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Set **P**

M.Sc. (Applied Geology) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Mineralogy (2333101)

Day & Date: Friday, 17-04-2026
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)**08**

- 1) Relief is the result of difference in _____.
 a) Color and luster b) Density
 c) Refractive indexes d) Streak
- 2) All silicate mineral structures contain _____.
 a) SiO₄ tetrahedra b) CO₃ groups
 c) CuO chains d) FeS sheets
- 3) Crystal system is mainly defined by _____.
 a) Number and length of axes and angles
 b) Color and luster
 c) Hardness
 d) Density
- 4) Quartz and feldspar are members of _____.
 a) Tectosilicates b) Inosilicates
 c) Phyllosilicates d) Nesosilicates
- 5) Bragg's equation is used in _____.
 a) Microscopy b) X-ray diffraction
 c) Chemical analysis d) Refractive index measurement
- 6) The number of crystal systems is _____.
 a) 3 b) 6
 c) 7 d) 10
- 7) Spinel group minerals are classified as _____.
 a) Sulfides b) Halides
 c) Oxides d) Carbonates
- 8) Symmetry elements include all except _____.
 a) Axis of rotation b) Mirror plane
 c) Center of symmetry d) Bond length

B) Fill in the blanks OR Write True/False. 04

- 1) Silicates are minerals containing _____ and oxygen in their structure.
- 2) The crystal system with three axes of equal length and 90° angles is called the _____ system.
- 3) Crystals are always amorphous in structure. (True/False)
- 4) There are 30 classes of crystal symmetry. (True/False)

Q.2 Answer the following. (Any Six) 12

- a) Explain the role of Miller indices in crystallography.
- b) Explain two types of luster.
- c) State two differences between isotropic and anisotropic minerals.
- d) Give optical properties of Quartz.
- e) What is pinacoid and prism?
- f) What is pleochroism?
- g) Define Isomorphism.
- h) Define cleavage and give names of two minerals with cleavage.

Q.3 Answer the following. (Any Three) 12

- a) Write a short note on Moh's scale of hardness.
- b) Explain reflection, refraction and refractive index.
- c) Write a note on inosilicate.
- d) Note on paragenesis of Oxides and Hydroxides group minerals.

Q.4 Answer the following. (Any Two) 12

- a) Write a note on carbonate group of minerals.
- b) Explain formation and classification of Feldspars and Feldspathoids.
- c) Write paragenesis physical and optical properties of mica group of minerals.

Q.5 Answer the following. (Any Two) 12

- a) Explain Nesosilicate and write a note on Olivine group of minerals.
- b) Discuss the crystal systems and their symmetry types.
- c) Write a note on polymorphism and its types.

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M.Sc. (Applied Geology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Igneous and Metamorphic petrology (2333102)

Day & Date: Monday, 20-04-2026
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. 08

- 1) Quartzite is formed from which rock?
 - a) Pure shale
 - b) Pure Basalt
 - c) Pure sandstone
 - d) Pure Granite
- 2) Granite belongs to which mode of occurrence of igneous rock?
 - a) Volcanic rocks
 - b) Plutonic
 - c) Hypabyssal
 - d) Volcanic and hypabyssal
- 3) The factor not affecting metamorphism is _____.
 - a) Wind conditions
 - b) Temperature
 - c) Pressure
 - d) Chemically active fluids
- 4) The slaty cleavage is called as _____.
 - a) Flow cleavage
 - b) Fracture cleavage
 - c) Fine cleavage
 - d) Medium cleavage
- 5) Which of the following magma type is most viscous?
 - a) Andesitic magma
 - b) Rhyolitic magma
 - c) Basaltic magma
 - d) Trachytic magma
- 6) Examples of high-grade schist are _____.
 - a) Talc-schist
 - b) Garnet-schist L
 - c) Chlorite-schist
 - d) Mica-schist
- 7) Basalt is _____ rock.
 - a) Sedimentary
 - b) Plutonic
 - c) Both igneous and metamorphic
 - d) Volcanic
- 8) _____ is the last mineral which crystalized in Bowen reaction series.
 - a) Hornblende
 - b) Olivine
 - c) Quartz
 - d) Calcite

B) Write True/False. 04

- 1) Marble is formed by Cataclastic metamorphism of limestone. (True/False)
- 2) The Deccan flood basalts are one of the largest volcanic provinces in India. (True/False)
- 3) Foliation in metamorphic rocks is caused by directed pressure during metamorphism. (True/False)
- 4) Igneous rocks with large crystals visible to the naked eye have a phaneritic texture. (True/False)

Q.2 Answer the following. (Any Six) 12

- a) Amygdaloidal structure
- b) Lamprophyre
- c) Megascopic properties of granite
- d) What is assimilation?
- e) Diagrammatic representation of Bowens reaction series
- f) Write short note on Contact Metamorphism.
- g) Albite-Orthoclase phase system
- h) Write a short note on MORB.

Q.3 Answer the following. (Any Three) 12

- a) What are Kimberlites? Give the Indian locations of kimberlites.
- b) Write full note on agents of metamorphism.
- c) Prograde Metamorphism
- d) Describe the important equilibria in the Forsterite-Silica binary system.

