed) shall be summarily rejected.

5. How to Apply:

(a) Candidates are required to apply Online using the link https://www. upsconline.nic.in. It is essential for the applicant to register himself/herself first at One Time Registration (OTR) platform, available on the Commission's website, and then proceed for filling up the online application for the examination. OTR has to be registered only once in life time. This can be done anytime throughout

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the year. If the candidate is already registered, he/she can proceed straightway for filling up the online application for the examination.

(i) Modification in OTR Profile: In case, the candidate wants to effect any change in his/her OTR profile, it shall be allowed only once in the lifetime after the registration at OTR platform. The change in OTR profile data shall be available till expiry of 7 days from the next day after the closure of application window of his/her first final application for any Examination of the Commission. In the case, the candidate after registration of OTR applies for the first time in this examination last date of modification of OTR would be **01.10.2024**

(ii) Modification in application form (Other than OTR Profile): The Commission has also decided to extend the facility of making correction(s) in any field(s) of the application form for this examination from next day of the closure of the application window of this Examination. This window will remain open for 7 days from the date of opening of the same, i.e., from 25.09.2024 to 01.10.2024. In case a candidate wants to carry out any change in his/her OTR profile during this period, then he/she should login to the OTR platform and do the needful accordingly. In other words, no change in the OTR profile can be made by visiting the window for Modification in application form.

(iii) The candidates will not be allowed to withdraw their applications after the submission of the same.

(b) The applicants are advised to submit only single application. However, if due to any unavoidable situation, he/she submits another/multiple applications, then he/she must ensure that application with the higher RID is complete in all respects like applicants details, examination centre, photograph, Photo I.D., signature, fee etc. The applicants who are submitting multiple applications should note that only the applications with higher RID (Registration ID) shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID.

(c) All candidates, whether already in Government Service, in Government owned industrial undertakings or other similar organisations or in private employment should submit their applications direct to the Commission. Persons already in Government service, whether in permanent or temporary capacity or as work charged employees other than casual or daily rated employees or those serving under the Public Enterprises are, however, required to inform in writing their Head of Office/Department that they have applied for the Examination. Candidates should note that in case a communication is received from their employer by the Commission withholding permission to the candidates applying for/appearing at the Examination, their application will be liable to be rejected/candidature will be liable to be cancelled.

NOTE-1: While filling in his/her On-line Application Form, the candidate should carefully decide about his/her choice for the Centre for the Examination.

If any candidate appears at a Centre other than the one indicated by the Commission in his/her e-admission certificate, the papers of such a candidate will not be valued and his/her candidature will be liable to cancellation.

NOTE-2: Suitable provisions for information regarding use of scribes by the blind candidates, candidates with locomotor disability and cerebral palsy where dominant (writing) extremity is affected to the extent of slowing the performance of function (minimum of 40% impairment), candidates with both arms affected and such PwBD candidates who produces a certificate to the effect that he/she has physical limitation to write have been made in the online application.

NOTE-3: Incomplete or defective applications shall be summarily rejected. No representation or correspondence regarding such rejection shall be entertained under any circumstances.

(d) Candidates are not required to submit hard copy/print out of their application to the Commission at this stage. **The candidates applying for the Examination should ensure that they fulfill all the eligibility conditions for admission to the Examination. Their admission at all the stages of Examination for which they are admitted by the Commission viz. Preliminary Examination, Main Examination and Personality Test/Interview will be purely provisional, subject to their satisfying the prescribed eligibility conditions. If on verification at any time before or after the Preliminary Examination, Main Examination or Personality Test/Interview, it is found that they do not fulfill any of the eligibility conditions; their candidature for the Examination will be cancelled by the Commission.**

Candidates are requested to keep ready the **scanned** copies of the following documents for submission to the Commission alongwith the Online Application Form

1. Certificate of Age.
2. Certificate of Educational Qualification.

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3. Certificate in support of claim to belong to Scheduled Caste, Scheduled Tribe, Economically Weaker Sections and Other Backward Classes where applicable.
4. Certificate in support of claim for age/ fee concession, wherever applicable.
5. Certificate in support of being persons with benchmark disability (wherever applicable).

. Originals of above documents will have to be produced at the time of Personality Test/Interview. The interview letter to the candidates will also be issued electronically.

If any of their claims is found to be incorrect, they may render themselves liable to disciplinary action by the Commission in terms of Rule 14 of the Combined Geo-Scientist Examination, 2025 notified in the Gazette of India dated 4th September, 2024 and also reproduced below:

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

(i) obtaining support for his/her candidature by the following means, namely:—
  (a) offering illegal gratification to, or
  (b) applying pressure on; or
  (c) blackmailing or threatening to blackmail any person connected with the conduct of Examination, or
(ii) impersonation; or
(iii) procuring impersonation by any person; or
(iv) submitting fabricated documents or documents which have been tampered with; or
(v) uploading irrelevant photos in the application form in place of actual photo/signature.
(vi) making statements which are incorrect or false, or suppressing material information; or
(vii) resorting to the following means in connection with his/her candidature for the Examination namely :—
  (a) obtaining copy of question paper through improper means;
  (b) finding out the particulars of the persons connected with secret work relating to the Examination;
  (c) influencing the examiners; or
(viii) being in possession of or using unfair means during the Examination; or
(ix) writing obscene matters, drawing obscene sketches or writing irrelevant matter in the scripts; or
(x) misbehaving in the Examination Hall including tearing of the scripts, provoking fellow examinees to boycott Examination, creating a disorderly scene and the like; or
(xi) harassing or doing bodily harm to the staff employed by the Commission for the conduct of its Examination; or
(xii) being in possession of or using any mobile phone (even in switched off mode), pager or any electronic equipment or programmable device or storage media like pen drive, smart watches etc. or camera or blue tooth devices or any other equipment or related accessories either in working or switched off mode capable of being used as a communication device during the Examination; or
(xiii) violating any of the instructions issued to candidates alongwith their admission certificates permitting them to take the Examination; or
(xiv) attempting to commit or as the case may be, abetting the commission of all or any of the acts specified in the foregoing clauses;

may in addition to rendering himself/herself liable to criminal prosecution, be liable:-

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

  Provided that no penalty under this rule shall be imposed except after:—
    (i) giving the candidate, an opportunity of making such representation in writing as he/she may wish to make in that behalf; and
    (ii) taking the representation, if any, submitted by the candidate, within the period allowed to him/her into consideration.

5.) Any person who is found by the Commission to be guilty of colluding with a candidate(s) in committing or abetting the commission of any of the misdeeds listed at the clauses (i) to (xiii) above render himself liable to action in terms of the clause (xiv).

Note: If a candidate is found to be in possession of **banned items** or using unfair means, he/she may not be allowed to continue in the said exam as soon as the incident comes to notice of the

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Examination functionaries and the action against the candidates may be taken in consultation with the Commission. Further, the candidate may also not be allowed in any of the subsequent papers of the said examination.

6. LAST DATE FOR SUBMISSION OF APPLICATIONS:

The Online Applications can be filled upto **24th September, 2024 till 1800 Hrs.**

7. CORRESPONDENCE WITH COMMISSION:

The Commission will not enter into any correspondence with the candidates about their candidature except in the following cases:

(i) The eligible candidates shall be issued an e-Admission Certificate on the last working day of the preceding week of the date of Examination. The e-Admission Certificate will be made available on the UPSC Web-site [https://www.upsc.gov.in] for downloading by candidates. No Admission Certificate will be sent by post. For downloading the e-Admission Certificate/e-Admit Card the candidate must have his/her vital parameters like RID and Date of Birth or Roll No. (if received) & date of birth or name, father's name & Date of Birth available with him/her. **If a candidate does not receive his/her admission certificate or any other communication regarding his/her candidature for the Examination one week before the commencement of the Examination, he/she should at once contact the Commission.** Information in this regard can also be obtained from the Facilitation Counter located in the Commission's Office either in person or over phone Nos.011-23381125/011-23385271/011-23098543. **In case no communication is received in the Commission's office from the candidate regarding non-receipt of his/her e-Admission Certificate at least one week before the Examination, he/she himself/herself will be solely responsible for non-receipt of his/her e-Admission Certificate.**

No candidate will ordinarily be allowed to take the Examination unless he/she holds an e-admission certificate for the Examination. On receipt of e-Admission Certificate, check it carefully and bring discrepancies/errors, if any, to the notice of UPSC immediately.

The candidates should note that their admission to the Examination will be purely provisional based on the information given by them in the Application Form. This will be subject to verification of all the eligibility conditions by the UPSC.

The mere fact that an e-admission certificate to the Examination has been issued to a candidate will not imply that the Commission has finally cleared his/her candidature or that the Commission has accepted entries made by the candidate in his/her application for the Examination as true and correct. Candidates may note that the Commission will take up the verification of eligibility conditions of a candidate, with reference to original documents, only after the candidate has qualified the Combined Geo-Scientist (Main) Examination. Unless the Commission formally confirms candidature, it continues to be provisional.

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

Candidates should note that the name in the e-Admission Certificate in some cases may be abbreviated due to technical reasons.

(ii) The candidates must ensure that their E-Mail IDs given in their Online Applications are valid and active as the Commission may use electronic mode of communication while contacting them at different stages of examination processes.

(iii) A candidate must see that communications sent to him/her at the address stated in his/her application are redirected, if necessary. Change in address should be communicated to the Commission at the earliest opportunity. Although the Commission make every effort to take account of such changes, they cannot accept any responsibility in the matter.

(iv) Candidates may note that they will not be allowed to take the Examination on the strength of an e-Admission Certificate issued in respect of another candidate.

Important: All communications to the Commission should invariably contain the following particulars.

1. Name and year of Examination.
2. Registration I.D. (RID) Number
3. Roll No. (if received)
4. Name of candidate in full and in Block Letters.
5. Complete Postal Address as given in the Application.
6. Valid and active E-mail I.D.

N.B.(i) Communications not containing the above particulars may not be attended to.

N.B.(ii) If a letter/communication is received from a candidate after an Examination has been held and it does not give his/her full name and Roll number, it will be ignored and no action will be taken thereon.

N.B.(iii) Candidates are strongly advised to keep a printout or soft copy of their online application for future references.

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8. The eligibility for availing reservation against the vacancies reserved for the Persons with Benchmark Disabilities shall be the same as prescribed in "The Rights of Persons with Disabilities Act, 2016 (RPwD Act, 2016)". The candidates of Multiple Disabilities will be eligible for reservation under category (e) - Multiple Disabilities only of Section 34(1) of RPwD Act, 2016 and shall not be eligible for reservation under any other categories of disabilities i.e. (a) to (d) of Section 34(1) of RPwD Act, 2016 on account of having 40% and above impairment in any of these categories of PwBD.
Provided further that the persons with Benchmark Disabilities shall also be required to meet special eligibility criteria in terms of physical requirements/functional classification (abilities/ disabilities) consistent with requirements of the identified Service/Post as under:-

Geologist Gr 'A':

Sl.	Functional Classification	Physical Requirements
1	HH	S, ST, BN, MF, SE, W, KC, C
2	OA, OL	S, ST, BN, MF, SE, W, KC, C

Geophysicist Gr 'A':

Sl.	Functional Classification	Physical Requirements
1	HH	S, ST, BN, MF, SE, W, KC, C
2	OA, OL	S, ST, BN, MF, SE, W, KC, C

Chemist Gr 'A':

Sl.	Functional Classification	Physical Requirements
1	HH	S, ST, BN, MF, SE, W,KC, C
2	OA, OL	S, ST, BN, MF, SE, W,KC, C

Scientist 'B' (Hydrogeology) Gr 'A', Scientist 'B' (Geophysics) Gr 'A', Assistant Hydrogeologist Gr 'B' and Assistant Geophysicist Gr 'B':

Sl.	**Functional Classification**	**Physical Requirements**
1.	PB - Partially Blind	S, ST, W, SE, H, RW
2.	HH- Hard of Hearing	S, ST, W, SE, H, RW
3.	OL - One leg affected(R or L) (Impaired Reach)	S, ST, W, SE, H, RW
4.	MW - Muscular Weakness and limited physical endurance	S, ST, W, SE, H, RW

Scientist 'B'(Chemical) Gr 'A':

Sl.	Functional Classification	Physical Requirements
1	OL - One leg affected(R or L) (Impaired Reach)	S, ST, W, SE, H, RW
2.	MW - Muscular Weakness and limited physical endurance	S, ST, W, SE, H, RW
3.	HH- Hard of Hearing	S, ST, W, SE, H, RW

Assistant Chemist Gr 'B':

Sl.	**Functional Classification**	**Physical Requirements**

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Sl.	Functional Classification	Physical Requirements
1.	OL - One leg affected (R or L) (Impaired Reach)	S, ST, W, SE, H, RW
2.	MW – Muscular Weakness and limited physical endurance	S, ST, W, SE, H, RW
3.	HH – Hard of Hearing	S, ST, W, SE, H, RW

Note: HH- Hard of Hearing, H- Hearing, SP- Speaking, S – Sitting, ST – Standing, W – Walking, MF – Manipulation by fingers, RW – Reading & Writing, SE – Seeing, OA - One Arm affected, OL - One Leg affected, OLA - One Leg One Arm affected, N- Numerical calculation ability, BL - Both legs affected, BN – Bending, KC – Kneeling, C- Communication, PB- Partially Blind.

