

**Ministry of Mines
(Department of Mines)
New Delhi, the 16th June, 2007.**

RULES

No.4/2/2007-M.II(SM) – The rules for a competitive examination to be held by the Union Public Service Commission in 2007 for the purpose of filling vacancies in the following posts are published for general information:-

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

(i) Geologist (Junior) Group A

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

Reservation will be made for candidates belonging to the Scheduled Castes, Scheduled Tribes, the Other Backward Classes and Physically disabled categories in respect of vacancies as may be fixed by the Government.

Appointment on the results of the examination will be made on a temporary basis in the first instance.

3. The examination will be conducted by the Union Public Service Commission in the manner prescribed in Appendix I of these Rules.

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

4. 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, East African countries of Kenya, Uganda, the United Republic of Tanzania, Zambia, Malawi, Zaire and Ethiopia or Vietnam with the intention of permanently settling in India.

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

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 by the Government of India.

5 (a) A candidate for this examination must have attained the age of 21 years and must not have attained the age of 32 years on 1st January, 2007 i.e. he must have been born not earlier than 2nd January 1975 and not later than 1st January 1986.

(b) The upper age limit will be relaxable upto a maximum of seven 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(s) mentioned in column II.

Column I	Column II
Geological Survey of India	Geologist (Jr.) Group A

(c) The upper age limits prescribed above will be further relaxable:-

- (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 candidates belonging to Other Backward Classes who are eligible to avail of reservation applicable to such candidates.
- (iii) upto a maximum of five year, if a candidate had ordinarily been domiciled in the State of Jammu & Kashmir during the period from the 1st January 1980 to 31st day of December 1989.
- (iv) 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 release as a consequence thereof.
- (v) upto a maximum of five years in the case of Ex-servicemen including Commissioned Officers and ECOs/SSCOs who have rendered at least of Military Service as on 1st January 2007 and have been released (i) on completion of assignment including those whose assignment is due to be completed within one year from 1st January 2007 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.
- (vi) upto a maximum of 5 years in the case of ECOs/SSCOs who have completed an initial period of assignment of 5 years of Military service as on 1st January, 2007 and whose

assignment has been extended beyond 5 years and in whose case the Ministry of Defence issues a certificate that they can apply for civil employment and that they will be released on 3 months notice on selection from the date of receipt of offer of appointment.

(vii) upto a maximum of 10 years in the case of blind deaf-mute and Orthopaedically disable person.

Note I – Candidate belonging to the Scheduled Castes and the Scheduled Tribes and the Other Backward Classes who are also covered under any other clauses of Rule 5 (c) above. viz. those coming under the category of Ex-servicemen persons domiciled in the state of J & K. physically handicapped etc. will be eligible for grant of cumulative age-relaxation under both the categories.

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

Note III – The age concession under Rule 5(c) (v) and (vi) will not be admissible to Ex-servicemen and Commissioned Officers including ECOs/SSCOs, who are released on their own request.

Note IV – Notwithstanding the provision of age-relaxation under Rule 5(c) (vii) above, a physically handicapped candidate will be considered to be eligible for appointment only if he/she (after such physical examination as the Government or appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned services/posts to be allocated to the physically disabled candidates by the Government.

SAVE AS PROVIDED ABOVE THE AGE LIMITS PRESCRIBED CAN IN NO CASE BE RELAXED:

The date of birth accepted by the Commission is that entered in the Matriculation or Secondary School Leaving Certificate or in a certificate recognised by an Indian University as equivalent to Matriculation or in an extract from a Register of Matriculates maintained by a University which extract must be certified by the proper authority of the University or in the Higher Secondary or an equivalent examination certificate.

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 Certificates in this part of the instructions include the alternative certificates mentioned above.

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

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

N.B. – (i) The candidature of a person who is admitted to the examination under the age concession mentioned in Rule 5(b) above, shall be cancelled, if after submitting his application, he resigns from service or his services are terminated by his department/office, either before or after taking the examination. He will, however, continue to be eligible if he is retrenched from the service or post after submitting the application.

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

6. A candidate must have –

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

(b) Diploma in Associateship in Applied Geology of the Indian School of Mines, Dhanbad. or

(c) Master's degree in Mineral Exploration from a recognised University.

Note I: A candidate who has appeared at an examination the passing of which would render him 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 candidate will be admitted to the examination, if otherwise eligible, but their

admission would be deemed to be provisional and subject to cancellation, if they do not produce proof of having passed the requisite qualifying examination alongwith the detailed application form which will be required to be submitted by the candidates who qualify on the result of the written part of the examination.

Note II: In exceptional cases the Commission may treat a candidate who has not any of the qualifications prescribed in this rule, as educationally qualified provided that he has passed examinations conducted by other institutions, the standard of which in the opinion of the Commission, justifies his admission to the examination.

Note III: A candidate who is otherwise eligible but who has taken a degree from a foreign University which is not recognised by government may also apply to the Commission and may be admitted to the examination at the discretion of the Commission.

7. candidates must pay the fee prescribed in the Commission's notice.

8. All candidates in Government service, whether in a permanent or in temporary capacity or as work-charged employees, other than casual or daily rated employees, or those serving under Public Enterprises will be required to submit an undertaking that they have informed in writing their Head of Office/Department that they have applied for the Examination.

Candidates should note that in case of communication is received from their employer by the Commission withholding permission to the candidates applying for/appearing on the examination, their application will be liable to be rejected/candidature will be liable to the cancelled.