Q.4 Answer the following. (Any Two) 12

- a) Differentiate between Tholeiitic Basalt and alkaline Basalt
- b) Describe various texture of igneous rock.
- c) Write a note on AFM diagrams.

Q.5 Answer the following. (Any Two) 12

- a) Write in brief about the Eskola's metamorphic facies.
- b) Describe in detail the Deccan Volcanic Flood basalt.
- c) Describe in detail the Barrovian metamorphic zones.

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**M.Sc. (Applied Geology) (Semester - I) (New) (NEP CBCS) Examination:
March/April – 2026
Sedimentology and Palaeontology (2333108)**

Day & Date: Wednesday, 22-04-2026
Time: 3:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

- 1) Which of the following is a characteristic of calcareous rocks?
 - a) Formation from volcanic ash
 - b) Lack of distinct layers
 - c) Presence of calcium carbonate
 - d) High silica content

- 2) What is the significance of cross-bedding in sedimentary structures?
 - a) It indicates the presence of volcanic activity
 - b) It helps in understanding sediment transport and deposition
 - c) It is a sign of biological processes
 - d) It has no significance in geology

- 3) What is the chemical composition of Dolomite?

a) $\text{CaMg}(\text{CO}_3)_2$	b) $\text{Ca}(\text{CO}_3)_2$
c) $\text{Mg}(\text{CO}_3)$	d) $\text{CaMg}(\text{CO}_3)$

- 4) Solution is nothing but _____.
 - a) Rolling over the bed surface
 - b) Jumping over the bed surface
 - c) Chemical transport
 - d) Permanent transport within the fluid

- 5) What is the Phylum of trilobites?

a) Gastropoda	b) Animalia
c) Trilobita	d) Arthropoda

- 6) What is the kingdom of Foraminifera?

a) Protista	b) Mollusca
c) Animalia	d) Miliolida

- 7) Which of the following is a argillaceous sedimentary rocks?

a) Shale	b) Breccia
c) Sandstone	d) Limestone

- 8) Lamination is nothing but _____.
- a) Foliated structure
 - b) Layered structure
 - c) Cracked structure
 - d) Coarse grained structure

B) Fill in the blanks OR write True/ False. 04

- 1) Clastic sedimentary rocks are formed from the weathering and erosion of pre-existing rocks. (True/False)
- 2) A sedimentary basin is a large elevation in the Earth's crust filled with sediment. (True/False)
- 3) Fossils can be found in slate. (True/False)
- 4) The time scale that divides Earth's history into distinct intervals is _____.

Q.2 Answer the following. (Any Six) 12

- a) Reynold number formula
- b) Transportation and cementation
- c) Define dolomitization
- d) Trace fossils
- e) What is traction and saltation?
- f) Frost wedging
- g) Petrification
- h) What is fossil?

Q.3 Answer the following. (Any Three) 12

- a) Write a note on any four principles of sedimentology.
- b) Explain sphericity and roundness with its formulas.
- c) Explain sedimentary textures with diagrams.
- d) State the significance of fossil records in mineral exploration.

Q.4 Answer the following. (Any Two) 12

- a) What are sedimentary deposits in marginal marine environments?
- b) Write morphology and classification of trilobites.
- c) Write a note on evolution of man.

Q.5 Answer the following. (Any Two) 12

- a) Write a note on classification and application of foraminifera.
- b) Explain in detail the formation and characteristics of sedimentary basins associated with convergent plate boundaries.
- c) Discuss the various classifications of sandstone.

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M.Sc. (Applied Geology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Geotechnical Engineering and Rock Mechanics (2333109)

Day & Date: Wednesday, 22-04-2026
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. 08

- 1) For good building stone, how much is the required crushing strength?
 - a) Less than 50 N/mm²
 - b) Greater than 100 N/mm²
 - c) 155 N/mm²
 - d) 10 N/mm
- 2) The Idukki dam in India is situated in which state?
 - a) Karnataka
 - b) Gujrat
 - c) Karela
 - d) Maharashtra
- 3) The downgrade movement of mass along no definite surface is called?
 - a) Flowage
 - b) Sliding
 - c) Subsidence
 - d) Earthquake
- 4) The talus cone is produced by _____.
 - a) Rock fall
 - b) Rock glides
 - c) Mud flows
 - d) All of these
- 5) The presence of which of the following mineral in a rock will weaken the strength of the rock _____.
 - a) Quartz
 - b) Mica
 - c) Altered feldspar
 - d) Both (b) and (c)
- 6) The value of water absorption is generally expressed in _____.
 - a) ml/kg
 - b) gram/liter
 - c) Percentage
 - d) Milliliter
- 7) A solid barrier constructed at a suitable location across a river valley to impound water is called _____.
 - a) Reservoir
 - b) Dam
 - c) Bridge
 - d) Retaining wall
- 8) Tunnels associated with hydropower generation are called _____.
 - a) Energy tunnels
 - b) Power tunnels
 - c) Generation tunnels
 - d) Utility tunnels

B) Fill in the blanks OR write True/ False. 04

- 1) Crushing strength of rock Conglomerate is 150 to 200 N/mm².
(True/False)
- 2) Shearing movements are observed in all cases of subsidence.
(True / False)
- 3) The density of the rock with natural moisture is natural density.
(True / False)
- 4) The ore of iron is _____.