9. As per the decision taken by the Government for increasing the access of unemployed to job opportunities, the Commission will publically disclose the scores of the candidates (obtained in the Written Examination and Interview/Personality Test) through the public portals. The disclosure will be made in respect of only those candidates who will appear in the Interview/Personality Test for the Combined Geo-scientist Examination and are not finally recommended for appointment. The information shared through this disclosure scheme about the non-recommended candidates may be used by other public and private recruitment agencies to appoint suitable candidates from the information made available in the public portal.

Candidates will be required to give their options at the time of Interview/ Personality Test, while acknowledging the e-summon letter mailed to them for interview. A candidate may opt out of the scheme also and in that case his/her details will not be published by the Commission.

Besides sharing of the information of the non-recommended candidates for the Examinations conducted by the Commission, the Commission will not assume any responsibility or liability for the method and manner in which information related to candidates who appear at the Commission's Examinations/Selections is utilized by other private of public organizations.

10. WITHDRAWAL OF APPLICATIONS The candidates will not be allowed to withdraw their applications after the submission of the same.

11. Details about the scheme of Examination, standard and syllabi of the subjects etc. may be seen in Appendix-I of this Notice.

(VINOD KUMAR)
UNDER SECRETARY
UNION PUBLIC SERVICE COMMISSION

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APPENDIX – I

PLAN OF EXAMINATION

The Examination shall be conducted according to the following plan:—

(i) Stage-I : Combined Geo-Scientist (Preliminary) Examination (Objective Type Papers) for the selection of candidates for the Stage-II: ..... 400 Marks

(ii) Stage-II : Combined Geo-Scientist (Main) Examination (Conventional Type Papers); and ..... 600 Marks

(iii) Stage-III : Personality Test/Interview ..... 200 Marks

2. The candidates will first take the Combined Geo-Scientist (Preliminary/Stage-I) Examination which consists of two Objective Type (multiple choices) Questions Papers for each stream. The Question Papers will be set in English only. The detailed Scheme of Stage-I: is as follow:-

Stage-I: Combined Geo-Scientist (Preliminary) Examination:-

Stream-I : Geologist Group 'A' in GSI and Scientist B (Hydrogeology) Group 'A' and Assistant Hydrogeologist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : General Studies	2 Hours	100 Marks
Paper-II : Geology/Hydrogeology	2 Hours	300 Marks
	Total	400 Marks

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Stream-II : Geophysicist Group 'A' in GSI and Scientist 'B' (Geophysics) Group 'A' and Assistant Geophysicist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : General Studies	2 Hours	100 Marks
Paper-II : Geophysics	2 Hours	300 Marks
	Total	400 Marks

Stream-III : Chemist Group 'A' in GSI and Scientist 'B'(Chemical) Group 'A' and Assistant Chemist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : General Studies	2 Hours	100 Marks
Paper-II : Chemistry	2 Hours	300 Marks
	Total	400 Marks

Note-1: There will be penalty (Negative Marking) for wrong answers marked by a candidate in the objective type question papers.

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

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

Note-2: The candidates are not permitted to use calculators for answering Objective Type Papers. They should therefore not bring the same inside the Examination Hall.

Note-3: Only those candidates who are declared by the Commission to have qualified in the Preliminary/Stage-I Examination in the year will be eligible for admission to the Main/Stage-II Examination of that year provided they are otherwise eligible for admission to the Main/Stage-II Examination. The marks obtained in Preliminary/Stage-I Examination by the candidates who are declared qualified for admission to the Main/Stage-II Examination will be counted for determining their final order of merit. The number of candidates to be admitted to the Main/Stage-II Examination will be about six to seven times of the total approximate number of vacancies to be filled in the year through this Examination.

Note-4: The Commission will draw a list of candidates to be qualified for Combined Geo-Scientist (Main) Examination based on the criterion of minimum qualifying marks in General Studies Paper (Paper-I) and Geo-Scientist Stream specific paper (Paper-II) of Preliminary Examination.

3. The Combined Geo-Scientist (Main) Examination will consist of three conventional type papers for each stream. **Conventional Type papers must be answered in English only. Question paper will be set in English only.** The detailed scheme of Stage-II is as follows:-

Stage-II: Combined Geo-Scientist (Main) Examination:-

Stream-I : Geologist Group 'A' in GSI		
Subject	**Duration**	**Maximum Marks**
Paper-I : Geology	3 Hours	200 Marks
Paper-II : Geology	3 Hours	200 Marks
Paper-III : Geology	3 Hours	200 Marks
	Total	600 Marks
Stream-II : Geophysicist Group 'A' in GSI and Scientist 'B' (Geophysics) Group 'A'		

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& Assistant Geophysicist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : Geophysics	3 Hours	200 Marks
Paper-II : Geophysics	3 Hours	200 Marks
Paper-III : Geophysics	3 Hours	200 Marks
	Total	600 Marks

Stream-III : Chemist Group 'A' in GSI and Scientist 'B' (Chemical) Group 'A' & Assistant Chemist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : Chemistry	3 Hours	200 Marks
Paper-II : Chemistry	3 Hours	200 Marks
Paper-III : Chemistry	3 Hours	200 Marks
	Total	600 Marks

Stream-IV : Scientist 'B'(Hydrogeology) Group 'A' & Assistant Hydrogeologist Group 'B' in CGWB		
Subject	**Duration**	**Maximum Marks**
Paper-I : Geology	3 Hours	200 Marks
Paper-II : Geology	3 Hours	200 Marks
Paper-III : Hydrogeology	3 Hours	200 Marks
	Total	600 Marks

Note-I : Candidates competing for selection to the posts of Geologist Group 'A', Geophysicist Group 'A', Chemist Group 'A' in GSI and Scientist 'B' (Hydrogeology) Group 'A', Scientist 'B' (Chemical) Group 'A', Scientist 'B'(Geophysics) Group 'A', Assistant Hydrogeologist Group 'B', Assistant Chemist Group 'B' and Assistant Geophysicist Group 'B' in CGWB will be required to appear in all the subjects mentioned against respective category above.

Note-II: If any candidate failed to appear in any one or more of above papers, meant for Stage-II/ Main Examination for selection to the post(s) of Geologist Group 'A', Geophysicist Group 'A', Chemist Group 'A' in GSI and Scientist 'B' (Hydrogeology) Group 'A', Scientist 'B' (Chemical) Group 'A', Scientist 'B'(Geophysics) Group 'A', Assistant Hydrogeologist Group 'B', Assistant Chemist Group 'B' and Assistant Geophysicist Group 'B' in CGWB, their candidature shall stand rejected and part of the Main Examination attempted by him/her shall not be evaluated and counted for any purpose.

Note-III: Credit will be given for orderly effective and exact expression combined with due economy of words in all subjects of Examination.

Note IV : Candidates should use only international form of Indian numerals (e.g. 1, 2, 3, 4, 5 etc.) while answering question papers.

Note V: Candidates will be allowed the use of Non-Programmable type Pocket Calculators in Descriptive/Conventional Type Papers of the Examination. Programmable type calculators will not be allowed and the use of such calculators shall tantamount to resorting to unfair means by the candidates. Loaning or interchanging of calculators in the Examination Hall is not permitted.

Note VI: Candidates should note that if any irrelevant matters/signages/marks etc. are found written in the answer script(s), which would not be related to any question/answer and/or would be having the potential to disclose the candidate's identity, the Commission will impose a penalty of deduction of marks from the total marks from the total marks otherwise accruing to the candidate or will not be evaluate the said script(s) on this account.

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4. Common instructions for Stage-I(Preliminary) and Stage-II(Main) Examinations.

4.1 Candidates must mark/write the papers in their own hand. In no circumstances will they be allowed the help of a scribe to mark/write the answers for them. The Persons with Benchmark Disabilities in the categories of blindness, locomotor disability (both arm affected – BA) and cerebral palsy will be provided the facility of scribe, if desired by the person. In case of other category of Persons with Benchmark Disabilities as defined under section 2(r) of the RPWD Act, 2016, the facility of scribe will be allowed to such candidates on production of a certificate to the effect that the person concerned has physical limitation to write, and scribe is essential to write Examination on behalf, from the Chief Medical Officer/Civil Surgeon/Medical Superintendent of a Government Health Care institution as per proforma at Appendix–IV.

Further, for persons with specified disabilities covered under the definition of Section 2(s) of the RPwD Act, 2016 but not covered under the definition of Section 2(r) of the said Act, i.e. persons having less than 40% disability and having difficulty in writing will be provided the facility of scribe subject to production of a certificate to the effect that person concerned has limitation to write and that scribe is essential to write examination on his/her behalf from the competent medical authority of a Government healthcare institution as per proforma at Appendix-VI.

4.2 The candidates have discretion of opting for his/her own scribe or request the Commission for the same. The details of scribe i.e. whether own or the Commission's and the details of scribe in case candidates are bringing their own scribe, will be sought at the time of filling up the application form online as per proforma at Appendix-V (for candidates having 40% disability or more) and Appendix VII (for candidates having less than 40% disability and having difficulty in writing).

4.3 The qualification of the Commission's scribe as well as own scribe will not be more than the minimum qualification criteria of the Examination. However, the qualification of the scribe should always be matriculate or above.

4.4 The Persons with Benchmark Disabilities in the category of blindness, locomotor disability (both arm affected – BA) and cerebral palsy will be allowed Compensatory Time of twenty minutes per hour of the Examination. In case of other categories of Persons with Benchmark Disabilities, this facility will be provided on production of a certificate to the effect that the person concerned has physical limitation to write from the Chief Medical Officer/ Civil Surgeon/Medical Superintendent of a Government Health Care institution as per proforma at Appendix – IV.

Further, for persons with specified disabilities covered under the definition of Section 2(s) of the RPwD Act, 2016 but not covered under the definition of Section 2(r) of the said Act, i.e. persons having less than 40% disability and having difficulty in writing will be provided compensatory time subject to production of a certificate to the effect that person concerned has limitation to write from the competent medical authority of a Government healthcare institution as per proforma at Appendix-VI.

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

Note (2) : The criteria for determining the percentage of visual impairment shall be as follows:—

Better eye Best Corrected	**Worse eye Best Corrected**	**Per Cent Impairment**	**Disability category**
6/6 to 6/18	6/6 to 6/18	0%	0
	6/24 to 6/60	10%	0
	Less than 6/60 to 3/60	20%	I
	Less than 3/60 to No Light Perception	30%	II (One eyed person)
6/24 to 6/60 Or Visual field less than 40 up to 20 degree around centre of fixation or heminaopia involving macula	6/24 to 6/60	40%	III a (low vision)
	Less than 6/60 to 3/60	50%	III b (low vision)
	Less than 3/60 to No Light Perception	60%	III c (low vision)
Less than 6/60 to 3/60	Less than 6/60 to 3/60	70%	III d (low vision)

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Or Visual field less than 20 up to 10 degree around centre of fixation	Less than 3/60 to No Light Perception	80%	III e (low vision)
Less than 3/60 to 1/60 Or Visual field less than 10 degree around centre of fixation	Less than 3/60 to No Light Perception	90%	IV a (Blindness)
Only HMCF Only Light Perception No Light Perception	Only HMCF Only Light Perception No Light Perception	100%	IV b (Blindness)

The concession admissible to blind candidates shall not be admissible to those suffering from Myopia.

4.5 In the question papers, wherever necessary, questions involving the Metric System of Weights and Measures only will be set.

5. The Stage-III will consist of Personality Test/Interview carrying 200 Marks (with no minimum qualifying marks). Candidates, who obtain such minimum qualifying marks in Stage-II as may be fixed by the Commission as per its discretion, shall be summoned for Stage-III (Personality Test). The number of candidates to be summoned for Personality Test will be about twice the number of vacancies to be filled. In the Personality Test, the candidate will be interviewed by Board i.e. Interview Board (s) constituted by the Commission. The object of the interview will be to assess the suitability for the post(s) of Geologist Group 'A', Geophysicist Group 'A', Chemist Group 'A' in GSI and Scientist 'B' (Hydrogeology) Group 'A', Scientist 'B' (Chemical) Group 'A', Scientist 'B'(Geophysics) Group 'A', Assistant Hydrogeologist Group 'B', Assistant Chemist Group 'B' and Assistant Geophysicist Group 'B' in CGWB. Special attention will be paid in the Personality Test to assessing the candidate's capacity for leadership, initiative and intellectual curiosity, tact and other social qualities, mental and physical energy powers of practical application, integrity of character and aptitude for adapting themselves to the field life.

6. **The Details of the syllabi for Stage-I: (Preliminary Examination) and Stage-II: (Main Examination) of Combined Geo-Scientist Examination are as under:**

SCHEDULE

STANDARD AND SYLLABUS

Paper-I in General Studies of Stage-I is common for all streams and its standard will be such as may be expected of a science graduate. Paper-II of Stage-I (Stream specific) and 3 compulsory papers of Stage-II each on Geology, Geophysics, Chemistry and Hydrogeology subjects will be approximately of the M.Sc. degree standard of an Indian University **and** questions will generally be set to test the candidate's grasp of the fundamentals in each subject.