9. The decision of the Commission with regard to the acceptance of the application of a candidate for the examination and his eligibility or otherwise for admission to the examination shall be final.

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

candidature for the examination will be cancelled by the Commission.

10. No candidate shall be admitted to the examination unless he holds a certificate of admission from the Commission.

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

- (i) Obtaining support for his candidature by any means: or
 - (ii) Impersonating: or
 - (iii) procuring impersonation by any person: or
 - (iv) submitting fabricated documents or documents which have been tampered with: or
 - (v) making statements which are incorrect or false, or suppressing material information; or
 - (vi) resorting to any other irregular or improper means in connection with his candidature for the examination; or
 - (vii) using unfair means during the examination; or
 - (viii) writing irrelevant matter, including obscene language or pornographic matter, in the script(s); or
 - (ix) misbehaving in any other manner in the staff employed by the Commission for the conduct of their examination; or
 - (x) harassing or doing bodily harm to the staff employed by the Commission for the conduct of their examination; or
 - (xi) being in possession of or using mobile phone, pager or any electronic equipment or device or any other equipment capable of being used as a communication device during the examination. or,
 - (xii) Violating any of the instructions issued to the candidates alongwith their Admission Certificates permitting them to take the examination; or
 - (xiii) attempting to commit or as the case may be abetting the Commission of all or any of the acts specified in the foregoing clauses; may, in addition to rendering himself liable to criminal prosecution be liable.
- (a) to be disqualified by the Commission from the examination for which he is a candidate; and/or

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

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

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

12. Candidates who obtain such minimum qualifying marks in the written examination as may be fixed by the Commission in their discretion shall be summoned by them for an interview for a personality test.

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

13.(i) After the interview the candidates will be arranged by the Commission in the order of merit as disclosed by the aggregate marks finally awarded to each candidate and in that order so many candidates as are found by the Commission to be qualified at the examination shall be recommended for appointment up to the number of unreserved vacancies decided to be filled on the results of the examination.

(ii) The candidates belonging to any of the Scheduled Castes, Scheduled Tribes or the Other Backward Classes may to the extent of the number of vacancies reserved for the Scheduled Castes, Scheduled Tribes and the Other Backward Classes be recommended by the Commission by a relaxed standard, subject to the fitness of these candidates for selection to the services.

Provided that the candidates belonging to Scheduled Castes, Scheduled Tribes and the Other Backward Classes who have been recommended by the Commission without resorting to any relaxations/concessions in the eligibility or selection criteria, at any stage of the examination shall not be adjusted against the vacancies reserved for Scheduled Castes, Scheduled Tribes and Other Backward Classes.

14. The prescribed qualifying standards will be relaxable at the discretion of the Commission at all the stages of examination in favour of physically handicapped candidates in order to fill up the vacancies reserved for them. In case however the physically handicapped candidates get selected on their own merit in the requisite number at the qualifying standard fixed by the Commission for General SC, ST and OBC category candidates, extra physically disabled candidates i.e. more than the number of vacancies reserved for them, will not be recommended by the Commission on the relaxed standards.

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

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

17. A candidate must be in good mental and bodily health and free from any physical defect likely to interfere with the discharge of his duties as an officer of the service. A candidate who after such medical examination as Government or the appointing authority, as the case may be, may prescribe, is found not to satisfy these requirements will not be appointed. The candidates who are declared finally successful on the basis of this examination may be required to undergo the medical examination to ascertain their physical fitness for the post or otherwise. The details of the medical examination are given in the Appendix II to these Rules. Candidates will have to pay a fee of Rs. 16.00 (Rupees sixteen only) to the Medical Board concerned at the time of the Medical Examination.

Note:- In order to prevent disappointment, candidates are advised to have themselves examined by a Government Medical Officer of the standing of a Civil Surgeon before applying for admission to the examination. Particulars of the nature of the medical test to which candidates will be subjected before appointment in gazetted posts and of the standards required are given in Appendix II for the disable Ex-Defence Services personnel, the standards will be relaxed consistent with the requirements of the posts.

18. For being considered against the vacancies reserved for them, the physically disabled persons should have disability of forty percent (40%) or more. However, such candidates shall be required to meet one or more of the following physical requirements/abilities which may be necessary for performing the duties in the concerned Services/Posts :-

Code	Physical Requirements
F 1.	Work performed by manipulating (with Fingers)
PP 2.	Work performed by pulling & pushing.
L 3.	Work performed by lifting.
KC 4.	Work performed by kneeling and Crouching
B 5.	Work performed by bending
S 6.	Work performed by sitting (on bench or chair)
ST 7.	Work performed by standing
W 8.	Work performed by walking
SL 9.	Work performed by seeing
H 10	Work performed by hearing/ speaking
RW 11	Work performed by reading and writing

The functional classification in their case shall be one or more of the following consistent with the requirements of the concerned Services/Posts.

FUNCTIONAL CLASSIFICATION

CODE FUNCTIONS

BL 1. both legs affected but not arms.

BA	2. both arms affected (a) impaired reach (b) weakness of grip
BLA	3. both legs and both arms affected.
OL	4. one leg affected (R or L) a) impaired reach b) weakness of grip c) ataxic
OA	5. one arm affected (R or L) --do—
BH	6. stiff back and hips (cannot sit or stoop
MW	7. muscular weakness and limited physical endurance.
B	8. the blind.
PB	9. partially blind
D	10. the deaf
PD	11. partially deaf.

19. No person:-
(a) who has entered into or contracted a marriage with a person having a spouse living, or
(b) who having a spouse living has entered into or contracted a marriage with any person shall be eligible for appointment to service.