Q.2 Answer the following. (Any Six) 12

- a) Give the names of important dams in Maharashtra.
- b) What is spillway?
- c) Explain Body wave.
- d) What is building stone? Give its examples.
- e) What are the causes of landslide?
- f) What is hardness?
- g) Define Permeability and Porosity.
- h) Define Tensile strength.

Q.3 Answer the following. (Any Three) 12

- a) Explain the difficulties during tunneling.
- b) Explain silting of reservoir.
- c) Prevention measures of landslide.
- d) Physical characters of building stones.

Q.4 Answer the following. (Any Two) 12

- a) Describe the dams on different geological structures.
- b) Describe various types of tunnel.
- c) Explain types of drilling.

Q.5 Answer the following. (Any Two) 12

- a) Explain the different types of dam.
- b) Explain tunneling through different Geological Structures.
- c) Explain seismic zones of India.

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M.Sc. (Applied Geology) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Research Methodology (2333103)

Day & Date: Friday, 24-04-2026
Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) A patent is _____.
 - a) A detailed research paper
 - b) Legal protection for an invention
 - c) A type of publication in SCOPUS
 - d) A way to present research data
- 2) Ethics in research does NOT include _____.
 - a) Objectivity
 - b) Integrity
 - c) Subjectivity
 - d) Confidentiality
- 3) A systematic record-keeping of experimental data is essential for _____.
 - a) Reproducibility of results
 - b) Increasing the word count
 - c) Impressing the supervisor
 - d) Filing for a driving license
- 4) What is the main purpose of a literature review in research?
 - a) To summarize the research findings
 - b) To avoid plagiarism
 - c) To understand existing knowledge and identify gaps
 - d) To formulate the research problem
- 5) Process of conducting research 'Formulation of Hypothesis' is followed by _____.
 - a) Statement of Objectives
 - b) Analysis of Data
 - c) Selection of Research Tools
 - d) Collection of Data
- 6) Which of the following is not a component of a research paper?
 - a) Abstract
 - b) Literature review
 - c) A patent application
 - d) Results and discussion

- 7) Impact Factor is a measure used to evaluate _____.
 a) The number of articles published in a journal
 b) The frequency of citations received by a journal
 c) The h-index of a researcher
 d) The immediacy index of articles
- 8) Which of the following is not an objective of research?
 a) Defining research questions
 b) Proving pre-existing assumptions
 c) Expanding knowledge
 d) Solving a specific problem

B) Write True/False.**04**

- 1) Literature review is not a component of a research paper?
 2) An ISBN is typically assigned to BOOKS.
 3) Advanced search allows for more detailed and specific filtering options.
 4) YouTube is not typically used in research presentation or documentation

Q.2 Answer the following. (Any Six)**12**

- a) Define research ethics and its importance.
 b) Differentiate between ISSN and ISBN.
 c) Explain the importance of internet browsing in research work.
 d) List some search engines commonly used in academic research
 e) Describe how MS Excel can be used in research data analysis.
 f) Define impact factor.
 g) Define h-index.
 h) Describe the role of MS PowerPoint in research presentation

Q.3 Answer the following. (Any Three)**12**

- a) What is Research problem? What are the sources of research problem?
 b) What are the Sources of collecting Secondary and primary data.
 c) Describe different publication indices and their uses
 d) What are e-databases?

Q.4 Answer the following. (Any Two)**12**

- a) What is patent filing? Discuss process of filing.
 b) List types of data collection.
 c) Write a detailed note on application of computers in research.

Q.5 Answer the following. (Any Two)**12**

- a) Note on Impact factor.
 b) Discuss h-index and its advantages and limitations.
 c) What are the criteria for quality research?

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M.Sc. (Applied Geology) (Semester - II) (New) (NEP CBCS)
Examination: March/April - 2026
Indian Stratigraphy (2333201)

Day & Date: Thursday, 16-04-2026
 Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

- 1) The stratigraphic boundary demarcating the Archaean rocks from Closepet granite is termed as _____.
 - a) Non-conformity
 - b) Disconformity
 - c) Angular Unconformity
 - d) Eparchaeon Unconformity
- 2) The oldest group of Cuddapah Super-group is _____.
 - a) Papaghni Group
 - b) Nallamalai Group
 - c) Chitravati Group
 - d) Kurnool Group
- 3) The Vindhyan system lies unconformably on the _____.
 - a) Kurnool rocks
 - b) Deccan rocks
 - c) Cuddapah rocks
 - d) Bijawar group rocks
- 4) During which geological time Dinosaur flourished on earth?
 - a) Proterozoic
 - b) Permian
 - c) Jurassic
 - d) Tertiary
- 5) Which is the youngest era in the geological time scale?
 - a) Precambrian
 - b) Palaeozoic
 - c) Mesozoic
 - d) Cenozoic
- 6) Cu deposits of Khetri belt are associated with _____.
 - a) Railo group
 - b) Erinpura granite
 - c) Alwar slate
 - d) Ajabgarh limestone
- 7) K-T boundary is also called as _____.
 - a) Archaean - Proterozoic boundar
 - b) Precambrian - Cambrian
 - c) Cretaceous - Tertiary
 - d) Jurassic - Cretaceous
- 8) Which of the following era represent longest time period?
 - a) Precambrian
 - b) Paleozoic
 - c) Mesozoic
 - d) Cenozoic