There will be no practical examination in any of the subjects

Syllabus of Combined Geo-Scientist (Preliminary) Examination

Stage-I *(Objective Type)*

Paper-I: General Studies *(Common for all streams)*

- Current events of national and international importance.
- History of India and Indian National Movement.
- Indian and World Geography -Physical, Social, Economic Geography of India and the World.
- Indian Polity and Governance -Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues, etc.
- Economic and Social Development – Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, etc.
- General issues on Environmental Ecology, Bio-diversity and Climate Change - that do not require subject specialisation
- General Science

Stage-I *(Objective Type)*

Paper-II : Geology/Hydrogeology

1. Physical Geology

Principle of uniformitarianism; origin, differentiation and internal structure of the Earth; origin of atmosphere; earthquakes and volcanoes; continental drift, sea-floor spreading, isostasy, orogeny and plate tectonics; geological action of rivers, wind, glaciers, waves; erosional and depositional landforms; weathering processes and products.

2. Structural Geology

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Stress, strain and rheological properties of rocks; planar and linear structures; classification of folds and faults; Mohr's circle and criteria for failure of rocks; ductile and brittle shear in rocks; study of toposheets, V-rules and outcrop patterns; stereographic projections of structural elements.

3. Mineralogy

Elements of symmetry, notations and indices; Bravais lattices; chemical classification of minerals; isomorphism, polymorphism, solid solution and exsolution; silicate structures; physical and optical properties of common rock forming minerals- olivine, garnet, pyroxene, amphibole, mica, feldspar and quartz.

4. Igneous Petrology

Magma types and their evolution; IUGS classification of igneous rocks; forms, structures and textures of igneous rocks; applications of binary and ternary phase diagrams in petrogenesis; magmatic differentiation and assimilation; petrogenesis of granites, basalts, komatiiites and alkaline rocks (carbonatite, kimberlite, lamprophyre and nepheline syenite).

5. Metamorphic Petrology

Limits, types and controls of metamorphism; metamorphic structures- slate, schist and gneiss; metamorphic textures- pre, syn and post tectonic porphyroblasts; concept of metamorphic zone, isograd and facies; geothermal gradients, facies series and plate tectonics.

6. Sedimentology

Origin of sediments; sedimentary textures, grain-size scale; primary sedimentary structures; classification of sandstone and carbonate rocks; siliciclastic depositional environments and sedimentary facies; diagenesis of carbonate sediments.

7. Paleontology

Fossils and processes of fossilization; concept of species and binomial nomenclature; morphology and classification of invertebrates (Trilobites, Brachiopods, Lamellibranchs, Gastropods and Cephalopods); evolution in Equidae and Hominidae; microfossils-Foraminifera, Ostracoda; Gondwana flora.

8. Stratigraphy

Law of superposition; stratigraphic nomenclature- lithostratigraphy, biostratigraphy and chronostratigraphy; Archaean cratonic nucleii of Peninsular India (Dharwar, Singhbhum, and Aravalli cratons); Proterozoic mobile belts (Central Indian Tectonic Zone, Aravalli-Delhi and Eastern Ghats); Purana sedimentary basins (Cuddapah and Vindhyan); Phanerozoic stratigraphy of India- Spiti, Kashmir, Damodar valley, Kutch, Trichinopoly, Siwaliks and Indo-Gangetic alluvium.

9. Economic Geology

Properties of mineral deposits- form, mineral assemblage, texture, rock-ore association and relationship; magmatic, sedimentary, metamorphic, hydrothermal, supergene and weathering-related processes of ore formation; processes of formation of coal, and petroleum; distribution and geological characteristics of major mineral and hydrocarbon deposits of India.

10. Hydrogeology

Groundwater occurrence and aquifer characteristics, porosity, permeability, hydraulic conductivity, transmissivity; Darcy's Law in homogenous and heterogenous media; Bernoulli equation, Reynold's number; composition of groundwater; application of H and O isotopes in groundwater studies; artificial recharge of groundwater.

Stage-I *(Objective Type)*

Paper-II : Geophysics

1. Solid Earth Geophysics:

Introduction to Geophysics and its branches. Solar system: origin, formation and characteristics of planets, Earth: shape and rotation. Gravity and magnetic fields of earth. Geomagnetism, elements of earth's magnetism, Rock and mineral magnetism, Elastic waves, types and their propagation characteristics, internal structure of earth, variation of physical properties in the interior of earth. Plate tectonics, Earthquakes and their causes, focal depth, epicenter, Intensity and Magnitude scales, Energy of earthquakes, Seismicity.

2. Mathematical Methods in Geophysics:

Elements of vector analysis, Vector algebra, Properties of scalars, vectors and tensors, Gradient, Divergence and Curl, Gauss's divergence theorem, Stoke’s theorem. Matrices, Eigen values and Eigen vectors and their applications in geophysics. Newton's Law of gravitation, Gravity potential and gravity fields due to bodies of different geometric shapes. Basic Forces of Nature and their strength: Gravitational, Electromagnetic, Strong and Weak forces. Conservation Laws in Physics: Energy, Linear and angular momentum. Rigid body motion and moment of inertia. Basics of special theory of relativity and Lorentz transformation.

Fundamental concepts of inverse theory, Definition of inversion and application to Geophysics. Forward and Inverse problems. Probability theory, Random variables, binomial, Poisson and normal distributions. Linear algebra, Linear ordinary differential equations of first and second

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order. Partial differential equations (Laplace, wave and heat equations in two and three dimensions). Elements of numerical techniques: root of functions, interpolation, and extrapolation, integration by trapezoid and Simpson's rule, solution of first order differential equation using Runge-Kutta method, Introduction to finite difference and finite elements methods.

3. Electromagnetism:

Electrostatic and magneto-static fields, Coulomb's law, Electrical permittivity and dielectric constant, Lorentz force and their applications. Ampere's law, Biot and Savart's law, Gauss's Theorem, Poisson's equation. Laplace's equation: solution of Laplace's equation in Cartesian coordinates, use of Laplace's equation in the solutions of geophysical and electrostatic problems. Displacement current, Faraday's law of electromagnetic induction. Maxwell's equations. Boundary conditions. Wave equation, plane electromagnetic waves in free space, dielectric and conducting media, electromagnetic vector and scalar potentials.

4. Geophysical Prospecting:

Elements of geophysical methods: Principles, data reduction and applications of gravity, magnetic, electrical, electromagnetic and well logging methods. Fundamentals of seismic methods: Fermat's Principle, Snell's Law, Energy portioning, Reflection and transmission coefficients, Reflection and Refraction from layered media. Signals and systems, sampling theorem, aliasing effect, Fourier series and periodic waveforms, Fourier transform and its application, Laplace transforms, Convolution, Auto and cross correlations, Power spectrum, Delta function, unit step function.

5. Remote Sensing and Thermodynamics:

Fundamentals of remote sensing, electromagnetic spectrum, energy- frequency-wavelength relationship, Stefan-Boltzmann Law, Wien's Law, electromagnetic energy and its interactions in the atmosphere and with terrain features. Planck's Radiation Law. Laws of thermodynamics and thermodynamic potential.

6. Nuclear Physics and Radiometry:

Basic nuclear properties: size, shape, charge distribution, spin and parity; Binding energy, semi-empirical mass formula; Fission and fusion. Principles of radioactivity, Alpha, beta and gamma decays, Photoelectric and Compton Effect, Pair Production, radioactivity decay law, radioactivity of rocks and minerals, Radiation Detectors: Ionization chamber, G-M counter, Scintillation counter and Gamma ray spectrometer. Matter Waves and wave particle duality, Electron spin, Spectrum of Hydrogen, helium and alkali atoms.

Stage-I *(Objective Type)*

Paper-II : Chemistry

1. Chemical periodicity:

Schrödinger equation for the H-atom. Radial distribution curves for 1s, 2s, 2p, 3s, 3p, 3d orbitals. Electronic configurations of multi-electron atoms.

Periodic table, group trends and periodic trends in physical properties. Classification of elements on the basis of electronic configuration. Modern IUPAC Periodic table. General characteristics of s, p, d and f block elements. Effective nuclear charges, screening effects, atomic radii, ionic radii, covalent radii. Ionization enthalpy, electron gain enthalpy and electronegativity. Group trends and periodic trends in these properties in respect of s-, p- and d-block elements. General trends of variation of electronic configuration, elemental forms, metallic nature, magnetic properties, catenation and catalytic properties, oxidation states, aqueous and redox chemistry in common oxidation states, properties and reactions of important compounds such as hydrides, halides, oxides, oxy-acids, complex chemistry in respect of s-block and p-block elements.

2. Chemical bonding and structure:

Ionic bonding: Size effects, radius ratio rules and their limitations. Packing of ions in crystals, lattice energy, Born-Landé equation and its applications, Born-Haber cycle and its applications. Solvation energy, polarizing power and polarizability, ionic potential, Fajan's rules. Defects in solids.

Covalent bonding: Valence Bond Theory, Molecular Orbital Theory, hybridization. Concept of resonance, resonance energy, resonance structures.

Coordinate bonding: Werner theory of coordination compounds, double salts and complex salts. Ambidentate and polydentate ligands, chelate complexes. IUPAC nomenclature of coordination compounds. Coordination numbers, Geometrical isomerism. Stereoisomerism in square planar and octahedral complexes.

3. Acids and bases:

Chemical and ionic equilibrium. Strengths of acids and bases. Ionization of weak acids and bases in aqueous solutions, application of Ostwald's dilution law, ionization constants, ionic product of water, pH-scale, effect of temperature on pH, buffer solutions and their pH values, buffer action & buffer capacity; different types of buffers and Henderson's equation.

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4. Theoretical basis of quantitative inorganic analysis:

Volumetric Analysis: Equivalent weights, different types of solutions, normal and molar solutions. Primary and secondary standard substances.

General principles of different types of titrations: i) acid-base, ii) redox, iii) complexometric, iv) Precipitation. Types of indicators - i) acid-base, ii) redox iii) metal-ion indicators.

5. Kinetic theory and the gaseous state:

Kinetic theory of gases, average kinetic energy of translation, Boltzmann constant and absolute scale of temperature. Maxwell-Boltzmann distribution of speeds. Calculations of average, root mean square and most probable velocities. Collision diameter; collision number and mean free path; frequency of binary collisions; wall collision and rate of effusion.

6. Chemical thermodynamics and chemical equilibrium:

First law and its applications to chemical problems. Thermodynamic functions. Total differentials and state functions. Free expansion, Joule-Thomson coefficient and inversion temperature. Hess' law.

Applications of Second law of thermodynamics. Gibbs function (*G*) and Helmholtz function (*A*), Gibbs-Helmholtz equation, criteria for thermodynamic equilibrium and spontaneity of chemical processes.

7. Solutions of non-electrolytes:

Colligative properties of solutions, Raoult's Law, relative lowering of vapour pressure, osmosis and osmotic pressure; elevation of boiling point and depression of freezing point of solvents. Solubility of gases in liquids and solid solutions.

8. Electrochemistry:

Cell constant, specific conductance and molar conductance. Kohlrausch's law of independent migration of ions, ion conductance and ionic mobility. Equivalent and molar conductance at infinite dilution. Debye-Hückel theory. Application of conductance measurements. Conductometric titrations. Determination of transport number by moving boundary method.

9. Basic organic chemistry:

Delocalized chemical bond, resonance, conjugation, hyperconjugation, hybridisation, orbital pictures of bonding sp^3, sp^2, sp: C-C, C-N and C-O system), bond polarization and bond polarizability. Reactive intermediates: General methods of formation, relative stability and reactivity of carbocations, carbanions and free radicals.

10. Stereochemistry:

Configuration and chirality (simple treatment of elements of symmetry), optical isomerism of compounds containing two to three stereogenic centres, R,S nomenclature, geometrical isomerism in compounds containing two C=C double bonds (E,Z naming), and simple cyclic systems, Newman projection (ethane and substituted ethane).

11. Types of organic reactions:

Aliphatic substitution reactions: S_{N1}, S_{N2} mechanisms, stereochemistry, relative reactivity in aliphatic substitutions. Effect of substrate structure, attacking nucleophile, leaving group and reaction medium and competitive reactions.

Elimination reactions: E_1, E_2, mechanisms, stereochemistry, relative reactivity in aliphatic eliminations. Effect of substrate structure, attacking base, leaving group, reaction medium and competitive reactions, orientation of the double bond, Saytzeff and Hoffman rules.

Addition reactions: Electrophilic, nucleophilic and radical addition reactions at carbon-carbon double bonds.

Electrophilic and nucleophilic aromatic substitution: Electrophilic (halogenation, sulphonation, nitration, Friedal-Crafts alkylation and acylation), nucleophilic (simple S_{NAr}, S_{N1} and aryne reactions).

12. Molecular Rearrangements:

Acid induced rearrangement and Wagner-Meerwein rearrangements. Neighbouring group participation.