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

20. Brief particulars relating to the posts to which recruitment is being made through this examination are given in Appendix III.

BHUPAL NANDA
DEPUTY SECRETARY

APPENDIX – I

1. The examination shall be conducted according to the following plan:-

Part I – Written examination in the subjects as set out in para 2 below.

Part II – Interview for personality test of such candidates as may be called by the Commission carrying a maximum of 200 marks.

2. The following will be the subjects for the written examination:-

	Subject	Duration	Maximum Marks
(1)	General English	2 hrs.	100
(2)	Geology Paper I	3 hrs.	200
(3)	Geology Paper II	3 hrs.	200
(4)	Geology Paper III	3 hrs.	200

3. THE EXAMINATION IN ALL THE SUBJECTS WILL BE OF CONVENTIONAL (ESSAY) TYPE.

4. All Question Papers must be answered in English. The Question Papers will be set in English only.

5. The standard and syllabus of the examination will be as shown in the schedule.

6. Candidates must write the papers in their own hand. In no circumstances will they be allowed the help of a scribe to write answers for them.

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

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

9. Marks will not be allotted for mere superficial knowledge.

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

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

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

13. Candidates are permitted to bring and use battery operated pocket calculators for answering papers in this examination, Loaning or interchanging of calculators in the Examination Hall is not permitted.

14. Interview for personality test: The candidate will be interviewed by a Board of competent and unbiased observers who will have before them a record of his career. The object of the interview will be to assess his suitability for the posts for which he has competed. 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.

SCHEDULE STANDARD AND SYLLABUS

The standard of the paper in General English will be such as may be expected of a science graduate. The papers on geological 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.

(1) GENERAL ENGLISH

Candidates will be required to write a Short Essay in English. Other questions will be designed to test their understanding of English and workman like use of words.

(2) GEOLOGY PAPER I

Section A: Geomorphology and Remote Sensing.

Basic principles, Weathering and soils, Mass wasting, Influence of climate on process. Concept of erosion cycles, Geomorphology of fluvial tracts, arid zones, coastal regions, 'Karst' landscapes and glaciated ranges. Geomorphic mapping slope analysis and drainage basin analysis, Applications of geomorphology in mineral prospecting, civil engineering, hydrology and environmental studies. Topographical maps, Geomorphology of India.

Concepts and principles of aerial photography and photogrammetry, satellite remote sensing – data products and their interpretation, Digital image processing, Remote sensing in

landform and land use mapping, structural mapping, hydrogeological studies and mineral exploration, Global and Indian Space Missions, Geographic Information System (GIS) – principles and applications.

Section B: Structural Geology

Principles of geological mapping and map reading, projection diagrams, Stress-strain relationships of elastic, plastic and viscous materials, Measurement of strain in deformed rocks. Behavior of minerals and rocks under deformation conditions, structural analysis of folds, cleavages, lineation, Joints and faults superposed deformation, Mechanism of folding and faulting. Time-relationship between crystallization and deformation, Unconformities and basement-cover relations, Structural behavior of igneous rocks, diapirs and salt domes, Introduction to petrofabrics.

Section C: Geotectonics

Earth and the solar system, Meteorites and other extra terrestrial materials, Planetary evolution of the earth and its internal structure, Heterogeneity of the earth's crust, Major tectonic features of the Oceanic and Continental crust, Continental drift – geological and geophysical evidence, mechanics, objections, present status, gravity and magnetic anomalies at Mid-ocean ridges, deep sea trenches, continental shield areas and mountain chains, Palaeomagnetism, Seafloor spreading and Plate Tectonics, Island arcs, Oceanic islands and volcanic arcs, Isostasy, orogeny and epeirogeny, seismic belts of the earth, seismicity and Plate movements, Geodynamics of the Indian Plate.

Section D: Stratigraphy

Nomenclature and the modern stratigraphic code, Radioisotopes and measuring geological time, Geological time-scale. Stratigraphic procedures of correlation of unfossiliferous rocks, Precambrian stratigraphy of India, Stratigraphy of the Palaeozoic. Mesozoic and Cenozoic formations of the India, Gondwana system and Gondwanaland, rise of the Himalaya and evolution of Siwalik basin, Deccan volcanics, Quaternary stratigraphy, Rock record, palaeoclimates and palaeogeography.

Section E: Palaeontology

Fossil record and geological time-scale, Morphology and time-ranges of fossil groups,

Evolutionary changes in molluscs and mammals in geological time, Principles of evolution, Use of species and genera of foraminifera and echinodermata in biostratigraphic correlation, Siwalik vertebrate fauna and Gondwana flora, evidence of life in Precambrian time, different microfossil groups and their distribution in India.

(3) GEOLOGY PAPER II

Section A : Mineralogy

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

Optical properties of common rock forming silicate minerals, uniaxial and biaxial minerals, Extinction angles, pleochroism, birefringence of minerals and their relation with mineral composition, Twinned crystals, Dispersion the U-stage.

Section B: Igneous and Metamorphic Petrology

Forms, textures and structures of igneous rocks, silicate melt equilibria, binary and ternary phase diagrams, Petrology and geotectonic evolution of granites, basalts, andesites and alkanine rocks, Petrology of gabbros, Kimberlites anorthosites and carbonatites, Origin of primary basic magmas.