- B) Fill in the blanks OR write True/ False. 04**
- a) Craton, the stable interior portion of a continent characteristically composed of ancient crystalline basement rock. (True/False)
 - b) Papaghni group of rocks in Cuddapah Supergroup are oldest in age. (True/False)
 - c) _____ is the longest unit of geological time scale.
 - d) Cenozoic is the youngest era in Geological time scale. (True/False)

- Q.2 Answer the following. (Any Six) 12**
- a) Define mass extinction and give example.
 - b) List the periods of Paleozoic era.
 - c) What is the significance of chemostratigraphy in correlation?
 - d) What is the significance of the Talchir Formation?
 - e) Name two Jurassic formations of Kutch.
 - f) Name two fossil-bearing formations in the Vindhyan Basin.
 - g) What are the major Quaternary deposits in Peninsular India?
 - h) What are intertrappean and infratrappean beds?

- Q.3 Answer the following. (Any Three) 12**
- a) Iron ore series
 - b) Write a note on K.T boundary problem.
 - c) Kurnol Group
 - d) Sargur Schist

- Q.4 Answer the following. (Any Two) 12**
- a) Discuss in detail Structure, Stratigraphy & Tectonic evolution of Cuddapah Basin.
 - b) Write note on Pleistocene glaciation.
 - c) Discuss the formation of Himalayas.

- Q.5 Answer the following. (Any Two) 12**
- a) Write a full note on Geological Time scale.
 - b) Write an essay on Deccan Trap.
 - c) Discuss in detail Structure, Stratigraphy & Tectonic evolution of Vindhyan Basin.

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**M.Sc. (Applied Geology) (Semester - II) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Geology and Geotectonics (2333202)**

Day & Date: Saturday, 18-04-2026
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)**08**

- 1) Mud cracks are an example of: _____.
 - a) Secondary structure
 - b) Primary structure
 - c) Fault
 - d) Fold
- 2) The bearing of a line is measured with respect to: _____.
 - a) Horizontal plane
 - b) Vertical plane
 - c) Magnetic north
 - d) Geological boundary
- 3) Which of the following is NOT a secondary structure?
 - a) Cleavage
 - b) Folds
 - c) Faults
 - d) Cross-bedding
- 4) The deformation of a rock without fracturing is called _____.
 - a) Brittle deformation
 - b) Elastic deformation
 - c) Ductile deformation
 - d) Rigid deformation
- 5) Homogeneous deformation means: _____.
 - a) Uniform deformation
 - b) Random deformation
 - c) Unequal deformation
 - d) Uneven deformation
- 6) If the apparent dip and true dip are equal, the measurement line is: _____.
 - a) Oblique to strike
 - b) Perpendicular to strike
 - c) Parallel to strike
 - d) Oblique to dip
- 7) Which process causes the Himalayas to rise?
 - a) Subduction
 - b) Sea floor spreading
 - c) Continental collision
 - d) Transform motion
- 8) The abyssal plain is a feature of the: _____.
 - a) Deep ocean floor
 - b) Continental slope
 - b) Continental shelf
 - d) Coastal area

B) Fill in the blanks OR write True/ False.

- a) _____ is the deepest point on the Earth.
- b) The _____ mountain belt is a product of continental-continental plate collision.
- c) Plate tectonics has no role in the formation of oceanic trenches. (True/False)
- d) Active margins are commonly associated with earthquakes, volcanic activity, and mountain building. (True / False)

Q.2 Answer the following. (Any Six)**12**

- a) Define strike.
- b) Convection currents.
- c) Dextral fault.
- d) What is principle of superposition?
- e) Crest and trough.
- f) Define buckling.
- g) Continental Shelf.
- h) Define Inlier.

Q.3 Answer the following. (Any Three)**12**

- a) Difference between lineation and foliation.
- b) Write a note on outcrop and its types.
- c) Give detail account on transform plate boundary.
- d) Write a note on sea floor spreading.

Q.4 Answer the following. (Any Two)**12**

- a) Give detail account on joints and their different types.
- b) Write a note on primary structures and discuss its types.
- c) Give detail account on fold and their different types.

Q.5 Answer the following. (Any Two)**12**

- a) Write a note on erosional landforms in costal geomorphology.
- b) Write a note on convergent plate boundary.
- c) Describe the major features of the ocean floor with the help of a neat diagram. Explain the formation and significance of mid-oceanic ridges.