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Syllabus of Combined Geo-Scientist (Main) Examination

For the post of Geologist/Scientist 'B'(Hydrogeology) /Assistant Hydrogeologist

Stage-II *(Descriptive Type)*

Geology : Paper-I

Section A. Physical geology and remote sensing

Evolution of Earth; Earth's internal structure; earthquakes and volcanoes; principles of geodesy, isostasy; weathering- processes and products; geomorphic landforms formed by action of rivers, wind, glaciers, waves and groundwater; features of ocean floor; continental shelf, slope and rise; concepts of landscape evolution; major geomorphic features of India- coastal, peninsular and extra peninsular.Electromagnetic spectrum; electromagnetic bands in remote sensing; spectral signatures

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of soil, rock, water and vegetation; thermal, near infra-red and microwave remote sensing; digital image processing; LANDSAT, IRS and SPOT- characteristics and use; aerial photos- types, scale, parallax, relief displacement; elements of image interpretation.**Section B. Structural geology**

Principles of geological mapping; kinematic and dynamic analysis of deformation; stress-strain relationships for elastic, plastic and viscous materials; measurement of strain in deformed rocks; structural analysis of fold, cleavage, boudin, lineation, joint, and fault; stereographic projection of linear and planar structures; superposed deformation; deformation at microscale- dynamic and static recrystallisation, controls of strain rate and temperature on development of microfabrics; brittle and ductile shear zones; time relationship between crystallisation and deformation, calculation of paleostress.

Section C. Sedimentology

Classification of sedimentary rocks; sedimentary textures-grain size, roundness, sphericity, shape and fabric; quantitative grain size analysis; sediment transport and deposition- fluid and sediment gravity flows, laminar and turbulent flows, Reynold's number, Froude number, grain entrainment, Hjulstrom diagram, bed load and suspension load transport; primary sedimentary structures; penecontemporaneous deformation structure; biogenic structures; principles and application of paleocurrent analysis; composition and significance of different types of sandstone, limestone, banded iron formation, mudstone, conglomerate; carbonate diagenesis and dolomitisation; sedimentary environments and facies-facies models for fluvial, glacial, deltaic, siliciclastic shallow and deep marine environments; carbonate platforms- types and facies models; sedimentation in major tectonic settings; principles of sequence stratigraphy-concepts, and factors controlling base level changes, parasequence, clinoform, systems tract, unconformity and sequence boundary.**Section D. Paleontology**

Fossil record and geological time scale; modes of preservation of fossils and concept of taphonomy; body- and ichno-fossils, species concept, organic evolution, Ediacara Fauna; morphology and time range of Graptolites, Trilobites, Brachiopods, Lamellibranchs, Gastropods, Cephalopods, Echinoids and Corals; evolutionary trends in Trilobites, Lamellibranchs, Gastropods and Cephalopods; micropaleontology- methods of preparation of microfossils, morphology of microfossil groups (Foraminifera, Ostracoda), fossil spores, pollen and dinoflagellates; Gondwana plant fossils and their significance; vertebrate life through ages, evolution in Proboscidea, Equidae and Hominidae; applications of paleontological data in stratigraphy, paleoecology, and paleoclimatology; mass extinctions.**Section E. Stratigraphy**

Principles of stratigraphy-code of stratigraphic nomenclature of India; lithostratigraphy, biostratigraphy, chronostratigraphy and magnetostratigraphy; principles of stratigraphic correlation; characteristics of Archean granite-greenstone belts; Indian stratigraphy- geological evolution of Archean nucleii (Dharwar, Bastar, Singhbhum, Aravalli and Bundelkhand); Proterozoic mobile belts- Eastern Ghats Mobile Belt, Southern Granulite Terrain, Central Indian Tectonic Zone, Aravalli-Delhi Belt, North Singhbhum Mobile Belt; Proterozoic sedimentary basins (Cuddapah and Vindhyan); Phanerozoic stratigraphy- Paleozoic (Spiti, Kashmir and Kumaon), Mesozoic (Spiti, Kutch, Narmada Valley and Trichinopoly), Gondwana Supergroup, Cenozoic (Assam, Bengal basins, Garhwal-Shimla Himalayas); Siwaliks; boundary problems in Indian stratigraphy.**Stage-II** *(Descriptive Type)*

Geology : Paper-II

Section A. Mineralogy

Symmetry, motif, Miller indices; concept of unit cell and Bravais lattices; 32 crystal classes; types of bonding, Pauling's rules and coordination polyhedra; crystal imperfections-defects, twinning and zoning; polymorphism, pseudomorphism, isomorphism and solid solution; physical properties of minerals; polarising microscope and accessory plate; optical properties of minerals- double refraction, polarisation, pleochroism, sign of elongation, interference figure and optic sign; structure, composition, physical and optical properties of major rock-forming minerals- olivine, garnet, aluminosilicates, pyroxene, amphibole, mica, feldspar, clay, silica and spinel group.

Section B. Geochemistry and isotope geology

Chemical composition and characteristics of atmosphere, lithosphere, hydrosphere; geochemical cycles; meteorites-types and composition; Goldschmidt's classification of elements; fractionation of elements in minerals/rocks; Nernst's partition coefficient (compatible and incompatible elements), Nernst-Berthelot partition coefficient and bulk partition coefficient; Fick's laws of diffusion and activity composition relation (Roult's and Henry's law); application of trace elements in petrogenesis; principles of equilibrium and Rayleigh fractionation; REE patterns, Eh and pH diagrams and mineral stability.

Half-life and decay equation; dating of minerals and rocks with potassium-argon, rubidium-strontium, uranium-lead and samarium-neodymium isotopes; petrogenetic implications of samarium-neodymium and rubidium-strontium systems; stable isotope geochemistry of carbon,

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oxygen and sulphur and their applications in geology; monazite chemical dating.**Section C. Igneous petrology**

Viscosity, temperature and pressure relationships in magmas; IUGS classification of plutonic and volcanic rocks; nucleation and growth of minerals in magmatic rocks, development of igneous textures; magmatic evolution (differentiation, assimilation, mixing and mingling); types of mantle melting (batch, fractional and dynamic); binary (albite-anorthite, forsterite-silica and diopside-anorthite) and ternary (diopside-forsterite-silica, diopside-forsterite-anorthite and nepheline-kalsilite-silica) phase diagrams and relevance to magmatic crystallization; petrogenesis of granites, basalts, ophiolite suite, komatiites, syenites, boninites, anorthosites and layered complexes, and alkaline rocks (carbonatite, kimberlite, lamproite, lamprophyre); mantle metasomatism, hotspot magmatism and large igneous provinces of India.**Section D. Metamorphic petrology**

Limits and physico-chemical controls (pressure, temperature, fluids and bulk rock composition) of metamorphism; concept of zones, facies, isograds and facies series, geothermal gradients and tectonics of orogenic belts; structures, micro-structures and textures of regional and contact metamorphic rocks; representation of metamorphic assemblages (ACF, AKF and AFM diagrams); equilibrium concept in thermodynamics; laws of thermodynamics, enthalpy, entropy, Gibb's free energy, chemical potential, fugacity and activity; tracing the chemical reactions in P-T space, phase rule and mineralogical phase rule in multi-component system; Claussius-Clapeyron equation and slopes of metamorphic reactions; heat flow, diffusion and mass transfer; Fourier's law of heat conduction; geothermobarometry; mass and energy change during fluid-rock interactions; charnockite problem, formation of skarns, progressive and retrogressive metamorphism of pelitic, calcareous and basic rocks; P-T-t path and tectonic setting.

Section E. Geodynamics

Phase transitions and seismic discontinuities in the Earth; seismic waves and relation between V_p, V_s and density; seismic and petrological Moho; rheology of rocks and fluids (Newtonian and non-Newtonian liquids); rock magnetism and its origin; polarity reversals, polar wandering and supercontinent cycles; continental drift, sea floor spreading; gravity and magnetic anomalies of ocean floors and their significance; mantle plumes and their origin; plate tectonics- types of plate boundaries and their inter-relationship; heat flow and heat production of the crust.**Stage-II**

(Descriptive Type)

Geology : Paper-III

Section A. Economic geology

Ore minerals and industrial minerals; physical and optical properties of ore minerals; ore textures and paragenesis; characteristics of mineral deposits- spatial and temporal distribution, rock-ore association; syngenetic and epigenetic deposits, forms of ore bodies, stratiform and strata-bound deposits; ore forming processes- source and migration of ore constituents and ore fluid, mechanism of ore deposition; magmatic and pegmatitic deposits (chromite, Ti-magnetite, diamond, Cu-Ni sulphide, PGE, REE, muscovite, rare metals); hydrothermal deposits (porphyry Cu-Mo, greisen Sn-W, skarn, VMS and SEDEX type sulphide deposits, orogenic gold); sedimentary deposits (Fe, Mn, phosphorite, placer); supergene deposits (Cu, Al, Ni and Fe); metamorphic and metamorphosed deposits (Mn, graphite); fluid inclusions in ore mineral assemblage- physical and chemical properties, microthermometry; stable isotope (S, C, O, H) in ore genesis- geothermometry, source of ore constituents; global tectonics and mineralisation.

Section B. Indian mineral deposits and mineral economics

Distribution of mineral deposits in Indian shield; geological characteristics of important industrial mineral and ore deposits in India- chromite, diamond, muscovite, Cu-Pb-Zn, Sn-W, Au, Fe-Mn, bauxite; minerals used in refractory, fertilizer, ceramic, cement, glass, paint industries; minerals used as abrasive, filler; building stones.

Strategic, critical and essential minerals; India's status in mineral production; co-products and by-products;consumption, substitution and conservation of minerals; National Mineral Policy ; Mineral Concession Rules; marine mineral resources and laws of the sea.

Section C. Mineral exploration

Stages of exploration; scope, objectives and methods of prospecting, regional exploration and detailed exploration; geological, geochemical and geobotanical methods; litho-, bio-, soil geochemical surveys, mobility and dispersion of elements, geochemical anomalies; ore controls and guides; pitting, trenching, drilling; sampling, assaying, ore reserve estimation; categorization of ore reserves; geophysical methods- ground and airborne surveys; gravity, magnetic, electrical and seismic methods of mineral exploration.

Section D. Fuel geology and Engineering geology

Coal and its properties; proximate and ultimate analysis; different varieties and ranks of coal; concept of coal maturity, peat, lignite, bituminous and anthracite coal; origin of coal, coalification process; lithotypes, microlithotypes and maceral groups of coal; mineral and organic matter in coal;

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lignite and coal deposits of India; origin, migration and entrapment of natural hydrocarbons; characteristics of source and reservoir rocks; structural, stratigraphic and mixed traps; geological, geochemical and geophysical methods of hydrocarbon exploration; petroliferous basins of India; geological characteristics and genesis of major types of U deposits and their distribution in India. .
Engineering properties of rocks; geological investigations in construction of dams, reservoirs, tunnels, bridges, highways and coastal protection structures; geologic considerations of construction materials.

Section E. Environmental geology and Natural hazards

Stefan-Boltzmann equation and planetary temperature; cause and effects of global climate change; Earth's radiation budget; greenhouse gases and effect; examples of positive and negative feedback mechanisms; biogeochemical cycle of carbon; geological investigations of nuclear waste disposal sites; marginal marine environments- estuaries, mangroves and lagoons; ozone hole depletion, ocean acidification, coral bleaching, Milankovitch cycle, sea level rise, eutrophication and acid rain; environmental impacts of urbanization, mining and hydropower projects; water pollution, water logging and soil erosion; Himalayan glaciers; causes and consequences of earthquakes, volcanoes, tsunami, floods, landslides, coastal erosion, droughts and desertification; application of remote sensing and geographic information systems (GIS) in environmental management.

Stage-II *(Descriptive Type)*

Hydrogeology

Section A. Occurrence and distribution of groundwater

Origin of water on Earth; global water cycle and budget; residence time concept, geologic formations as aquifers; confined and unconfined aquifers; groundwater table mapping and piezometric nests; porosity, void ratio, effective porosity and representative porosity range; primary and secondary porosities; groundwater zonation; specific retention, specific yield; groundwater basins; springs.

Section B. Groundwater movement and well hydraulics

Groundwater flow concepts; Darcy's Law in isotropic and anisotropic media and validity; water flow rates, direction and water volume in aquifers; permeability and hydraulic conductivity and ranges in representative rocks; Bernoulli equation; determination of hydraulic conductivity in field and laboratory; concept of groundwater flow through dispersion and diffusion; transmissivity and aquifer thickness.

Section C. Water wells and groundwater levels

Unidirectional and radial flow to a well (steady and unsteady); well flow near aquifer boundaries; methods for constructing shallow wells, drilling wells, well completion; testing wells, pumping test, slug tests for confined and unconfined aquifers; fluctuations in groundwater levels; stream flow and groundwater flows; groundwater level fluctuations; land subsidence; impact of global climate change on groundwater.

Section D. Groundwater exploration

Surface investigation of groundwater- geologic, remote sensing, electrical resistivity, seismic, gravity and magnetic methods; sub-surface investigation of groundwater- test drilling, resistivity logging, spontaneous potential logging, radiation logging.

Section E. Groundwater quality and management

Groundwater composition, units of expression, mass-balance calculations; rock-water interaction (chemical equilibrium, free energy, redox reactions and cation/anion exchanges), graphic representation of chemical data; groundwater hardness, microorganisms in groundwater; water quality standards; sea-water intrusion; groundwater issues due to urbanization; solid and liquid waste disposal and plume migration models; application of isotopes (H, C, O) in groundwater; concepts of artificial recharge methods; managing groundwater resources; groundwater basin investigations and management practices.