Textures and structures of metamorphic rocks, Regional and contact metamorphism of pelitic and impure calcareous rocks, Mineral assemblages and P/T conditions, Experimental and thermodynamic appraisal of metamorphic reactions, Characteristics of different grades and facies of metamorphism, Metasomatism and granitization, Migmatites, Plate tectonics and metamorphic zones, Paired metamorphic belts.

Section C: Sedimentology

Provenance and diagenesis of sediments, Sedimentary textures, Framework matrix and cement of terrigenous sediments, Definition, measurement and interpretation of grain size, Elements of hydraulics, Primary structure, palaeocurrent analysis, Biogenic and chemical sedimentary structures, Sedimentary environment and facies. Facies modelling for marine, non-marine and mixed sediments. Tectonics and sedimentation. Classification and definition of sedimentary basins,

Sedimentary basins of India. Cyclic sediments, Seismic and sequence stratigraphy, Purpose and scope of basin analysis, Structure contours and isopach maps.

Section D: Geochemistry

Earth in relation to the solar system and universe, cosmic abundance of elements, Composition of the planets and meteorites, Structure and composition of earth and distribution of elements, Trace elements, Elementary crystal chemistry and thermodynamics, Introduction to isotope geochemistry, Geochemistry of hydrosphere, biosphere and atmosphere, Geochemical cycle and principles of geochemical prospecting.

Section E: Environmental Geology

Concepts and principles. Natural hazards – Preventive/Precautionary measures – floods. Landslide, Earthquakes, river and coastal erosion. Impact assessment of anthropogenic activities such as urbanization, open cast mining and quarrying, river-valley projects, disposal of industrial and radioactive waste, excess withdrawal of ground water, use of fertilizers, dumping of ores, mine waste any fly-ash, organic and inorganic contamination of ground water and their re-medical measures, soil degradation and remedial measures, Environment protection – legislative measures in India.

(4) GEOLOGY PAPER III

Section A: Indian mineral deposits and mineral economies.

Occurrence and distribution in India of metalliferous deposits – base metals, iron, manganese, aluminium, chromium, nickel, gold, silver, molybdenum, Indian deposits of non-metals – mica, asbestos, barytes, gypsum, graphite, apatite and beryl, Gemstones, refractory minerals, abrasives and minerals used in glass, fertilizer, paint, ceramic and cement industries, Building stones, Phosphorite deposits, Placer deposits, rare earth minerals.

Strategic, critical and essential minerals, India's status in mineral production changing patterns of minerals consumption, National Mineral Policy, Mineral Concession Rules, Marine mineral resources and Law of sea.

Section B: Ore genesis

Ore deposits and ore minerals Magmatic processes of mineralisation. Porphyry Skarn and hydrothermal mineralisation. Fluid inclusion studies. Mineralisation associated with – (i) ultramafic, mafic and acidic rocks. (ii) greenstone belts. (iii) Komatites, anorthositics and kimberlites and (iv) submarine volcanism, Magma-related mineralisation through geological time. Stratiform and stratabound ores, Ores and metamorphism-cause and effect relations.

Section C: Mineral exploration

Methods of surface and subsurface exploration, prospecting for economic minerals – drilling, sampling and assaying, Geophysical techniques – gravity, electrical, magnetic, airborne and seismic, Geomorphological and remote sensing techniques, Geobotanical and geochemical methods, Borehole logging and surveys for deviation.

Section D: Geology of fuels

Definition, origin of coal, Stratigraphy of coal measures, Fundamentals of coal petrology, peat, lignite, bituminous and anthracite coal. Microscopic constituents of coal. Industrial application of coal petrology, Indian coal deposits, diagenesis of organic materials.

Origin, migration and entrapment of natural hydrocarbons, Characters of source and reservoir rocks. Structural stratigraphic and mixed traps. Techniques of exploration, Geographical and geological distributions of onshore and offshore petroliferous basins of India.

Mineralogy and geochemistry of radioactive minerals, Instrumental techniques of detection and measurement of radioactivity, Radioactive methods for prospecting and assaying of mineral deposits. Distribution of radioactive minerals in India, Radioactive methods in petroleum exploration – well logging techniques, Nuclear waste disposal – geological constraints.

Section E: Engineering Geology

Mechanical properties of rocks and soil Geological investigations for river valley projects – Dams and reservoirs; tunnels – type, methods and problems, Bridges – types and foundation problems. Shoreline engineering Landslides – classification, causes, prevention and rehabilitation. concrete

aggregates – sources, alkali aggregate reaction. Aseismic designing – seismicity in Indian and earthquake-resistant structures. Problems of ground water in engineering projects. Geo-technical case studies of major projects in India.

APPENDIX II

REGULATIONS RELATING TO THE PHYSICAL EXAMINATION OF CANDIDATES

These regulations are published for the convenience of candidates and in order to enable them to ascertain the probability of their coming upto the required physical standard. The regulations are also intended to provide guidelines to the medical examiners and a candidate who does not satisfy the minimum requirements prescribe in the regulations cannot be declared fit by the medical examiners. However, while holding that a candidate is not fit according to the norms laid down in these regulations, it would be permissible for a Medical Board to recommend to the Government of India for reasons specifically recorded in writing that he may be admitted to service without disadvantage to Government.

2(a) It should however, be clearly understood that the Government of India reserve to themselves absolute discretion of reject or accept any candidate after considering the report of the Medical Board. For the partially hearing impaired persons only to the extent of posts reserved under physically handicapped category, standards will be relaxed consistent with the requirements of the posts.

(b) The medical examination to be conducted shall consist of the entire medical examination which the Medical Board may prescribe for a candidate. The Medical Examination shall be conducted only in respect of the candidates who have been declared finally successful on the basis of the examination.

