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**M.Sc. (Applied Geology) (Sem - I) (New) (NEP CBCS) Examination:
March/April - 2025
Mineralogy (2333101)**

Day & Date: Thursday, 15-May-2025
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) Which of the following belongs to Garnet Group mineral?
 - a) Hornblende
 - b) Pyrope
 - c) Lepidolite
 - d) Plagioclase
- 2) If the velocity of ordinary ray is greater than that of extraordinary ray the mineral is _____.
 - a) Optically Balanced
 - b) Optically negative
 - c) Optically positive
 - d) None of these
- 3) The colour of the streak of the mineral chalcopyrite is _____.
 - a) Black
 - b) Yellow
 - c) Blue
 - d) Brass Yellow
- 4) _____ is measure of the bending of a ray of light when passing from one medium into another.
 - a) Index of refraction
 - b) Relief index
 - c) Index of reflection
 - d) None of these
- 5) In uniaxial mineral when extraordinary ray has high refractive index than ordinary ray the mineral is _____.
 - a) Optically Balanced
 - b) Optically negative
 - c) Optically positive
 - d) None of these
- 6) Which is the hardest mineral?
 - a) Diamond
 - b) Olivine
 - c) Opal
 - d) Topaz
- 7) Which one of the following minerals has $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ chemical formula?
 - a) Apatite
 - b) Orthoclase
 - c) Hornblende
 - d) Gypsum

8) _____ is the colors produced when the analyzer is inserted on a thin-section microscope.

- a) Interference color
- b) Pleochroism
- c) Index color
- d) All of these

B) Fill in the blanks or write True/ False

04

- 1) Adamantine is the luster shown by Quartz. (True/False)
- 2) Anisotropic minerals are minerals that have the same properties in all directions. (True/False)
- 3) A mineral which transmits no light through a thin section under a microscope is called as Mineral. (True/False)
- 4) Microcline shows _____ twinning.

Q.2 Answer the following question (Any Six)

12

- a) Define isotropism.
- b) Define optic axis.
- c) Give physical properties of Quartz.
- d) Define luster and streak of a mineral.
- e) What is pseudomorphism?
- f) Define Extinction.
- g) Define Uniaxial mineral.
- h) Define Biaxial mineral.

Q.3 Answer the following question (Any Three)

12

- a) Describe in brief optical and physical properties pyroxene group of minerals.
- b) Define anisotropism and give the name of two anisotropic minerals.
- c) Write down applications of XRD in Mineral studies.
- d) Write a note on uniaxial & biaxial minerals.

Q.4 Answer the following (Any Two)

12

- a) Describe in short any three silicate structures.
- b) Write a detail note on concept of light under microscope.
- c) Discuss the carbonate group mineral.

Q.5 Answer the following question (Any Two)

12

- a) Write a note on Mica group mineral.
- b) Write a note on Olivine group.
- c) Write a detail note on Feldspar group.

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Set P

**M.Sc. (Applied Geology) (Sem - I) (New) (NEP CBCS) Examination:
March/April - 2025
Igneous and Metamorphic petrology (2333102)**

Day & Date: Saturday, 17-May-2025
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) Granites are: _____.
 - a) Metamorphic rocks
 - b) Plutonic igneous rocks
 - c) Sedimentary rocks
 - d) Volcanic rocks
- 2) Pegmatite rock contains one of the following in abundance: _____.
 - a) Tourmaline
 - b) Spinel
 - c) Forsterite
 - d) Andesine
- 3) Slate is the product of _____ metamorphism.
 - a) Dynamothermal
 - b) Thermal
 - c) Cataclastic
 - d) Pneumatolytic
- 4) Marble is the resultant product of thermal metamorphism on _____.
 - a) Shale
 - b) Sandstone
 - c) Limestone
 - d) Basalt
- 5) Quartz-mica schist is the resultant product of Dynamothermal metamorphism on _____ rock.
 - a) Argillaceous
 - b) Arenaceous
 - c) Calcareous
 - d) Basic igneous
- 6) Green schists are : _____.
 - a) Low pressure and low temperature rock
 - b) High pressure and high temperature rock
 - c) High pressure and low temperature rock
 - d) Low pressure and high temperature rock
- 7) Kimberlite is a: _____.
 - a) Mineral
 - b) Igneous rocks
 - c) Sedimentary rock
 - d) Metamorphic rock
- 8) The Norms of CIPW Classification is essentially a _____ classification.
 - a) Mineralogical
 - b) Chemical
 - c) Genetic
 - d) Texture

B) Fill in the blanks OR Write true/false **04**

- 1) Dyke is discordant intrusive igneous body (True/False).
- 2) Magmas or lavas are found in solid state only (True/False).
- 3) The concept of metamorphic facies was first proposed by scientist Harker (True/False).
- 4) The glaucophane and lawsonite minerals assemblage is characteristic of Blueschist facies (True/False)

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

- a) Viscosity of magma
- b) ACF diagram
- c) What is Hornfels?
- d) Megascopic properties of basalt rock
- e) Lamprophyre
- f) Batholith
- g) Thermal metamorphism
- h) A note on Gneissose rock

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

- a) Solid-solid reaction.
- b) Texture of the igneous rocks.
- c) Explain chemical properties of magma.
- d) Write a short note on AKF diagram.