For the post of Geophysicist/Scientist 'B'(Geophysics) /Assistant Geophysicist

Stage-II *(Descriptive Type)*

Geophysics : Paper-I

PART-A

A1. Solid Earth Geophysics:

Introduction to Geophysics and its branches. Solar system: origin, characteristics of planets, Earth: rotation and figure, Geoid, Spheroid and topography. Plate tectonics and Geodynamic processes, Thermal history and heat flow, Temperature variation in the earth, convection currents. Gravity field of earth and Isostasy. Geomagnetism, elements of earth's magnetism: Internal and External fields and their causes, Paleomagnetism, Polar wandering paths, Continental drift, Seafloor spreading and its geophysical evidences. Elastic Waves, Body Waves and internal structure of earth, variation of physical properties in the interior of earth, Adam-Williamson's Equation.

A2. Earthquake Seismology:

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Seismology, earthquakes, focal depth, epicenter, great Indian earthquakes, Intensity and Magnitude scales, Energy of earthquakes, foreshocks, aftershocks, Elastic rebound theory, Types and Nature of faulting, Fault plane solutions, Seismicity and Seismotectonics of India, Frequency-Magnitude relation (b-values). Bulk and rigidity modulus, Lame's Parameter, Seismic waves: types and their propagation characteristics, absorption, attenuation and dispersion. Seismic ray theory for spherically and horizontally stratified earth, basic principles of Seismic Tomography and receiver function analysis, Velocity structure, Vp/Vs studies, Seismic network and arrays, telemetry systems, Principle of electromagnetic seismograph, displacement meters, velocity meters, accelerometers, Broadband Seismometer, WWSSN stations, seismic arrays for detection of nuclear explosions. Earthquake prediction; dilatancy theory, short-, medium- and long- term predictions, Seismic microzonations, Applications for engineering problems.

A3. Mathematical methods in Geophysics:

Elements of vector analysis, Gradient, Divergence and Curl, Gauss's divergence theorem, Stoke's theorem, Gravitational field, Newton's Law of gravitation, Gravitation potential and fields due to bodies of different geometric shapes, Coulomb's law, Electrical permittivity and dielectric constant, Origin of Magnetic field, Ampere's law, Biot and Savart's law, Geomagnetic fields, Magnetic fields due to different type of structures, Solution of Laplace equation in Cartesian, Cylindrical and Spherical Coordinates, Image theory, Electrical fields due to charge, point source, continuous charge distribution and double layers, equipotential and line of force. Current and potential in the earth, basic concept and equations of electromagnetic induction, Maxwell's Equation, near and far fields, Attenuation of EM waves, EM field of a loops of wire on half space and multi-layered media.

A4. Geophysical Inversion:

Fundamental concepts of inverse theory, Definition and its application to Geophysics. Probability, Inversion with discrete and continuous models. Forward problems versus Inverse problems, direct and model based inversions, Formulation of inverse problems, classification of inverse problems, least square solutions and minimum norm solution, concept of norms, Jacobian matrix, Condition number, Stability, non-uniqueness and resolution of inverse problems, concept of '*a priori*' information, constrained linear least squares inversion, review of matrix theory. Models and data spaces, data resolution matrix, model resolution matrix, Eigen values and Eigen vectors, singular value decomposition (SVD), Gauss Newton method, steepest descent (gradient) method, Marquardt-Levenberg method. Probabilistic approach of inverse problems, maximum likelihood and stochastic inverse methods, Random search inversion (Monte-Carlo) Backus-Gilbert method, Bayesian Theorem and Inversion. Global optimization techniques: genetic algorithm and simulated annealing methods.

PART-B:

B1. Mathematical Methods of Physics:

Dimensional analysis; Units and measurement; Vector algebra and vector calculus; Linear algebra, Matrices: Eigenvalues and eigenvectors; Linear ordinary differential equations of first and second order; Special functions (Hermite, Bessel, Laguerre and Legendre); Fourier series, Fourier and Laplace transforms; Elementary probability theory, Random variables, Binomial, Poisson and normal distributions; Green's function; Partial differential equations (Laplace, wave and heat equations in two and three dimensions); Elements of numerical techniques: root of functions, interpolation, and extrapolation, integration by trapezoid and Simpson's rule, solution of first order differential equation using Runge-Kutta method; Tensors; Complex variables and analysis; Analytic functions; Taylor & Laurent series; poles, residues and evaluation of integrals; Beta and Gamma functions. Operators and their properties; Least-squares fitting.

B2. Electrodynamics:

Electrostatics: Gauss' Law and its applications; Laplace and Poisson equations, Boundary value problems; Magnetostatics: Biot-Savart law, Ampere's theorem; Ampere's circuital law; Magnetic vector potential; Faraday's law of electromagnetic induction; Electromagnetic vector and scalar potentials; Uniqueness of electromagnetic potentials and concept of gauge: Lorentz and Coulomb gauges; Lorentz force; Charged particles in uniform and non-uniform electric and magnetic fields; Poynting theorem; Electromagnetic fields from Lienard-Wiechert potential of a moving charge; Bremsstrahlung radiation; Cerenkov radiation; Radiation due to oscillatory electric dipole; Condition for plasma existence; Occurrence of plasma; Magnetohydrodynamics; Plasma waves; Transformation of electromagnetic potentials; Lorentz condition; Invariance or covariance of Maxwell field equations in terms of 4 vectors; Electromagnetic field tensor; Lorentz transformation of electric and magnetic fields.

B3. Electromagnetic Theory:

Maxwell's equations: its differential and integral forms, physical significance; Displacement current; Boundary conditions; Wave equation, Plane electromagnetic waves in: free space, non-conducting isotropic medium, conducting medium; Scalar and vector potentials; Reflection; refraction of

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electromagnetic waves; Fresnel's Law; interference; coherence; diffraction and polarization; Lorentz invariance of Maxwell's equations; Transmission lines and waveguides.

B4. Introductory Atmospheric and Space Physics:

The neutral atmosphere; Atmospheric nomenclature; Height profile of atmosphere; Hydrostatic equation; Geopotential height; Expansion and contraction; Fundamental forces in the atmosphere; Apparent forces; Atmospheric composition; Solar radiation interaction with the neutral atmosphere; Climate change; Electromagnetic radiation and propagation of Waves: EM Radiation; Effects of environment; Antennas: basic considerations, types. Propagation of waves: ground wave, sky wave, and space wave propagation; troposcatter communication and extra terrestrial communication; The Ionosphere; Morphology of ionosphere: the D, E and F-regions; Chemistry of the ionosphere Ionospheric parameters E and F region anomalies and irregularities in the ionosphere; Global Positioning Systems (GPS): overview of GPS system, augmentation services GPS system segment; GPS signal characteristics; GPS errors; multi path effects; GPS performance; Satellite navigation system and applications.

Stage-II *(Descriptive Type)*

Geophysics : Paper-II

PART-A

A1. Potential Field (Gravity and Magnetic) Methods:

Geophysical potential fields, Inverse square law, Principles of Gravity and Magnetic methods, Global gravity anomalies, Newtonian and logarithmic potential, Laplace's equations for potential field. Green's Function, Concept of gravity anomaly, Rock densities, factors controlling rock densities, determination of density, Earth's main magnetic field, origin, diurnal and secular variations of the field, Geomagnetic elements, intensity of magnetization and induction, magnetic potential and its relation to field, units of measurement, interrelationship between different components of magnetic fields, Poisson's relation, Magnetic susceptibility, factors controlling susceptibility. Magnetic Mineralogy: Hysteresis, rock magnetism, natural, and remnant magnetization, demagnetization effects. Principles of Gravity and Magnetic instruments, Plan of conducting gravity and magnetic surveys, Gravity and Magnetic data reduction, Gravity bases, International Gravity formula, IGRF corrections. Concept of regional and residual anomalies and various methods of their separation, Edge Enhancement Techniques (Derivatives, Continuation, Analytical Signal, Reduced to Pole and Euler Deconvolution), ambiguity in potential field interpretation, Factors affecting magnetic anomalies, Application of gravity and magnetics in geodynamic, mineral exploration and environmental studies. Qualitative interpretation, Interpretation of gravity and magnetic anomalies due to different geometry shaped bodies and modeling.

A2. Electrical and Electromagnetic methods:

Electrical properties of rocks and minerals, concepts and assumptions of horizontally stratified earth, anisotropy and its effects on electrical fields, geoelectric and geological sections, D.C Resistivity method. Concept of natural electric field, various electrode configurations, Profiling and Sounding (VES). Tpes of Sounding curves, Equivalence and Suppression, Concept of Electrical Resistivity Tomography (ERT). SP Method:, Origin of SP, application of SP surveys. Induced Polarization (IP) Method: Origin of IP, Membrane and Electrode polarization, time and frequency domains of measurement, chargeability, percent frequency effect and metal factor, Application of IP surveys for mineral exploration. Electromagnetic methods, Passive and Active source methods, Diffusion equation, wave equation and damped wave equation used in EM method, boundary conditions, skin depth, depth of investigation and depth of penetration, amplitude and phase relations, real and imaginary components, elliptical polarization, Principles of EM prospecting, various EM methods: Dip angle, Turam, moving source-receiver methods-horizontal loop (Slingram), AFMAG, and VLF.. Principles of Time Domain EM: INPUT method. EM Profiling and sounding, Interpretation of EM anomalies. Principle of EM scale modeling. Magnetotelluric methods: Origin and characteristics of MT fields, Instrumentation, Transverse Electric and Transverse Magnetic Modes, Static Shift. Dimensionality and Directionality analysis. Field Layout and interpretation of MT data and its applications. Principles of Ground Penetrating Radar (GPR).

A3. Seismic Prospecting:

Basic principles of seismic methods, Various factors affecting seismic velocities in rocks, Reflection, refraction and Energy partitioning at an interface, Geometrical spreading, Reflection and refraction of wave phenomena in a layered and dipping media. Seismic absorption and anisotropy, Multi channel seismic (CDP) data acquisition (2D and 3D), sources of energy, Geophones, geometry of arrays, different spread geometry, Instrumentation, digital recording. Different types of multiples, Travel time curves, corrections, Interpretation of data, bright spot, low velocity layer, Data processing, static and dynamic (NMO and DMO) corrections, shot-receiver gather, foldage, multiplexing and demultiplexing. Dix's equation, Velocities: Interval, Average and RMS, Seismic

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resolution and Fresnel Zone, Velocity analysis and Migration techniques, Seismic Interpretation, Time and Depth Section, Fundamentals of VSP method, High Resolution Seismic Surveys (HRSS).

A4. Borehole Geophysics:

Objectives of well logging, concepts of borehole geophysics, borehole conditions, properties of reservoir rock formations, formation parameters and their relationships-formation factor, porosity, permeability, formation water resistivity, water saturation, irreducible water saturation, hydrocarbon saturation, residual hydrocarbon saturation; Arhcie's and Humble's equations; principles, instrumentations, operational procedures and interpretations of various geophysical logs: SP, resistivity and micro resistivity, gamma ray, neutron, sonic, temperature, caliper and directional logs. Production logging, overlay and cross-plots of well-log data, determination of formation lithology, porosity, permeability and oil-water saturation, sub-surface correlation and mapping, delineation of fractures; application of well-logging in hydrocarbon, groundwater, coal, metallic and non-metallic mineral exploration.

PART-B

B1. Classical Mechanics

Inertial and non-inertial frames, Newton's laws; Pseudo forces; Central force motion; Two-body collisions, Scattering in laboratory and centre-of-mass frames; Rigid body dynamics, Moment of inertia, Variational principle, Lagrangian and Hamiltonian formalisms and equations of motion; Poisson brackets and canonical transformations; Symmetry, Invariance and conservation laws, Cyclic coordinates; Periodic motion, Small oscillations and normal modes; Special theory of relativity, Lorentz transformations, Relativistic kinematics and mass-energy equivalence.

B2. Thermodynamics and Statistical Physics

Laws of thermodynamics and their significance; Thermodynamic potentials, Maxwell relations; Chemical potential, Phase equilibria; Phase space, Micro- and macro- states; Micro canonical, canonical and grand-canonical ensembles and partition functions; Free Energy and connection with thermodynamic quantities; First and second order phase transitions; Maxwell-Boltzmann distribution, Quantum statistics, Ideal Fermi and Bose gases; Principle of detailed balance; Blackbody radiation and Planck's distribution law; Bose-Einstein condensation; Random walk and Brownian motion; Diffusion equation.

B3. Atomic and Molecular Physics and Characterization of materials

Quantum states of an electron in an atom; Electron spin; Stern-Gerlach experiment; Spectrum of Hydrogen, Helium and alkali atoms; Relativistic corrections for energy levels of hydrogen; Hyperfine structure and isotopic shift; Width of spectral lines; LS and JJ coupling; Zeeman, Paschen Back and Stark effects; Rotational, vibrational, electronic, and Raman spectra of diatomic molecules; Frank-Condon principle; Thermal and optical properties of materials, Study of microstructure using SEM, Study of crystal structure using TEM, Resonance methods: Spin and applied magnetic field, Larmor precession, relaxation times - spin-spin relaxation, Spin-lattice relaxation, Electron spin resonance, g factor, Nuclear Magnetic resonance, line width, Motional narrowing, Hyperfine splitting; Nuclear Gamma Resonance: Principles of Mössbauer Spectroscopy, Line width, Resonance absorption, Isomer Shift, Quadrupole splitting.