1. To be passed as fit for appointment a candidate must be in good mental and bodily health and free from any physical defect likely to interfere with the efficient performance of the duties of his appointment.

2. In the matter of the correlation of age, height and chest girth of candidates of Indian (including Anglo-Indian) race, it is left to the Medical Board to use whatever correlation figures are considered most suitable as a guide in the examination of the candidates, if there be any disproportion with regard to height, weight and chest girth, the candidate

should be hospitalised for investigation and X – Ray of the chest taken before the candidates is declared fit or not fit by the Board.

3. The candidate's height will be measured as follows:- He will remove his shoes and be placed against the standard with his feet together and the weight thrown on the heels and not on the toes or other sides of the feet. He will stand erect without rigidity and with the heels, calve, buttocks and shoulders touching the standard, the chin will be depressed to bring the vertex of the head-level under the horizontal bar and the height will be recorded in centimetres and parts of a centimetre to halves.

4. The candidate's chest will be measured as follows: He will be made to stand erect with his feet together and to raise his arms over his hand. The tape will be so adjusted round the chest that its upper edge touches the inferior angles of the shoulder blades behind and lies in the same horizontal plane when the tape is taken round the chest. The arms will than be lowered to hang loosely by the side and care will be taken that the shoulders are not thrown upwards or backwards so as to displace the tape. The candidate will then be directed to take a deep inspiration several times and the maximum expansion of the chest will be carefully noted and the minimum and maximum will then be recorded in the centimetres thus 84 – 89, 86 – 93.5 etc. In according the measurement's fractions of less than half a centimetre should not be noted.

N.B. – The height and chest of the candidate should be measured twice before coming to a final decision.

5. The candidate will also be weighed and his weight recorded in kilogram; fraction of half a kilogram should not be noted.

6. The candidate's eye-sight will be tested in accordance with the following rules. The result of each test will be recorded.

(i) General:- The candidate's eye will be submitted to a general examination directed to the detection of any disease or abnormality. The candidate will be rejected if he suffers from any squint or morbid conditions of eyes, eyelids or continuous structure of such a sort as to render or are likely at a future date to render him unfit for service.

(ii) Visual Acuity:- The examination for determining the acuteness of vision includes two tests, one of the distant, the other for near vision, Each eye will be examined separately.

There shall be no limit for minimum naked eye vision but the naked eye vision of the candidate shall however, be recorded by the Medical Board or other medical authority in every case as it will furnish the basic information in regard to the condition of the eye.

The standard for distant and near vision with or without glasses shall be as follows:-

Distant Vision		Near Vision	
Better eye	Worse eye	Better eye	Worse eye
6/9 or 6/6	6/9 or 6/12	0.6	0.8

Note (1) Total amount of Myopia (including the cylinder) shall not exceed 4.00D. The total amount of Hypermetropia (including the cylinder) shall not exceed 4.00D.

Note (2) Fundus Examination wherever possible fundus examination will be carried out at the discretion of the Medical Board and result recorded.

Note (3) Colour Vision: (i) The testing of colour vision shall be essential.

(ii) Colour perception should be graded into a higher and a lower grade depending upon the size of the aperture in the lantern as describe in the table below:-

	Higher Grade of Colour perception	Lower Grade of Colour perception
1. Distance between the lamp and candidate	4.9 metres	4.9 metres
2. Size of aperture	1.3 mm.	1.3 mm
3. Time of exposure	5 Sec.	5 Sec.

For the post of Geologist (Jr.) and Asstt. Geologist concerning Geological survey of India, the medical standard in regard to colour perception and all other tests relating to eyes will be of high order.

(iii) Satisfactory colour vision constitutes recognition with ease and without hesitation of signal red, signal green and white colours. The use of Ishihara's plates, shown in good light and a suitable lantern like edrige green shall be considered quite dependable for testing colour vision while either of the two tests may ordinarily be considered sufficient, in respect of the services concerned with road, rail and air traffic, it is essential to carry out the lantern test. In doubtful cases where a candidate fails to qualify when tested by only one of the tests should be employed.

Note (4): Field of vision:- The field of vision shall be tested by the confrontation method. Where such test, gives unsatisfactory or doubtful result the field of vision should be determined on the perimeter.

Note (5) Night Blindness:- Night blindness need not be tested as a routine but only in special cases. No standard test for the testing of night blindness or dark adaptation is prescribed. The Medical Board should be given the discretion to improvise such a rough test e.g. recording of visual acuity with reduced illumination or by making the candidate recognise various objects in a darkened room after he/she has been there for 20 to 30 minutes. Candidates own statements should not always be relied upon but they should be given due consideration.

Note (6) : (a) Ocular conditions other than visual acuity – Any organic disease or a progressive reactive error which is likely to result in lowering the visual acuity should be considered as a disqualification.

(b) Trachoma – Trachoma unless complicated shall not ordinarily be a cause for disqualification.

(c) Squint – Where the presence of binocular vision is essential squint even if the visual acuity is of a prescribed standard should be considered a disqualification.

(d) One-eyed persons – The employment of one-eyed individuals is not recommended.

7. Blood Pressure

The board will use its discretion regarding Blood Pressure.

A rough method of calculating normal maximum systolic pressure is as follow : -

(i) With young subjects 15-25 years of the age the average is about 100 plus the age.

(ii) With Subjects over 25 years of age the general rule of 110 plus half the age seems quite satisfactory.