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

- a) Describe in detail the origin and types of carbonatites.
- b) Describe in brief the Barrowian Metamorphic zones.
- c) A full note agents of metamorphism.

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

- a) What are paired metamorphic belts? Explain with neat labelled diagram.
- b) Define magma evolution and differentiation. Also describe the various processes of magma evolution.
- c) Write note on forms of igneous rocks.

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Set P

**M.Sc. (Applied Geology) (Sem - I) (New) (NEP CBCS) Examination:
March/April - 2025
Sedimentology and Palaeontology (2333108)**

Day & Date: Monday, 19-May-2025
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) How do sediments typically originate?
 - a) From the melting of glaciers
 - b) From the weathering and erosion of pre-existing rocks
 - c) From volcanic eruptions
 - d) From the deposition of organic materials
- 2) Which of the following best describes chemical weathering?
 - a) It involves the alteration of minerals through chemical reactions.
 - b) It occurs when organisms break down rocks.
 - c) It is the process of transporting sediments.
 - d) It is the physical breakdown of rocks into smaller fragments.
- 3) Lamination is nothing but _____.

a) Foliated structure	b) Layered structure
c) Cracked structure	d) Coarse grained structure
- 4) What is the phylum of foraminifera?

a) Mollusca	b) Gastropoda
c) Foraminifera	d) Animalia
- 5) 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) $\text{CaMg}(\text{CO}_3)$
- 6) Which of the following is an argillaceous sedimentary rocks?

a) Shale	b) Breccia
c) Sandstone	d) Limestone
- 7) Why is it important to study sedimentary structures in geology?
 - a) They are primarily of interest to biologists
 - b) They provide insights into past environmental conditions
 - c) They are only relevant for mining operations
 - d) They do not affect geological formations

- 8) 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

B) Fill in the blank or Write True or False.

04

- 1) Limestone is a type of igneous sedimentary rock composed primarily of calcium carbonate.
- 2) Mud cracks form when wet clay dries out and shrinks.
- 3) Fossils can be found in metamorphic rocks.
- 4) _____ is the scientific name for modern humans.

Q.2 Answer the following. (Any Six)

12

- a) What is fossil?
- b) Weathering and Erosion
- c) Traction and Suspension
- d) Grain size
- e) Reynold number formula
- f) Phylum and class of trilobite
- g) Lithification
- h) Crest and Trough

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) Difference between clastic and nonclastic sedimentary rocks.
- d) Explain sedimentary textures.

Q.4 Answer the following. (Any Two)

12

- a) Write a note on evolution of man.
- b) What are sedimentary deposits in marine environments?
- c) Write a note on fossil records significance in mineral exploration.

Q.5 Answer the following. (Any Two)

12

- a) Write a note on classification of sandstone.
- b) Write morphology and classification of trilobites.
- c) Explain in detail the formation and characteristics of sedimentary basins associated with convergent plate boundaries.

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Set **P**

**M.Sc. (Applied Geology) (Sem - I) (New) (NEP CBCS) Examination:
March/April - 2025
Research Methodology (2333103)**

Day & Date: Saturday, 24-May-2025
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) 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
- 2) Plagiarism can be best defined as: _____.
 - a) Incorrect citation of sources
 - b) Unauthorized use of someone else's ideas or words
 - c) Extensive use of search engines
 - d) A way to check research quality
- 3) 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
- 4) Data collection in research should be: _____.

a) Selective	b) Random
c) Systematic and accurate	d) Only qualitative
- 5) 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
- 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 search engines is most commonly used for academic research?
- a) Yahoo
 - b) Bing
 - c) Google Scholar
 - d) Duck Duck Go

B) Fill in the blanks OR write true/ false

04

- 1) Advanced search allows for more detailed and specific filtering options. (TRUE/FALSE)
- 2) YouTube is not typically used in research presentation or documentation. (TRUE/FALSE)
- 3) Literature review is not a component of a research paper? (TRUE/FALSE)
- 4) Coral Draw is not typically used in research presentation or documentation. (TRUE/FALSE)

Q.2 Answer the following. (Any Six)

12

- a) What is the impact factor of a journal?
- b) Differentiate between ISSN and ISBN.
- c) Define the objectives of research.
- d) List some search engines commonly used in academic research
- e) Describe how MS Excel can be used in research data analysis.
- f) Define research ethics and its importance.
- g) Give any two purpose of literature review.
- h) Explain any two advantages of power point.