B4. Nuclear and Particle Physics

Basic nuclear properties: size, shape, charge distribution, spin and parity; Binding energy, Packing fraction, Semi-empirical mass formula; Liquid drop model; Fission and fusion, Nuclear reactor; Line of stability, Characteristics of the nuclear forces, Nucleon-nucleon potential; Charge-independence and charge-symmetry of nuclear forces; Isospin; Deuteron problem; Evidence of shell structure, Single-particle shell model and, its validity and limitations; Elementary ideas of alpha, beta and gamma decays and their selection rules; Nuclear reactions, reaction mechanisms, compound nuclei and direct reactions; Classification of fundamental forces; Elementary particles (quarks, baryons, mesons, leptons); Spin and parity assignments, strangeness; Gell Mann-Nishijima formula; C, P and T invariance and applications of symmetry arguments to particle reactions, Parity non-conservation in weak interaction; Relativistic kinematics.

Stage-II *(Descriptive Type)*

Geophysics : Paper-III

PART-A

A1. Radiometric and Airborne Geophysics:

Principles of radioactivity, radioactivity decay processes, units, radioactivity of rocks and minerals, Instruments, Ionization chamber, G-M counter, Scintillation counter, Gamma ray spectrometer, Radiometric prospecting for mineral exploration (Direct/Indirect applications), beach placers, titanium, zirconium and rare-earths, radon studies in seismology and environmental applications. Airborne geophysical surveys (gravity, magnetic, electromagnetic and radiometric), planning of surveys, flight path recovery methods. Applications in geological mapping, identification of structural features and altered zones.

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A2. Marine Geophysics:

Salinity, temperature and density of sea water. Introduction to Sea-floor features: Physiography, divisions of sea floor, continental shelves, slopes, and abyssal plains, growth and decline of ocean basins, turbidity currents, occurrence of mineral deposits and hydrocarbons in offshore. Geophysical surveys and instrumentation: Gravity, Magnetic and electromagnetic surveys, Sonobuoy surveys, Instrumentation used in ship borne surveys, towing cable and fish, data collection and survey procedures, corrections and interpretation of data. Oceanic magnetic anomalies, Vine-Mathews hypothesis, geomagnetic time scale and dating sea floor, Oceanic heat flow, ocean ridges, basins, marginal basins, rift valleys. Seismic surveys, energy sources, Pinger, Boomer, Sparker, Air gun, Hydrophones and steamer cabling. Data reduction and interpretation. Ocean Bottom Seismic surveys. Bathymetry, echo sounding, bathymetric charts, sea bed mapping. Navigation and Position fixing methods.

A3. Geophysical Signal Processing:

Time Series, Types of signals, sampling theorem, aliasing effect, Fourier series of periodic waveforms, Fourier transform and its properties, Discrete Fourier transform and FFT, Hilbert Transform, Convolution and Deconvolution, Auto and cross correlations, Power spectrum, Delta function, unit step function. Time domain windows, Z transform and properties, Inverse Z transform. Poles and zeroes. Principles of digital filters, types of filters: recursive, non recursive, time invariant, Chebyshev, Butterworth, moving average, amplitude and phase response of filters, low pass, band pass and high pass filters. Processing of Random signals. Improvement of signal to noise ratio, source and geophone arrays as spatial filters. Earth as low pass filter.

A4. Remote Sensing and Geohydrology:

Fundamental concepts of remote sensing, electromagnetic radiation spectrum, Interaction of electromagnetic energy and its interactions in atmosphere and surface of the earth, elements of photographic systems, reflectance and emittance, false color composites, remote sensing platforms, flight planning, geosynchronous and sun synchronous orbits, sensors, resolution, parallax and vertical exaggeration, relief displacement, mosaic, aerial photo interpretation and geological application. Fundamentals of photogrammetry, satellite remote sensing, multi-spectral scanners, thermal scanners, microwave remote sensing, fundamental of image processing and interpretation for geological applications. Types of water bearing formations, porosity, permeability, storage coefficient, specific storage, specific retention, specific yield, Different types of aquifers, vertical distribution of ground water, General flow equation; steady and unsteady flow of ground water in unconfined and confined aquifers.

PART-B

B1. Solid State Physics and Basic Electronics

Crystalline and amorphous structure of matter; Different crystal systems, Space groups; Methods of determination of crystal structure; X-ray diffraction, Scanning and transmission electron microscopes; Band theory of solids, conductors, insulators and semiconductors; Thermal properties of solids, Specific heat: Einstein's and Debye theory; Magnetism: dia, para and ferro; Elements of superconductivity; Meissner effect, Josephson junctions and applications; Elementary ideas about high temperature superconductivity.

Semiconductor devices and circuits: Intrinsic and Extrinsic semiconductors; Devices and structures (p-n junctions, diodes, transistors, FET, JFET and MOSFET, homo and hetero junction transistors, thermistors), Device characteristics, Frequency dependence and applications. Opto-electronic devices (solar cells, photo detectors, LEDs) Operational amplifiers and their applications.

B2. Laser systems

Spontaneous and stimulated emission of radiation. Coherence**,** Light amplification and relation between Einstein A and B coefficients. Rate equations for three and four level systems. Lasers: Ruby, Nd-YAG, CO_2, Dye, Excimer, Semiconductor. Laser cavity modes, Line shape function and full width at half maximum (FWHM) for natural broadening, collision broadening, Doppler broadening; Saturation behavior of broadened transitions, Longitudinal and transverse modes. Mode selection, ABCD matrices and cavity stability criteria for confocal resonators. Quality factor, Expression for intensity for modes oscillating at random and mode-locked in phase. Methods of Q-switching and mode locking. Optical fiber waveguides, Fiber characteristics.

B3. Digital electronics, Radar systems, Satellite communications

Digital techniques and applications: Boolean identities, de Morgan's theorems, Logic gates and truth tables; Simple logic circuits: registers, counters, comparators and similar circuits). A/D and D/A converters. Microprocessor: basics and architecture; Microcontroller basics. Combination and sequential logic circuits, Functional diagram, Timing diagram of read and write cycle, Data transfer techniques: serial and parallel. Fundamentals of digital computers. Radar systems, Signal and data processing, Surveillance radar, Tracking radar, Radar antenna parameters. Fundamentals of

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satellite systems, Communication and Orbiting satellites, Satellite frequency bands, Satellite orbit and inclinations. Earth station technology.

B4. Quantum Mechanics

Wave-particle duality; Wave functions in coordinate and momentum representations; Commutators and Heisenberg's uncertainty principle; Schrodinger's wave equation (time-dependent and time-independent); Eigenvalue problems: particle in a box, harmonic oscillator, tunneling through a 1-D barrier; Motion in a central potential; Orbital angular momentum; Addition of angular momentum; Hydrogen atom; Matrix representation; Dirac's bra and ket notations; Time-independent perturbation theory and applications; Variational method; WKB approximation; Time dependent perturbation theory and Fermi's Golden Rule; Selection rules; Semi-classical theory of radiation; Elementary theory of scattering, Phase shifts, Partial waves, Born approximation; Identical particles, Pauli's exclusion principle, Spin-statistics connection; Relativistic quantum mechanics: Klein Gordon and Dirac equations.

For the posts of Chemist/Scientist 'B'(Chemical) /Assistant Chemist

Stage-II *(Descriptive Type)*

Chemistry : Paper-I (Inorganic Chemistry)

1. Inorganic solids:

Defects, non-stoichiometric compounds and solid solutions, atom and ion diffusion, solid electrolytes. Synthesis of materials, monoxides of 3d-metals, higher oxides, complex oxides (corundrum, ReO_3, spinel, pervoskites), framework structures (phosphates, aluminophosphates, silicates, zeolites), nitrides and fluorides, chalcogenides, intercalation chemistry, semiconductors, molecular materials.

2. Chemistry of coordination compounds:

Isomerism, reactivity and stability: Determination of configuration of *cis*- and *trans*- isomers by chemical methods. Labile and inert complexes, substitution reactions on square planar complexes, *trans* effect. Stability constants of coordination compounds and their importance in inorganic analysis.

Structure and bonding: Elementary Crystal Field Theory: splitting of d^n configurations in octahedral, square planar and tetrahedral fields, crystal field stabilization energy, pairing energy. Jahn-Teller distortion. Metal-ligand bonding, sigma and pi bonding in octahedral complexes and their effects on the oxidation states of transition metals. Orbital and spin magnetic moments, spin only moments and their correlation with effective magnetic moments, d-d transitions; LS coupling, spectroscopic ground states, selection rules for electronic spectral transitions; spectrochemical series of ligands, charge transfer spectra.

3. Acid base titrations:

Titration curves for strong acid-strong base, weak acid-strong base and weak base-strong acid titrations, polyprotic acids, poly-equivalent bases, determining the equivalence point: theory of acid-base indicators, pH change range of indicator, selection of proper indicator. Principles used in estimation of mixtures of $NaHCO_3$ and Na_2CO_3 (by acidimetry).

4. Gravimetric Analysis:

General principles: Solubility, solubility product and common ion effect, effect of temperature on the solubility; Salt hydrolysis, hydrolysis constant, degree of hydrolysis.

Stoichiometry, calculation of results from gravimetric data. Properties of precipitates. Nucleation and crystal growth, factors influencing completion of precipitation. Co-precipitation and post-precipitation, purification and washing of precipitates. Precipitation from homogeneous solution. A few common gravimetric estimations: chloride as silver chloride, sulphate as barium sulphate, aluminium as oxinate and nickel as dimethyl glyoximate.

5. Redox Titrations:

Standard redox potentials, Nernst equation. Influence of complex formation, precipitation and change of pH on redox potentials, Normal Hydrogen Electrode (NHE). Feasibility of a redox titration, redox potential at the equivalence point, redox indicators. Redox potentials and their applications.

Principles behind Iodometry, permanganometry, dichrometry, difference between iodometry and iodimetry. Principles of estimation of iron, copper, manganese, chromium by redox titration.

6. Complexometric titrations:

Complex formation reactions, stability of complexes, stepwise formation constants, chelating agents. EDTA: acidic properties, complexes with metal ions, equilibrium calculations involving EDTA, conditional formation constants, derivation of EDTA titration curves, effect of other complexing agents, factors affecting the shape of titration curves: indicators for EDTA titrations, titration methods employing EDTA: direct, back and displacement titrations, indirect determinations, titration of mixtures, selectivity, masking and demasking agents. Typical applications of EDTA titrations: hardness of water, magnesium and aluminium in antacids, magnesium, manganese and

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zinc in a mixture, titrations involving unidentate ligands: titration of chloride with Hg^{2+} and cyanide with Ag^{+}.

7. Organometallic compounds:

18-electron rule and its applications to carbonyls and nature of bonding involved therein. Simple examples of metal-metal bonded compounds and metal clusters. Wilkinson's catalyst.

8. Nuclear chemistry:

Radioactive decay- General characteristics, decay kinetics, parent-daughter decay growth relationships, determination of half-lives. Nuclear stability. Decay theories. Unit of radioactivity. Preparation of artificial radionuclides by bombardment, radiochemical separation techniques. Experimental techniques in the assay of radioisotopes, Geiger-Muller counters. Solid state detectors.

9. Chemistry of d- and f-block elements:

d-block elements: General comparison of 3d, 4d and 5d elements in terms of electronic configuration, elemental forms, metallic nature, atomization energy, oxidation states, redox properties, coordination chemistry, spectral and magnetic properties.

f-block elements: Electronic configuration, ionization enthalpies, oxidation states, variation in atomic and ionic (3+) radii, magnetic and spectral properties of lanthanides, separation of lanthanides (by ion-exchange method).

Stage-II *(Descriptive Type)*

Chemistry : Paper-II (Physical Chemistry)

1. Kinetic theory and the gaseous state:

Real gases, Deviation of gases from ideal behaviour; compressibility factor; van der Waals equation of state and its characteristic features. Existence of critical state. Critical constants in terms of van der Waals constants. Law of corresponding states and significance of second virial coefficient. Boyle temperature.

2. Solids: Nature of solid state. Band theory of solids: Qualitative idea of band theory, conducting, semiconducting and insulating properties.

Law of constancy of angles, concept of unit cell, different crystal systems, Bravais lattices, law of rational indices, Miller indices, symmetry elements in crystals. X-ray diffraction, Bragg's law.

3. Chemical thermodynamics and chemical equilibrium:

Chemical potential in terms of Gibbs energy and other thermodynamic state functions and its variation with temperature and pressure. Gibbs-Duhem equation; fugacity of gases and fugacity coefficient. Thermodynamic conditions for equilibrium, degree of advancement. vant Hoff's reaction isotherm. Equilibrium constant and standard Gibbs energy change. Definitions of K_P, K_C and K_x; vant Hoff's reaction isobar and isochore. Activity and activity coefficients of electrolytes / ions in solution. Debye-Hückel limiting law.

4. Chemical kinetics and catalysis:

Second order reactions. Determination of order of reactions. Parallel and consecutive reactions. Temperature dependence of reaction rate, energy of activation. Collision Theory and Transition State Theory of reaction rates. Enthalpy of activation, entropy of activation, effect of dielectric constant and ionic strength on reaction rate, kinetic isotope effect.

Physisorption and chemisorption, adsorption isotherms, Freundlich and Langmuir adsorption isotherms, BET equation, surface area determination; colloids, electrical double layer and colloid stability, electrokinetic phenomenon. Elementary ideas about soaps and detergents, micelles, emulsions.