N.B. – As a general rule any systolic pressure over 140 mm. and diastolic over 90 mm. should be regarded as suspicious and the candidate should be hospitalised by the Board before giving their final opinion regarding the candidate's fitness otherwise. The hospitalisation report should indicate whether the rise in blood pressure, is of a transient nature due to excitement etc. or whether it is due to any organic disease. In all such cases X-ray and electro-cardiographic examination of heart and blood urea clearance test should also be done as a routine. The final decision as to the fitness or otherwise of a candidate will, however, rest with the Medical Board only.

Method of taking Blood Pressure.

The mercury monometer type of instrument should be used as a rule. The measurement should not be taken within fifteen minutes of any exercise or excitement. Provided the patient, and particularly his/her arm is relaxed he/she may be either lying or sitting. The arm is supported comfortably at the patient's side in a more or less horizontal position. The arm should be freed from clothes to the shoulder. The cuff completely deflated should be applied with the middle of the rubber over the inner side of the arm and its lower edge an inch or two above the bend of the elbow. The following turns of clothes bandage should spread evenly over the bag to avoid bulging during inflation.

The branchial artery is located by palpitation at the bend of the elbow and the stethoscope is then applied lightly and centrally over it below but not in contact with the cuff. The cuff is inflated to about 200 mm. Hg. and then slowly deflated. The level at which the column stands when soft successive sounds are heard represents the systolic pressure. When more air is allowed to escape the sounds will be heard to increase in intensity. The level at which the well-heard clear sounds change to soft muffled fading sounds represents the diastolic pressure. The measurements should be taken in a fairly brief period of time as prolonged pressure of cuff is irritating to the patient and will vitiate the readings. Rechecking if necessary, should be done only a few minutes after complete deflation of the cuff (sometimes, as the cuff is deflated sounds are heard or at a certain level; they may disappear as

pressure falls and reappear at a still lower level. This 'Silent Gap' may cause error on readings.

8. The urine passed in the presence of the examiner should be examined and the result recorded. Where a Medical Board finds sugar present in a candidate's urine by the usual chemical tests the Board will proceed with the examination with all its other aspects and will also specially note any signs or symptoms suggestive of diabetes. If except for the glycosuria the Board finds the candidate confirm to the standard of medical fitness required they may pass the candidate fit subject to the glycosuria being non-diabetic and the Board will refer the case to a specified specialist in Medicine who has hospital and laboratory facilities at his disposal. The Medical Specialist will carry out whatever examination, clinical and laboratory he considers necessary including a standard blood sugar tolerance test and will submit his opinion to the Medical Board upon which the Medical Board will base its final opinion "fit" or "unfit". The candidate will not be required to appear in person before the Board on the second occasion. To exclude the effects of medication it may be necessary to retain a candidate for several days in hospital under strict supervision.

9. A woman candidate who as a result of tests is found to be pregnant of 12 weeks standing or over should be declared temporarily unfit till the confinement is over. She should be re-examined for a fitness certificate six weeks after the date for confinement subject to the production of a medical certificate of fitness from a registered medical practitioner.

10. The following additional points should be observed:-

(a) that the candidate's hearing in each ear is good and that there is no sign of disease of the ear. In case it is defective the candidate should be got examined by the ear specialist; provided that if the defect in hearing is remediable by operation or by use of a hearing aid candidate cannot be declared unfit on that accounts, provided he/she has no progressive disease in the ear. The following are the guidelines for the medical examining authority in this regard:-

(1) Marked or total deafness in one ear other ear being normal
Fit for non-technical jobs if the deafness is upto 30 decibles in higher frequencies.

(2) Perceptive deafness in both ears in which some improvement is possible by a hearing
Fit in respect of both technical and non-technical jobs if the deafness is upto 30 decibles in speech