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**M.Sc. (Applied Geology) (Sem - II) (New) (NEP CBCS) Examination:
March/April– 2026
Fundamental of Remote Sensing and GIS (2333207)**

Day & Date: Tuesday, 21-04-2026
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

- 1) _____ Wavelength can penetrate clouds.
 - a) Optical
 - b) Thermal
 - c) Microwave
 - d) All the above
- 2) _____ is the computer system of capturing, storing, analyzing, manipulating and display spatial and spatial data.
 - a) Remote sensing
 - b) GPS
 - c) GIS
 - d) None
- 3) First ever aerial photograph taken from hot air balloon in _____.
 - a) 1864
 - b) 1868
 - c) 1867
 - d) 1858
- 4) FCC stands for _____.
 - a) False Colour Composite
 - b) Falles Colour Composite
 - c) Few Colour Complex
 - d) All of the above
- 5) Who is the father of GIS?
 - a) Roger Williams
 - b) Pisharoth Rama Pisharoty
 - c) Kiran Kumar AlurSeelin
 - d) Roger Tomlinson
- 6) TIN stands for _____.
 - a) Triangulated Irregular Network
 - b) Traffic Internet Network
 - c) Temporal Interest Network
 - d) Temperature Interface Node
- 7) Which of the following is an example of a GIS data format?
 - a) JPEG
 - b) PDF
 - c) TIFF
 - d) PNG
- 8) DBMS stands for _____.
 - a) Data building management system
 - b) Distribution building management system
 - c) Database management system
 - d) Distribution building manipulation system

- B) Fill in the blanks OR write True/ False. 04**
- 1) RESOURCESAT-1 was launched in 2003 by India. (True /False)
 - 2) _____ coined the term, 'Remote sensing'.
 - 3) The sensor used in the digital elevation model can identify contour heights greater than _____ m.
 - 4) In false colour composite (FCC) image healthy vegetation appears in red colour. (True /False)
- Q.2 Answer the following. (Any Six) 12**
- a) Oblique Aerial Photographs.
 - b) What is scattering?
 - c) Define GIS.
 - d) Define remote Sensing.
 - e) What is Photogrammetry?
 - f) Applications of GIS.
 - g) What are binary images?
 - h) What are the components of GIS?
- Q.3 Answer the following. (Any Three) 12**
- a) What are atmospheric windows?
 - b) Write a note on Multispectral scanners.
 - c) An aerial photograph was taken from a flying height of 15 km above M.S.L. A straight portion of a canal measures 20 cm on this photograph, where as it is 10 km on the ground. If the height of the terrain is 5000 m above M.S.L., compute the focal length of camera lens used for taking the photograph.
 - d) Explain different types of platforms.
- Q.4 Answer the following. (Any Two) 12**
- a) Explain the applications of remote sensing in groundwater.
 - b) What is GPS? Give ITS APPLICATIONS.
 - c) Explain vector and raster data models in GIS.
- Q.5 Answer the following. (Any Two) 12**
- a) Write note on Geographical co-ordinate system.
 - b) Hardware and software requirement for GIS.
 - c) Describe in detail passive and active remote sensing.

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**M.Sc. (Applied Geology) (Semester - III) (New) (NEP CBCS)
Examination: March/April - 2026
Geophysical and Geochemical Exploration (2333301)**

Day & Date: Friday, 17-04-2026
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)

08

- 1) Which of the following is a geophysical prospecting method?
 - a) Drilling
 - b) Pitting
 - c) Magnetic survey
 - d) Sampling
- 2) Geochemical prospecting is based on _____.
 - a) Rock color
 - b) Physical anomalies
 - c) Chemical composition of rocks and soils
 - d) Electrical conductivity
- 3) Gravity survey is used to detect variations in _____.
 - a) Density of subsurface rocks
 - b) Color of rocks
 - c) Temperature of rocks
 - d) Porosity of rocks
- 4) The workable standard of a deposit is determined by _____.
 - a) Ore grade and tonnage
 - b) Rock color and shape
 - c) Temperature and pressure
 - d) Soil moisture
- 5) Electrical resistivity method helps in identifying _____.
 - a) Radiometric anomalies
 - b) Magnetic susceptibility
 - c) Subsurface lithology and groundwater
 - d) Gravity variations
- 6) Pathfinder elements in geochemical surveys are _____.
 - a) Rare elements with no economic value
 - b) Elements indicating the presence of specific ore deposits
 - c) Magnetic materials
 - d) Radioactive isotopes only

- 7) The travel-time curve in seismic prospecting is used for _____.
 - a) Measuring soil density
 - b) Interpreting subsurface structures and layer depths
 - c) Calculating groundwater salinity
 - d) Identifying ore grades

- 8) Geochemical provinces are defined as _____.
 - a) Regions of uniform physical properties
 - b) Areas with characteristic elemental concentration patterns
 - c) Areas of high magnetic intensity
 - d) Regions of uniform rock color

B) Fill in the blanks OR Write True/ False. 04

- a) The instrument used in magnetic surveys is called a _____.
- b) The reflection and refraction of seismic waves help to determine _____ structures.
- c) The main objective of exploration is to study plant growth in mineralized areas. (True/False)
- d) The gamma-ray log in well logging is primarily used to identify metallic ore zones. (True/False)

Q.2 Answer the following. (Any Six) 12

- a) What is the difference between prospecting and exploration?
- b) What are the main stages of mineral exploration?
- c) Define workable standard of a mineral deposit.
- d) Mention any two instruments used in geophysical prospecting.
- e) What is the principle of the seismic reflection method?
- f) What is meant by geochemical dispersion?
- g) Explain the significance of geochemical provinces.
- h) What is the importance of statistical interpretation (univariate and multivariate analysis) in exploration data?