5. Electrochemistry:

Types of electrochemical cells, cell reactions, emf and Nernst equation, ΔG, ΔH and ΔS of cell reactions. Cell diagrams and IUPAC conventions. Standard cells. Half-cells / electrodes, types of reversible electrodes. Standard electrode potential and principles of its determination. Concentration cells. Determination of ΔG^{o}, K^{o}, K_{sp} and pH.

Basic principles of pH metric and potentiometric titrations, determination of equivalence point and pK_a values.

6. Quantum chemistry:

Eigenfunctions and eigenvalues. Uncertainty relation, Expectation value. Hermitian operators. Schrödinger time-independent equation: nature of the equation, acceptability conditions imposed on the wave functions and probability interpretation of wave function. Schrödinger equation for particle in a one-dimensional box and its solution. Comparison with free particle eigenfunctions and eigenvalues. Particle in a 3-D box and concept of degeneracy.

7. Basic principles and applications of spectroscopy:

Electromagnetic radiation, interaction with atoms and molecules and quantization of different forms of energies. Units of frequency, wavelength and wavenumber. Condition of resonance and energy of absorption for various types of spectra; origin of atomic spectra, spectrum of hydrogen atom.

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Rotational spectroscopy of diatomic molecules: Rigid rotor model, selection rules, spectrum, characteristic features of spectral lines. Determination of bond length, effect of isotopic substitution.
Vibrational spectroscopy of diatomic molecules: Simple Harmonic Oscillator model, selection rules and vibration spectra. Molecular vibrations, factors influencing vibrational frequencies. Overtones, anharmonicity, normal mode analysis of polyatomic molecules.
Raman Effect: Characteristic features and conditions of Raman activity with suitable illustrations. Rotational and vibrational Raman spectra.

8. Photochemistry:

Franck-Condon principle and vibrational structure of electronic spectra. Bond dissociation and principle of determination of dissociation energy. Decay of excited states by radiative and non-radiative paths. Fluorescence and phosphorescence, Jablonski diagram. Laws of photochemistry: Grotthus-Draper law, Stark-Einstein law of photochemical equivalence; quantum yield and its measurement for a photochemical process, actinometry. Photostationary state. Photosensitized reactions. Kinetics of HI decomposition, H_2-Br_2 reaction, dimerisation of anthracene.

Stage-II *(Descriptive Type)*

Chemistry : Paper-III (Analytical and Organic)

PART-A (Analytical Chemistry)

A1. Errors in quantitative analysis:

Accuracy and precision, sensitivity, specific standard deviation in analysis, classification of errors and their minimization, significant figures, criteria for rejection of data, Q-test, t-test, and F-test, control chart, sampling methods, sampling errors, standard reference materials, statistical data treatment.

A2. Separation Methods:

Chromatographic analysis: Basic principles of chromatography (partition, adsorption and ion exchange), column chromatography, plate concept, plate height (HETP), normal phase and reversed phase concept, thin layer chromatography, frontal analysis, principles of High Performance Liquid Chromatography (HPLC) and Gas Liquid Chromatography (GLC), and Ion-exchange chromatography.
Solvent extraction: Classification, principle and efficiency of the technique, mechanism of extraction, extraction by solvation and chelation, qualitative and quantitative aspects of solvent extraction, extraction of metal ions from aqueous solutions.

A3. Spectroscopic methods of analysis:

Lambert-Beer's Law and its limitations.
UV-Visible Spectroscopy: Basic principles of UV-Vis spectrophotometer, Instrumentation consisting of source, monochromator, grating and detector, spectrophotometric determinations (estimation of metal ions from aqueous solutions, determination of composition of metal complexes using Job's method of continuous variation and mole ratio method).
Infra-red Spectrometry: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instruments, sampling techniques.
Flame atomic absorption and emission spectrometry: Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and burner design), techniques of atomization and sample introduction, method of background correction, sources of chemical interferences and methods of removal, techniques for the quantitative estimation of trace level metal ions. Basic principles and theory of AAS. Three different modes of AAS - Flame-AAS, VG-AAS, and GF-AAS. Single beam and double beam AAS. Function of Hollow Cathode Lamp (HCL) and Electrode Discharge Lamp (EDL). Different types of detectors used in AAS. Qualitative and quantitative analysis.

A4. Thermal methods of analysis:

Theory of thermogravimetry (TG), basic principle of instrumentation, techniques for quantitative analysis of Ca and Mg compounds.

A5. X-ray methods of Analysis:

Introduction, theory of X-ray generation, X-ray spectroscopy, X-ray diffraction and X-ray fluorescence methods, instrumentation and applications. Qualitative and quantitative measurements. Powder diffraction method.

A6. Inductively coupled plasma spectroscopy:

Theory and principles, plasma generation, utility of peristaltic pump, sampler–skimmer systems, ion lens, quadrupole mass analyzer, dynode / solid state detector, different types of interferences-spectroscopic and non-spectroscopic interferences, isobaric and molecular interferences, applications.

A7. Analysis of geological materials:

Analysis of minerals and ores- estimation of (i) $CaCO_3$, $MgCO_3$ in dolomite (ii) Fe_2O_3, Al_2O_3, and TiO_2 in bauxite (iii) MnO and MnO_2 in pyrolusite. Analysis of metals and alloys: (i) Cu and Zn in brass (ii) Cu, Zn, Fe, Mn, Al and Ni in bronze (iii) Cr, Mn, Ni, and P in steel (iv) Pb, Sb, Sn in 'type metal'.

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Introduction to petroleum: constituents and petroleum fractionation. Analysis of petroleum products: specific gravity, viscosity, Doctor test, aniline point, colour determination, cloud point, pour point. Determination of water, neutralization value (acid and base numbers), ash content, Determination of lead in petroleum.

Types of coal and coke, composition, preparation of sample for proximate and ultimate analysis, calorific value by bomb calorimetry.

PART B (Organic chemistry)

B1. Unstable, uncharged intermediates:

Structure and reactivity of carbenes and nitrenes and their rearrangements (Reimer-Tiemann, Hoffman, Curtius, Lossen, and Schimdt,).

B2. Addition reactions:

Addition to C-C multiple bonds: Mechanism of addition involving electrophiles, nucleophiles and free radicals (polymerization reactions of alkenes and substituted alkenes), Ziegler-Natta catalyst for polymerization, polyurethane, and conducting polymers; addition to conjugated systems (Diels-Alder reaction), orientation and reactivity (on simple *cis*- and *trans*- alkenes).

Addition to carbon-heteroatom multiple bonds: Addition to C=O double bond, structure and reactivity, hydration, addition of ROH, RSH, CN-, bisulphite, amine derivatives, hydride ions.

B3: Reactions at the carbonyl group:

Cannizzaro, Aldol, Perkin, Claisen ester, benzoin, benzil-benzilic acid rearrangement, Mannich, Dieckmann, Michael, Strobe, Darzen, Wittig, Doebner, Knoevenagel, Reformatsky reactions.

B4. Oxidation and Reduction:

Reduction of C=C, Meerwein-Pondorf reaction, Wolff-Kishner and Birch reduction.

Oxidation of C=C, hydration, hydroxylation, hydroboration, ozonolysis, epoxidation, Sharpless epoxidation.

B5. Electrocyclic Reactions:

Molecular orbital symmetry, frontier orbitals of ethylene, 1,3-butadiene, 1,3,5-hexatriene, allyl system, FMO approach, pericyclic reactions, Woodward-Hoffman correlation diagram method and perturbation molecular orbital (PMO) approach for the explanation of pericyclic reactions under thermal and photochemical conditions. Simple cases of Norrish type-I and type-II reactions. Conrotatory and disrotatory motions of (4n) and (4n+2) polyenes with emphasis on [2+2] and [4+2] cycloadditions, sigmatropic rearrangements- shift of H and carbon moieties, Claisen, Cope, Sommerlet-Hauser rearrangement.

B6. Spectroscopic methods of analysis:

Infrared spectroscopy: Characteristic frequencies of organic molecules and interpretation of spectra. Modes of molecular vibrations, characteristic stretching frequencies of O-H, N-H, C-H, C-D, C=C, C=N, C=O functions; factors affecting stretching frequencies.

Ultraviolet spectroscopy: Chromophores, auxochromes. Electronic transitions (σ−σ*, n-σ*, π-π* and n-π*), relative positions of λ_{max} considering conjugative effect, steric effect, solvent effect, red shift (bathochromic shift), blue shift (hypsochromic shift), hyperchromic effect, hypochromic effect (typical examples). Woodward rules. Applications of UV spectroscopy to conjugated dienes, trienes, unsaturated carbonyl compounds and aromatic compounds.

Nuclear Magnetic Resonance Spectrometry: (Proton and Carbon-13 NMR) Nuclear spin, NMR active nuclei, principle of proton magnetic resonance, equivalent and non-equivalent protons. Measurement of spectra, the chemical shift, shielding / deshielding of protons, upfield and downfield shifts, intensity of NMR signals and integration factors affecting the chemical shifts: spin-spin coupling to ^{13}C ^{1}H-^{1}H first order coupling: some simple ^{1}H-^{1}H splitting patterns: the magnitude of ^{1}H-^{1}H coupling constants, diamagnetic anisotropy.

Mass spectrometry: Basic Principles, the mass spectrometer, isotope abundances; the molecular ion, metastable ions. McLafferty rearrangement.

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APPENDIX-II(A)

INSTRUCTIONS TO THE CANDIDATES FOR FILLING ONLINE APPLICATIONS

- Candidates are required to apply Online using the website https://upsconline.nic.in.
- Salient features of the system of Online Application Form are given hereunder:
- Detailed instructions for filling up online applications are available on the above mentioned website.
- Candidates will be required to complete the Online Application Form containing two stages viz. Part-I and Part-II as per the instructions available in the above mentioned site through drop down menus.

The candidates are required to pay a fee of Rs.200/- Rupees Two Hundred only) [excepting SC/ST/ Female/Persons with Benchmark Disability candidates who are exempted from payment of fee]

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either by remitting the money in any branch of State Bank of India or by Visa/Master/RuPay Credit/Debit Card/UPI Payment or by using Internet Banking of any Bank.

- Before start filling up Online Application, a candidate must have his photograph and signature duly scanned in the .jpg format in such a manner that each file should not exceed 300 KB each and must not be less than 20 KB in size for the photograph and signature.
- The candidate should have details of one Photo ID viz. Aadhar Card/Voter Card/PAN Card/Passport/Driving License/Any other photo ID Card issued by the State/Central Government. The details of this photo ID will have to be provided by the candidate while filling up the online application form. This photo ID will be used for all future references and the candidate is advised to carry this ID while appearing for the Examination.
- The Online applications (Part I and II) can be filled from 4th September, 2024 to 24th September, 2024 till 1800 Hrs.
- Applicants should avoid submitting multiple applications. However, if due to any unavoidable circumstances, any applicant submits multiple applications then he/she must ensure that the applications with higher RID is complete in all respects.
- In case of multiple applications, the applications with higher RID shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID.
- The applicants must ensure that while filling their Application Form, they are providing their valid and active E-Mail IDs as the Commission may use electronic mode of communication while contacting them at different stages of examination process.
- The applicants are advised to check their emails at regular intervals and ensure that the email addresses ending with @ nic.in are directed to their inbox folder and not to the SPAM folder or any other folder.
- Candidates are strongly advised to apply online well in time without waiting for the last date for submission of Online Applications.

Appendix-II(B)

IMPORTANT INSTRUCTIONS TO WITHDRAW APPLICATION

The candidates will not be allowed to withdraw their applications after the submission of the same.

Appendix-III

(Part – A)

SPECIAL INSTRUCTIONS TO CANDIDATES FOR OBJECTIVE TYPE TESTS

1. Articles permitted inside Examination Hall

   Clip board or hard board (on which nothing is written), a good quality black ball pen for making responses on the Answer Sheet. Answer Sheet and sheet for rough work will be supplied by the invigilator.

2. Articles not permitted inside Examination Hall

   Do not bring into the Examination Hall any article other than those specified above e.g. books, notes, loose sheets, electronic or any other type of calculators, mathematical and drawing instruments, Log Tables, stencils of maps, slide rules, Test Booklets, rough sheets pertaining to earlier session(s), etc.

   Mobile phones or any other communication devices are not allowed inside the premises where the examination is being conducted. Any infringement of these instructions shall entail disciplinary action including ban from future examinations. Candidates are advised in their own interest not to bring any of the banned items including mobile phones etc. to the venue of the examination, as arrangements for safekeeping cannot be assured.

3. **Penalty for wrong Answers (in Objective Type Papers)**

   THERE WILL BE PENALTY (NEGATIVE MARKING) FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.

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

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

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

4. **Unfair means strictly prohibited**

   No candidates shall copy from the papers of any other candidate nor permit his papers to be copied nor give nor attempt to give not obtain nor attempt to obtain irregular assistance of any description.

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5. **Conduct in Examination Hall**
No candidates should misbehave in any manner or create disorderly scene in the Examination Hall or harass the staff employed by the Commission for the conduct of the examination. Any such misconduct will be severely penalised.