- aid. frequencies of 1000 to 4000. degree – Unfit.
- (3) Perforation of tympanic membrane of Central or marginal type. (i) one ear normal other ear perforation of tympanic membrane present, Temporarily unfit, under improvement conditions of Ear Surgery a candidate with marginal or other perforation, in both ears should be given a chance by declaring him temporary unfit and then he may be considered under 4(ii) below. (ii) Marginal or attic perforation in both ears- Unfit. (iii) Central perforation in both ears- Temporarily unfit.
- (4) Ears with Mastoid cavity subnormal one side/on both sides. (i) Either ear normal hearing other ear, mastoid cavity-fit for both technical and non-technical Jobs. (ii) Mastoid cavity of both sides, unfit for technical jobs-Fit for non-technical jobs if hearing improves to 30 decibels in either ear with or without hearing aid. Temporarily Unfit for both technical and non-technical jobs.
- (5) Persistently discharging ear operated/unoperated (i) A decision will be taken as per circumstances of individual cases.
- (6) Chronic inflammatory/allergic condition of nose with our without bony deformities of nasal septum. (ii) If deviated nasal Septum if present with symptoms temporarily unfit.
- (7) Chronic Inflammatory conditions of tonsils and or larynx. (i) Chronic inflammatory conditions of tonsils and or Larynx Fit. (ii) Hoarseness of voice of severe degree is present then Temporarily unfit.
- (8) Benign or locally malignant tumours of the T.N.T. (i) Benign tumours Temporarily Unfit. (ii) Malignant Tumour Unfit.
- (9) Otosclerosis. If the hearing is within 30 decibels after operation or with the help of hearing aid Fit.
- (10) Congenital defect of ear, nose or throat. (i) If not interfering with functions – Fit (ii) Stuttering of severe
- (11) Nasal Poly degree – Unfit. Temporarily Unfit.
- (b) that his speech is without impediment:
- (c) that his teeth are in good order and that he/she is provided with dentures where necessary for effective mastication (well filed teeth will be considered as sound).
- (d) that the chest is well formed and his chest expansion sufficient; and that his heart and lungs are sound;
- (e) that there is no evidence of any abdominal disease.
- (f) that it is not ruptured
- (a) that he does not suffer from hydrocele, severe degree of varicocele, varicose veins or piles.
- (b) that his limbs, hands and feet are well formed and developed and that there is free and perfect motion of all his joints.
- (c) that he does not suffer from any inveterate skin disease.
- (d) that there is no congenital malformation or defect.
- (e) that he does not bear traces of acute or chronic disease pointing to an impaired constitution.
- (f) that he bears marks of efficient vaccination; and
- (g) that he is free from communicable disease.
11. Radiographic examination of the chest for detecting any abnormality of the heart and lungs, which may not be apparent by ordinary physical examination will be restricted to only such candidates who are declared finally successful at the concerned Geologists' Examination.
- The decision of the Chairman of the Central Standing Medical Board (conducting the medical examination of the concerned candidate) about the fitness of the candidate shall be final.
- When any defect is found it must be noted in that certificate and the medical examiner should state his opinion whether or not it is likely to interfere with the efficient performance of the duties which will be required of the candidate.
- Note:- Candidate are warned that there is no right of appeal from a Medical Board special or standing appointed to determine the fitness for the above posts. If, however, Government are satisfied on the evidence produced before them of the possibility of an error of judgement in the decision of the first Board it is open to Government to allow in appeal to a second Board. Such evidence should be submitted within one month of the date of the communication in which the decision of the first Medical Board is communicated to the candidate

otherwise no request for an appeal to a second Medical Board, will be considered.

If any medical certificate is produced by a candidate as a piece of evidence about the possibility of an error of judgement in the decision of the first Board, the certificate will not be taken into consideration unless it contains a note by the medical practitioner concerned to the effect that it has been given in full knowledge of the fact that the candidate had already been rejected as unfit for service by the Medical board.

Medical Board's Report

The following intimation is made for the guidance of the Medical examiner: -

The standard of physical fitness to be adopted should make due allowance for the age and length of service, if any of the candidate concerned.

No person will be deemed qualified for admission to the Public Service who shall not satisfy Government, or the appointing authority as the case may be, that he/she has no disease, constitutional affliction, or bodily infirmity unfitting him/her, or likely to unfit him/her for that service.

It should be understood that the question of fitness involves the future as well as the present and that one of the main objects of medical examination is to secure continuous effective service, and in the case of candidates for permanent appointment to prevent early pension or payments in case of premature death. It is at the same time to be noted that the question is one of the likelihood of continuous effective service and the rejection of a candidate need not be advised on account of the presence of a defect which in only a small proportion of cases is found to interfere with continuous effective service.

A lady doctor will be co-opted as a member of the Medical Board whenever a woman candidate is to be examined.

Candidates appointed to the posts of Geologists (Jr.) are liable for field service in or out of India. In case of such a candidate the Medical Board should specifically record their opinion as to his/her fitness or otherwise for field service. The report of the Medical Board should be treated as confidential.

In cases where a Medical Board considered that a minor appointment in the Government service, the grounds for rejection may be communicated to the candidate in broad terms without giving minute

details regarding the defects pointed out by the Medical Board.

In case where a Medical Board considered that a minor disability disqualifying a candidate for Government Service can be cured by treatment (medical or surgical) a statement to that effect should be recorded by the Medical Board.

There is no objection to a candidate being informed of the Board's opinion to this effect by the appointing authority and when a cure has been effected it will be open to the authority concerned to ask for another Medical Board.

In the case of candidates who are to be declared "Temporarily unfit" the period specified for re-examination should not ordinarily exceed six months at the maximum. On re-examination after the specified period these candidates should not be declared temporarily unfit for a further period but a final decision in regard to their fitness for appointment or otherwise should be given.

(a) Candidate's statement and declaration.

The candidate must make the statement required below prior to his/her Medical Examination and must sign the Declaration appended thereto. His/her attention is specially directed to the warning contained in the Note below :-

1. State your name in full
(in block letters)
- 2 State your age and birth place
- 3(a) Do you belong to races such as
Gorkhas, Garhwali, Assames, Nagaland Tribes etc. whose average height is distinctly Lower?
Answer 'Yes and 'No' and if the answer is 'Yes' state the name of the race.
- (b) Have you ever had small pox, intermittent or any other fever, enlargement or suppuration of glands, spitting of blood, asthma, heart disease, lung disease, fainting attacks, rheumatism, appendicitis ?
- (c) Any other disease or accident requiring confinement to bed and medical or surgical treatment.
4. Have you suffered any form of nervousness due to overwork or anyother cause?
5. Furnish the following particulars concerning your family:-

- (i) Father's age if living, and state of health -----

 - (ii) Father's age at death and cause of death----

 - (iii) No. of brothers living, their ages and state of health.-----
 - (iv) No. of brothers dead, their ages and cause of death-----
 - (v) Mother's age if living and state of health-----
 - (vi) Mother's age at death and cause of death-----
 - (vii) No. of sisters living, their ages & state of health-----
 - (viii) No. of sisters dead, their ages & cause of death-----
6. Have you been examined by a Medical Board before ?
 7. If answer to above is 'Yes', please state what Service/ Services, you were examined for?
 8. Who was the examining authority?
 9. When and where was the Medical Board held?
 10. Results of the Medical Board's examination, if communicated to you or if known.
 11. All the above answers, are to the best of my knowledge & belief, true and correct and I shall be liable for action under law for any, material infirmity in the information furnished by me, or suppression of relevant material information. The furnishing of false information or suppression of any factual information would be a disqualification and is likely to render me unfit for employment under the Government. If the fact that false information has been furnished or that there has been suppression of any factual information comes to notice at any time during my

service, my services would be liable to be terminated.