Q.3 Answer the following. (Any Three) 12

- a) Define prospecting and explain its importance in mineral exploration.
- b) Describe the different stages of mineral exploration.
- c) Explain the principles of geological mapping used during prospecting.
- d) Discuss the importance of integrating geological, geochemical, and geophysical methods in exploration programs.

Q.4 Answer the following. (Any Two) 12

- a) What are prospecting guides? Discuss their geological significance.
- b) Explain the role of geochemical surveys in mineral exploration and classification of such surveys.
- c) Describe the concept of geochemical mobility and dispersion patterns in identifying ore deposits.

Q.5 Answer the following. (Any Two)

12

- a)** Explain the principles and applications of radiometric surveys in detecting radioactive minerals.
- b)** Discuss the importance and methods of well logging in subsurface geological correlation.
- c)** Describe biogeochemical and geobotanical methods used in prospecting, mentioning their merits, demerits, and indicator species.

Seat No.	
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Set **P**

**M.Sc. (Applied Geology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Fuel Geology (2333302)**

Day & Date: Monday, 20-04-2026
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.**08**

- 1) Which one of the following is green energy?

a) Thermal power plant	b) Nuclear power plant
c) Oil refining plant	d) Hydro power plant

- 2) Pick out the odd one _____.

a) Wood	b) Coal
c) Solar	d) Rock oil

- 3) Which state have maximum uranium deposits?

a) Maharashtra	b) Jharkhand
c) Andhra Pradesh	d) Rajasthan

- 4) The rocks having ____ is most suitable reservoir for petroleum.

a) High porosity high permeability
b) High porosity low permeability
c) Low porosity low permeability
d) Low porosity high permeability

- 5) Anthracite contains _____ carbon and generally has the highest heating value of all ranks of coal.

a) 60% to 70%	b) 55% to 65%
c) 86% to 97%	d) 50% to 60%

- 6) The reservoir rock of Bombay High Oil Field is: _____.

a) Sandstone	b) Limestone
c) Shale	d) Clay

- 7) In Bombay Offshore, limestone has acted as a _____.

a) Source rock	b) Cap rock
c) Reservoir rock	d) Both b and c

- 8) Which state have maximum non-conventional sources?

a) Maharashtra	b) Jharkhand
c) Tamil Nadu	d) Rajasthan

B) Write True/ False. 04

- 1) Coke coal is almost pure form of carbon. (True / False)
- 2) Fossil fuels can be made in the laboratory. (True / False)
- 3) Traps that are formed chiefly as a result of folding and faulting are called Structural traps. (True / False).
- 4) Plutonium-239 and uranium-235 are the most common isotopes used in nuclear weapons. (True / False)

Q.2 Answer the following. (Any Six) 12

- a) Renewable energy
- b) Geothermal energy
- c) Oil Migration
- d) Conventional energy
- e) Types of coal
- f) Coal bed methane (CBM)
- g) Composition of hydrocarbon
- h) Radioactive decay

Q.3 Answer the following. (Any Three) 12

- a) Source rock for petroleum
- b) Write short note on non-conventional energy resource in India.
- c) Uranium exploration in India
- d) Methods of exploration for radioactive mineral deposits

Q.4 Answer the following. (Any Two) 12

- a) Role of fuel in national development.
- b) Oil producing basin of Maharashtra and its stratigraphy.
- c) Note on enhanced oil recovery methods.

Q.5 Answer the following. (Any Two) 12

- a) Discuss in detail conventional and non-conventional energy resources.
- b) Write note on classification of coal based on physical properties and chemical parameters.
- c) Write a brief account on classification of petroliferous basins in India.

Seat No.	
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Set **P**

**M.Sc. (Applied Geology) (Semester - III) (New) (NEP CBCS)
Examination: March/April – 2026
Climatology (2333306)**

Day & Date: Wednesday, 22-04-2026
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.**08**

- 1) The balance between incoming solar radiation and outgoing terrestrial radiation is called: _____.
 - a) Albedo
 - b) Heat Budget
 - c) Radiation Balance
 - d) Solar Constant
- 2) High tides are formed when _____.
 - a) The sun and the moon are at the position of right angle with reference to the earth
 - b) The sun, the earth and the moon are in the same line
 - c) The sun and the earth at the position of 45° with reference to the moon
 - d) None of the above
- 3) The lapse rate of temperature in the troposphere is about: _____.
 - a) 6.5°C per km
 - b) 2°C per km
 - c) 10°C per km
 - d) 5°C per km
- 4) Choose the correct statement.
 - a) Overall salinity of ocean increases with increasing depth.
 - b) Salinity decreases with increasing depth in low latitudes
 - c) Salinity is higher at the surface at equator and lower below the water surface
 - d) Salinity increases with increasing depth in high latitudes
- 5) El Nino is primarily associated with which ocean?
 - a) Indian Ocean
 - b) Pacific Ocean
 - c) Atlantic Ocean
 - d) Arctic Ocean
- 6) Flat-topped volcanoes on the ocean floor are known as _____.
 - a) Seamounts
 - b) Guyots
 - c) Plateaus
 - d) Oceanic ridges
- 7) The main cause of global warming is _____.
 - a) Ozone
 - b) Methane
 - c) Greenhouse gases
 - d) Dust particles