6. **Answer Sheet Particulars**

(i) Write in black ball pen your Centre and subject followed by Test Booklet series (in bracket), subject code and roll number at the appropriate space provided on the Answer Sheet at the top. Also encode your booklet series (A, B, C or D as the case may be), subject code and roll number with black ball pen in the circles provided for the purpose in the Answer Sheet. The guidelines for writing the above particulars and encoding the above particulars are given in Annexure. In case the booklet series is not printed on the Test Booklet or Answer Sheet is unnumbered, please report immediately to the invigilator and get the Test Booklet/Answer Sheet replaced.

(ii) Candidates should note that any omission/mistake/discrepancy in encoding/filling of details in the OMR answer sheet, especially with regard to Roll Number and Test Booklet Series Code, will render the answer sheet liable for rejection.

(iii) Immediately after commencement of the examination please check that the Test Booklet supplied to you does not have any unprinted or torn or missing pages or items etc. If so, get it replaced by a complete Test Booklet of the same series and subject.

7. Do not write your name or anything other than the specific items of information asked for, on the Answer Sheet/Test Booklet/sheet for rough work.

8. Do not fold or mutilate or damage or put any extraneous marking in the Answer Sheet. Do not write anything on the reverse of the Answer Sheet.

9. Since the Answer Sheets will be evaluated on computerised machines, candidates should exercise due care in handling and filling up the Answer Sheets. **They should use black ball pen only to darken the circles. For writing in boxes, they should use black ball pen. Since the entries made by the candidates by darkening the circles will be taken into account while evaluating the Answer Sheet on computerised machines, they should make these entries very carefully and accurately. The candidate must mark responses in the Answer Sheet with good quality black ball pen.**

10. **Method of marking answers**
In the "OBJECTIVE TYPE" of examination, you do not write the answers. For each question (hereinafter referred to as "Item") several suggested answers (hereinafter referred to as "Responses") are given. You have to choose one response to each item. The question paper will be in the Form of TEST BOOKLET. The booklet will contain item bearing numbers 1, 2, 3 etc. Under each item, Responses marked (a), (b), (c), (d) will be given. Your task will be to choose the correct response. If you think there is more than one correct response, then choose what you consider the best response.
In any case, for each item you are to select only one response. If you select more than one response, your response will be considered wrong. In the Answer Sheet, Serial Nos. from 1 to 160 are printed. Against each numbers, there are circles marked (a), (b), (c) and (d). After you have read each item in the Test Booklet and decided which one of the given responses is correct or the best, you have to mark your response by completely blackening to indicate your response.
Ink pen or pencil should not be used for blackening the circle on the Answer Sheet.
For example, if the correct answer to item 1 is (b), then the circle containing the letter (b) is to be completely blackened with black ball pen as shown below :-
Example : (a) • (c) (d)

11. **Entries in Scannable Attendance List**
Candidates are required to fill in the relevant particulars with black ball pen only against their columns in the Scannable Attendance List, as given below :-
i) Blacken the circle (P) under the column (Present/Absent)
ii) Blacken the relevant circle for Test Booklet Series iii) Write Test Booklet Serial No.
iv) Write the Answer Sheet serial No. and also blacken the corresponding circles below
v) Append signature in the relevant column

12. Please read and abide by the instructions on the cover of Test Booklet. If any candidate indulges in disorderly or improper conduct, he will render himself liable for disciplinary action and/or imposition of a penalty as the Commission may deem fit.

13. The candidates are not allowed to leave the Examination Hall before the expiry of prescribed time period of the examination.

Annexure

How to fill in the Answer Sheet of objective type tests in the Examination Hall

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Please follow these instructions very carefully. You may note that since the Answer Sheets are to be evaluated on machine, any violation of these instructions may result in reduction of your score for which you would yourself be responsible.

Before you mark your responses on the Answer Sheet, you will have to fill in various particulars in it.

As soon as the candidate receives the Answer Sheet, he/she should check that it is numbered at the bottom. If it is found unnumbered he/she should at once get it replaced by a numbered one.

You will see from the Answer Sheet that you will have to fill in the top line, which reads thus:

केंद्र	विषय	विषय कोड		अनक्रमांक	
Centre	Subject	S. Code		Roll Number	

If you are, say, appearing for the examination in Delhi Centre for the General Studies Paper and your Roll No. is 081276 and your Test Booklet series is 'A', you should fill in thus, using ball pen.

* This is just illustrative and may not be relevant to the Examination concerned.

केंद्र	विषय	विषय कोड		अनक्रमांक	
Centre	Subject	S. Code	9 9	Roll Number	0 8 1 2 7 6
DELHI	General Ability				

You should write with black ball pen the name of the centre and subject in English or Hindi. The test Booklet Series is indicated by Alphabets A, B, C or D at the top right hand corner of the Booklet.

Write your Roll Numbers exactly as it is in your **e-Admit Card** in the boxes provided for this purpose. Do not omit black pen. The name of the Centre need not be encoded.

Writing and any zero(s) which may be there.

The next step is to find out the appropriate subject code from the Time Table. Now encode the Test Booklet Series, Subject Code and the Roll Number in the circles provided for this purpose. Do the encoding with encoding of Test Booklet Series is to be done after receiving the Test Booklet and confirming the Booklet Series from the same.

For General Ability subject paper of 'A' Test Booklet Series you have to encode the subject code, which is 99. Do it thus.

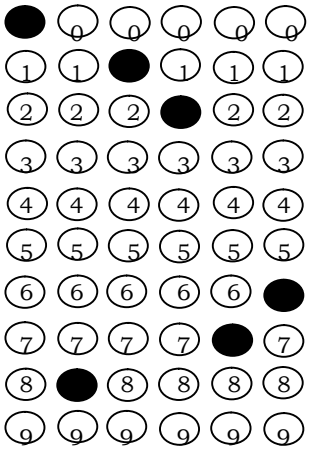
पुस्तिका क्रम	विषय कोड
Booklet Series (A)	Subject Code 9 9
●	0 0
B	1 1
C	2 2
D	3 3
	4 4
	5 5
	6 6
	7 7
	8 8
	● ●

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All that is required is to blacken completely the circle marked 'A' below the Booklet Series and below the subject code blacken completely the Circles for '9' (in the first vertical column) and '9' (in the second vertical column). You should then encode the Roll No. 081276. Do it thus similarly.

अनुक्रमांक
Roll Numbers

0	8	1	2	7	6



Important : Please ensure that you have carefully encoded your subject, Test Booklet Series and Roll Number.

* This is just illustrative and may not be relevant to your Examination.

(Part – B)

SPECIAL INSTRUCTIONS FOR CONVENTIONAL TYPE PAPERS

1. Articles permitted inside Examination Hall

Battery-operated pocket calculators of "non-programmable" type only, mathematical/ engineering/drawing instruments, including a flat rule divided on the edges into inches and tens of an inch and into centimeters and millimeters, a slide rule, set squares, a protractor and a pair of compasses, pencils, coloured pencils, mapping pens, eraser, T-square and drawing board for use wherever necessary. Candidates are not allowed to bring with them any "Tables or Charts" for use in the Examination Hall.

Mobile phones, bluetooth or any other communication devices are not allowed inside the premises where the Examination is being conducted. Any infringement of these instructions shall entail disciplinary action including ban from future Examinations.

Candidates are advised in their own interest not to bring any of the banned items including mobile phones to the venue of the Examination, as arrangements for safekeeping cannot be assured.

2. Tables to be supplied by UPSC

If it is considered necessary for answering the questions set in any paper, the Commission may supply any of the following for reference purpose only:-

(i) Mathematical/Physical, Chemical and Engineering Tables (including Logarithmic Tables); Steam Table (including Mollier Diagrams for Temperature up to 800° C and Pressure up 500 Kgf/Cm);

(ii) National Building Code of India 1970 or 1983 Group 2 Part VI;

(iii) Any other special articles as may be necessary for the candidates to answer the questions set in the question paper.

After conclusion of the Examination, return the above items to the Invigilator.

3. Answers to be written in own hand

Write the answers in your own hand in ink. Pencil may be used for maps, mathematical drawings or rough work.

4. Check Answer Book

The candidate must write his/her roll number (and not his/her name) only in the space provided for the purpose on every answer book used by him/her. Before writing in the answer book, please see that it is complete. In case there are any missing pages, it should be got replaced.

Do not tear out any pages from the Answer Book. If you use more than one Answer Book, indicate on the cover of first Answer Book the total number of Answer Books used. Do not leave any blank, unused spaces between answers. If such spaces are left, score them out.

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5. Answers in excess of prescribed number will be ignored

The candidate must attempt questions strictly in accordance with the directions given on each question paper. If questions are attempted in excess of the prescribed number only the questions attempted first upto the prescribed number shall be valued and the remaining answers will be ignored.

6. Questions relating to graph/précis should be attempted only on graph/précis sheets to be supplied on demand by the Invigilators. All loose sheets such as précis sheet, drawing papers, graph sheets etc. whether used or not, should be placed inside the answer books and fastened along with the additional answer book(s), if any. Candidates who fail to observe this instruction will be penalized. Do not write your roll number on these sheets.

7. Unfair means strictly prohibited

Do not copy from the papers of any other candidate nor allow your papers to be copied nor give nor attempt to give nor obtain nor attempt to obtain irregular assistance of any description. It will be responsibility to every candidate to ensure that his/her answers are not copied by another candidate. Failure to do so will invite penalty, as may be awarded by the Commission for adoption of unfair means.

8. Conduct in Examination Hall

Do not misbehave in any manner or create disorderly scene in the Examination Hall or harass or bodily harm the staff deployed for the conduct of Examination. You will be severely penalized if you attempt to do so.

9. Please read carefully and abide by the instructions printed on the Question Paper and on the Answer Book supplied in the Examination Hall.

Appendix – IV

Certificate regarding physical limitation in an examinee to write

This is to certify that, I have examined Mr./Ms./Mrs..... (name of the candidate with benchmark disability), a person with ..... (nature and percentage of disability as mentioned in the certificate of disability), S/o/D/o....., a resident of ..... (Village/District/State) and to state that he/she has physical limitation which hampers his/her writing capabilities owing to his/her disability.

Signature

Chief Medical Officer/Civil Surgeon /
Medical Superintendent of a Government Healt Care Institution.

Note: Certificate should be given by a specialist of the relevant stream/disability (eg. Visual Impairment – Ophthalmologist, Locomotor disability – Orthopaedic specialist/PMR).

Appendix - V

Letter of Undertaking for Using Own Scribe
(To be filled by the candidates online to the Commission)

I....., a candidate with.....(name of the disability) appearing for the ..... (name of the examination)..... bearing Roll No..... at ..... (name of the centre) in the District ....., ... (name of the State). My qualification is .....

I do hereby state that ..... (name of the scribe) will provide the service of scribe/reader/lab assistant for the undersighned for taking the aforesaid examination.

I do hereby undertake that his qualification is ..... In case, subsequently it is found that his/her qualification is not as declared by the undersigned and is beyond my qualification, I shall forfeit my right to the post and claims thereto.

(Signature of the candidates with Disability)

Place:

Date:

Appendix-VI

Certificate for person with specified disability covered under the definition of Section 2(s) of the RPwD Act, 2016 but not covered under the definition of Section 2(r) of the said Act, i.e.

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persons having less than 40% disability and having difficulty in writing

This is to certify that, we have examined Mr./Ms./Mrs..... (name of the candidate), S/o / D/o ....., a resident of ..... (Vill/PO/PS/District/State), aged.....yrs, a person with ..... (nature of disability/condition), and to state that he/she has limitation which hampers his/her writing capability owing to his/her above condition. He/she requires support of scribe for writing the examination.

2. The above candidate uses aids and assistive device such as prosthetics & orthotics, hearing aid (name to be specified) which is /are essential for the candidate to appear at the examination, with the assistance of scribe.

3. This certificate is issued only for the purpose of appearing in written examinations conducted by recruitment agencies as well as academic institutions and is valid upto ..... (it is valid for maximum period of six months or less as may be certified by the medical authority)

Signature of medical authority

(Signature & Name)	(Signature & Name)	(Signature & Name)	(Signature & Name)	(Signature & Name)
Orthopedic/PMR Specialist	Clinical phychologist/ Rehabilitation Psychologist / Psychiatrist / Special Educator	Neurologist (if available)	Occupational therapist (if available)	Other Expert, as nominated by the Chairperson (if any)
(Signature & Name)				
Chief Medical Officer / Civil Surgeon / Chief District Medical Officer ..... Chairperson				

Name of Government Hospital / Health Care Centre with seal

Place :

Date:

Appendix-VII

Letter of Undertaking by the person with specified disability covered under the definition of Section 2(s) of the RPwD Act, 2016 but not covered under the definition of Section 2(r) of the said Act, i.e. persons having less than 40% disability and having difficulty in writing

I....., a candidate with ..... (nature of disability/condition) appearing for the ..... (name of the examination) bearing Roll No..... at ..... (name of the centre) in the District ....., ... (name of the state). My educational qualification is

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.....

2. I do hereby state that ..... (name of the scribe) will provide the service of scribe for the undersigned for taking the aforementioned examination.

3. I do hereby undertake that his qualification is ..... In case, subsequently it is found that his qualification is not as declared by the undersigned and is beyond my qualification. I shall forfeit my right to the post or certificate/diploma/degree and claims relating thereto.

(Signature of the candidate)

Place :

Date :

****