Candidate's signature
Signed in my presence
Signature of the Chairman of the Board

PROFORMA-I

Report of the Medical Board on (name of candidate) physical examination

1. General development : Good
Fair PoorNutrition : Thin
.....Average.....Obese.....
.....Height (Without shoes)weight
.....Any recent change in weight ?
..... Temperature
2. Girth of Chest :
(1) After full inspiration)
(2) After full expiration)
Skin : Any obvious disease
3. Eyes :
(1) Any disease
(2) Night blindness
(3) Defect in colour vision
(4) Field of vision
(5) Fundus examination
(6) Visual acuity
(7) Ability for stereoscopic vision

Acuity of Vision	Naked eye With glasses	Strength of glasses		
		Sph.	cyl.	Axis.

Distant Vision
R.E.
L.E.
Near Vision
R.E.
L.E.

Hypermetropia
(Manifest)

RE

LE

4. Ears: Inspection Hearing : Right

Ear Left Ear

5. GlandsThyroid

6. Condition of teeth

7. Respiratory system: Does physical examination
reveal anything abnormal in the respiratory
organs ?

If yes, explain fully

8. Circulatory System :

(a) Heart: Any organic lesions

Rate Standing

After hopping 25 times

2 minutes after hopping

(b) Blood Pressure:

SystolicDiastolic

9. Abdomen: Girth

Tenderness

Hernia

(a)Palpable: Liver.....Spleen

Kidneys.....Tumours.....

(b) Haemorrhoids Fistula

10. Nervous System : Indication of nervous of
mental disabilities

11. Loco-Motor System: Any abnormality

12. Genito Urinary System: Any evidence of
hydrocele, varicocele, etc.

Urine Analysis :

(a) Physical appearance

(b) Sp. Gr.....

(c) Albumen

(d) Sugar

(e) Casts

(f) Cells

13. Is there anything in the health of the
candidate likely to render him/her unfit for the

efficient discharge of his/her duties in the service for
which he/she is a candidate?

Note : In case of female candidate, if it is found that
she is pregnant of 12 weeks standing or over, she
should be declared temporarily unfit, vide regulation
9.

14 (a) For which services has the candidate been
examined and found in all respects qualified for the
efficient and continuous discharge of his duties and
for which of them is he considered unfit?

(b) Is the candidate fit for FIELD SERVICE?

Note (I): The Board should record their findings
under one of the following three categories :

(i) Fit

(ii) Unfit on account of

(iii) Temporarily unfit on account of

Note (II) : The candidate has not undergone chest
X-ray test. In view of this, the above findings are not
final and are subject to the report on Chest X-ray
test.

Place:

Date:

Signature
Chairman
Member
Member

Seal of the Medical Board

PROFORMA-II

Candidate's statement/Declaration

1. State your name :
(in block letters)

2. Roll No.

Candidate's Signature
Signed in my presence
Signature of the Chairman of the
Board

To be filled-in by the Medical Board

Note : The Board should record their findings under one of the following three categories in respect of chest X-ray test of the candidate.

Name of the Candidate

- (iii) Fit
- (iv) Unfit on account of
- (iii) Temporarily unfit on account of

Place:

Date:

Signature
Chairman
Member
Member
Seal of the Medical Board

APPENDIX – III

Brief particulars relating to the post for which recruitment is being made through this examination.

Geological Survey of India.

Geologist (Junior), Group A -

- (a) Candidates selected for appointment will be appointed on probation for a period two years which may be extended, if necessary.
- (b) During the period of probation the candidates may be required to undergo such course of training and instructions and to pass such examination and tests as may be prescribed by the competent authority.
- (c) Prescribed scales of pay in the Geological Survey of India.
 - (i) Geologist (Junior) (Junior Time Scale) – Rs. 8,000 – 275 – 13,500/-
 - (ii) Geologist (Senior) (Senior Time Scale) – Rs. 10,000 – 325 – 15,200/-
 - (ii) Director (Geology) – Rs. 12,000 – 375 – 16,500/-
 - (iv) Director (Geol.) (Non-Functional) (Selection Grade) Rs. 14,300 – 400 – 18,300/-
- (v) Dy. Director General (Geology) – Rs. 18,400 – 500 – 22,400/-
- (vi) Sr. Dy. Director General Operation – Rs. 22,400 – 525 – 24,500/-
- (vii) Director General – Rs. 26,000/- (fixed)

- (d) Promotions to the higher grade of posts in the Department will be made in accordance with the recruitment rules subject to such modifications as may be made by Government from time to time.
- (e) Conditions of service and leave and pension are those described in the Fundamental Rules and Civil Services Regulations respectively, subject to such modifications as may be made by Government from time to time.
- (f) Conditions of Provident Fund are those laid down in the General Provident Fund (Central Services) Rules, subject to such modifications as may be made by Government from time to time.
- (g) All officers of Geological Survey of India are liable for service in any part of India or outside India.

BHUPAL NANDA
Dy. Secretary