- 8) Which among the following is the warm ocean current of the Pacific Ocean?
- a) Kuroshio current
 - b) Humboldt current
 - c) Canaries current
 - d) Labrador current

B) Fill in the blanks OR write True/ False. 04

- 1) The Coriolis force is zero at _____.
- 2) Nitrogen gas is a greenhouse gas. (True/ False)
- 3) The pressure exerted by air at sea level is 1013.25 mb. (True/False)
- 4) The El Nino phenomenon leads to heavy rainfall in India. (True/False)

Q.2 Answer the following. (Any Six) 12

- a) Explain earth sun relationship.
- b) Explain the scope of climatology in applied science.
- c) Give the cause of global warming.
- d) Define Jet stream.
- e) Define isothermal surfaces.
- f) Define Weather.
- g) What is the Walker circulation?
- h) Define transpiration.

Q.3 Answer the following. (Any Three) 12

- a) What is Indian dipole?
- b) Discuss the inversion of temperature with suitable diagram.
- c) Explain the periodic local winds with examples
- d) Write a note on Albedo.

Q.4 Answer the following. (Any Two) 12

- a) Write essay on Hydrological cycle.
- b) Write a note on Indian Monsoon.
- c) Discuss the causes and effects of ozone layer depletion.

Q.5 Answer the following. (Any Two) 12

- a) Explain the solar radiation- Terrestrial Radiation and its relationship.
- b) Note on Inter Tropical Convergence Zone (ITCZ).
- c) Describe the factors controlling the distribution of solar radiation.

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Set	P
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M.Sc. (Applied Geology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April - 2026
Ore Geology (2333401)

Day & Date: Thursday, 16-04-2026
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

- 1) Diamond in kimberlite and corundum in nepheline syenite are good examples of _____.
 a) Disseminated deposit b) Segregated deposit
 c) Injected deposit d) Pegmatitic deposit
- 2) World largest Barites deposit is located in _____.
 a) Managampet in Cuddapah basin
 b) Superior province in Canada
 c) Vindhyan basin in Central India
 d) Witwatersrand in South Africa
- 3) Rampura-Agucha in Rajasthan is known for the ore deposit of _____.
 a) Gold b) Tungsten
 c) Zinc d) Iron
- 4) Which one of the following mineral/s is an example of Late Magmatic deposit?
 a) Magnetite b) Ilmenite
 c) Chromite d) All the above
- 5) Cavities in the vein left unfilled are called as _____.
 a) Crustification b) Vugs
 c) Comb structure d) None of these
- 6) The fluid inclusion which is trapped after the formation of crystal is _____.
 a) Secondary b) Primary
 c) Pseudosecondary d) Exsolution
- 7) Layered igneous rocks could be good sites for the mineralization of _____.
 a) Gold b) Tungsten
 c) Chromite d) Diamond

- 8) Metasomatic replacement deposits are characterized by _____.
a) Preservation of rock structure
b) Presence of pseudo morphs of replacing minerals after the replaced one
c) Absence of Crusification
d) All the above

B) Fill in the blanks OR write True/ False. 04

- a) Chromite is primarily found in ultramafic igneous rocks. (True / False)
b) What is the chemical formula for Chalcopyrite?
c) Deposits that form after the host rock is already present are called _____ deposits.
d) Quartz mineral has 4.65 g/cm^3 specific gravity. (True / False)

Q.2 Answer the following. (Any Six) 12

- a) Physical properties of Pyrite ore mineral
b) Short note on Magmatic fluid.
c) Connate waters
d) What is ore shoots?
e) Replacement deposits
f) Explain the late Mesozoic and early tertiary Metallogenic epochs.
g) Write a full note on fluid Inclusion.
h) Ore Paragenesis

Q.3 Answer the following. (Any Three) 12

- a) Explain in details cavity filling deposit with suitable example.
b) Stratiform ore deposits
c) Heavy mineral separation method
d) National mineral policy

Q.4 Answer the following. (Any Two) 12

- a) Detail notes on fissure vein deposit.
b) Contact metamorphism
c) Mineralization associated with Divergent and Convergent plate margin

Q.5 Answer the following. (Any Two) 12

- a) What is wall rock alteration? Discuss in short various types of alteration.
b) Write a note on oxidation & supergene enrichment deposit.
c) Explain geology, stratigraphy and depositional environment of Iron ore formation.

Seat No.	
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Set	P
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M.Sc. (Applied Geology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April – 2026
Hydrogeology (2333402)

Day & Date: Saturday, 18-04-2026
 Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

- 1) Which rock type has high porosity and low permeability?
 - a) Clay
 - b) Sandstone
 - c) Limestone
 - d) Marble

- 2) A geoelectrical resistivity survey is most effective in locating _____.
 - a) Shallow freshwater aquifers
 - b) Fossil fuels
 - c) Salt domes
 - d) Magmatic intrusions

- 3) A hydrograph primarily represents: _____.
 - a) Water quality
 - b) Rainfall vs temperature
 - c) Stream discharge over time
 - d) Groundwater table fluctuations

- 4) Water table fluctuation is influenced by: _____.
 - a) Seismic activity
 - b) Barometric pressure
 - c) Rainfall, withdrawal, and recharge
 - d) None of the above

- 5) The most suitable condition for the occurrence of artesian wells is _____.
 - a) Unconfined aquifer above sea level
 - b) Confined aquifer under hydrostatic pressure
 - c) Water table aquifer during summer
 - d) Perched aquifer over impermeable rocks

- 6) Hydro stratigraphic units are defined based on: _____.
 - a) Rock color
 - b) Age of rocks
 - c) Water bearing properties
 - d) Fossil content

- 7) Wetlands play an important role in: ____.
- Increasing runoff
 - Decreasing infiltration
 - Groundwater recharge and flood control
 - Preventing evaporation
- 8) The storage coefficient of a confined aquifer is generally: ____.
- Greater than 1
 - Between 0.1 and 1
 - Between 0.005 and 0.05
 - Less than 0.0001

B) Fill in the blanks OR write True/ False. 04

- Transmissivity is the rate at which groundwater is transmitted through a unit width of aquifer. True/False
- Impermeable rock formations are example of constant-head boundaries. True/False
- Manual water-level measurement techniques include chalked steep tape, electric water-level sounders and airline methods. True/False
- _____ lakes or oceans are constant-head boundaries.

Q.2 Answer the following. (Any Six) 12

- Laminar flow.
- Define aquiclude with example.
- What is magmatic water?
- What is source & mouth in drainage basin?
- Confluence.
- Turbulent flow condition.
- Barometric efficiency.
- What is pumping test?

Q.3 Answer the following. (Any Three) 12

- Write a note on porosity and permeability with example.
- Define spring & its types.
- Write a note on cable tool drilling.
- Explain the terminologies related to well.

Q.4 Answer the following. (Any Two) 12

- Explain the role of remote sensing in hydrogeology.
- Explain hydrological cycle in detail with well labeled diagram.
- Write a note on water table contour map and give importance of hydrological mapping in groundwater studies.

Q.5 Answer the following. (Any Two) 12

- Write a note on groundwater provinces in India.
- Describe classification of aquifers with well labeled diagram.
- Write any three hydraulic properties of rock.

Seat No.	
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Set **P**

**M.Sc. (Applied Geology) (Semester - IV) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Geology & Disaster Management (2333405)**

Day & Date: Tuesday, 21-04-2026
Time: 03:00 PM To 05:30 PM

Max. Marks: 60

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)**08**

- 1) The common factors of wildfire hazards are: _____.
 - a) Lightening
 - b) Volcanic eruption
 - c) El - nino
 - d) All of the above
- 2) "Sundarbans" the largest mangrove forest in the world lies in _____ India.
 - a) West
 - b) North
 - c) East
 - d) South
- 3) Earthquake can lead to _____.
 - a) Landslide
 - b) Volcano
 - c) Liquefaction
 - d) Both a & c
- 4) What are the health effects of excess fluoride in drinking water?
 - a) Fluorosis
 - b) Toothaches
 - c) Lung disease
 - d) Intestinal infection
- 5) Which of the following atoms most often limits the primary productivity of an ecosystem?
 - a) Sulphur
 - b) Phosphorus
 - c) Nitrogen
 - d) Carbon
- 6) Phosphorus cycle absorbs phosphate in the form of _____.
 - a) HPO_3^-
 - b) P_2
 - c) PO_3^{4-}
 - d) AlOP_4
- 7) In a food chain the total amount of living material is depicted by:
 - a) Pyramid of energy
 - b) Pyramid of numbers
 - c) Pyramid of biomass
 - d) All of these
- 8) Which one is sedimentary cycle?
 - a) Oxygen cycle
 - b) Hydrogen Cycle
 - c) Nitrogen Cycle
 - d) Phosphorous Cycle

B) Fill in the blanks OR write True/ False. 04

- 1) Environmental day celebrated on _____.
- 2) Indo-gangatic plain is the most landslide prone area in India.
(True/False)
- 3) The Mount Vesuvius is the example of dormant volcano.
(True / False)
- 4) The state disaster management authority is headed by chief minister. (True / False)

Q.2 Answer the following. (Any Six) 12

- a) Differentiate between food chain and food web.
- b) What are ecological pyramids? Name the three types.
- c) What are the environmental impacts of open-cast mining?
- d) Cause of volcanic eruptions.
- e) Classify natural hazards based on their origin.
- f) What are the primary causes of landslides?
- g) What were the environmental impacts of the Uttarakhand floods?
- h) What were the primary impacts of the Nepal earthquake (2015)?

Q.3 Answer the following. (Any Three) 12

- a) Write a note on drought.
- b) What is the main cause of occurrence of earthquake?
- c) Write short note on coastal pollution.
- d) Fly ash.

Q.4 Answer the following. (Any Two) 12

- a) Discuss in detail Biogeochemical cycle.
- b) Write a note on Disaster management in India.
- c) What are different impacts of urbanization on environment?

Q.5 Answer the following. (Any Two) 12

- a) Write a note different types of waste with their sources.
- b) Define pollution. Discuss in detail causes and effects of Air pollution.
- c) Discuss use of GIS & Remote sensing in Natural disaster studies.