Q.3 Answer the following. (Any Three)

12

- What is the importance of literature review?
- List different types of research.
- What is plagiarism, and why is it a concern in research?
- Why is record-keeping essential in research?

Q.4 Answer the following. (Any Two)

12

- Describe Qualitative and Quantitative data collection method.
- Discuss the importance of internet browsing in modern research.
- Explain the SCOPUS index and its significance in academic research.

Q.5 Answer the following. (Any Two)

12

- Note on Impact factor.
- Describe different types of search engines.
- What are the criteria for quality research?

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**M.Sc. (Applied Geology) (Sem - II) (New) (NEP CBCS) Examination:
March/April - 2025
Indian Stratigraphy (2333201)**

Day & Date: Wednesday, 14-May-2025
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 of the following is younger mountain chain?

a) Andes	b) Himalayas
c) Alps	d) Zagros
- 2) The cretaceous rocks of fresh water origin which occur in Madhya Pradesh are called the _____.

a) Lameta bed	b) Bagh bed
c) Nimar sandstone	d) Umia sandstone
- 3) During which geological time Dinosaur was flourish on earth?

a) Proterozoic	b) Permian
c) Jurassic	d) Tertiary
- 4) Which is the youngest era in the geological time scale?

a) Precambrian	b) Palaeozoic
c) Mesozoic	d) Cenozoic
- 5) The sediments of the 'Dharwar Super-group' were deposited over a basement of _____.

a) Slates and phyllites
b) Marbles and Conglomerates
c) Sargur Schists and Peninsular Gneissic complex
d) Basalts and conglomerates
- 6) Gulcheru quartzite and Vempalle shales belong to _____.

a) Kistna group	b) Nallamalai group
c) Cheyair group	d) Papaghni group
- 7) Kaladgi group belongs to _____.

a) Proterozoic era	b) Archaean era
c) Mesozoic era	d) Cenozoic era
- 8) The oldest group of Vindhyan Super-group is _____.

a) Papaghni Group	b) Semri Group
c) Rewa Group	d) Bhandar Group

B) Fill in the blank or Write True/False. 04

- 1) The first jawed fishes appeared during Silurian period. (True/False)
- 2) _____ propounded the concept of uniformitarianism.
- 3) _____ era is called as the age of reptiles.
- 4) A gap in deposition of the sedimentary sequence is called as _____.

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

- a) What is non-conformity? Explain with diagram.
- b) What are intertrappean and intratrappean beds?
- c) Define magneto- and litho- stratigraphy?
- d) Name any four fossils of Gondwana sequence.
- e) Name the groups of Vindhyan supergroup.
- f) Define mass extinction and give example.
- g) Write a note on distribution of Palaeozoic rocks in India.
- h) Name the Proterozoic basins of peninsular India.

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

- a) Write a note Neogene-Quaternary boundary.
- b) Write a note on Papaghani group of Cuddapah Supergroup.
- c) What is stratigraphy? Write a brief account on any two of its principles.
- d) Write a detailed note on Eastern Ghat Mobile belt.

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

- a) Explain the Triassic of Spiti.
- b) Write down the stratigraphy and classification of Delhi supergroup.
- c) What are stratigraphic contacts? Discuss in detail its types.

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

- a) Write a detailed note on Dharwar craton.
- b) Write a brief note on the stratigraphy and classification of Gondwana formations of India.
- c) Explain the geological time scale in detail.

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**M.Sc. (Applied Geology) (Sem - II) (New) (NEP CBCS) Examination:
March/April - 2025
Structural Geology and Geotectonics (2333202)**

Day & Date: Friday, 16-May-2025
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) Match the following:

- | I | II |
|---------------------------|---|
| 1. Hade | i. Vertical slip |
| 2. Throw | ii. Total displacement |
| 3. Heave | iii. Angle between fault plane and vertical plane |
| 4. Net slip | iv. Horizontal dip slip |
| a) 1-i, 2-iii, 3-ii, 4-iv | b) 1-i, 2-ii, 3-iii, 4-iv |
| c) 1-iii, 2-i, 3-iv, 4-ii | d) 1-ii, 2-iv, 3-i, 4-iii |

2) Choose the correct statement:

- Vertical faults have a footwall in downthrow side and hanging wall in upthrow side.
- Vertical faults have a hanging Wall in downthrow side and footwall in down throw side.
- Vertical faults have neither a footwall nor a hanging wall.
- All the statements are wrong

3) The minimum thickness between two tangents for a given value of limb dip on two surfaces of a folded layer is called:

- Isogonal thickness
- True thickness
- Orthogonal thickness
- All the above terms may be applied

4) The plunge and pitch are equal when the beds are: _____.

- Horizontal
- Inclined
- Inclined at 45°
- Vertical

5) Two sets of related folds whose axial surfaces are inclined towards one another are called: _____.

- Parallel folds
- Similar folds
- Conjugate folds
- Complex folds

- 6) The lithospheric plate's slides past one another and that the plates neither gain nor lose surface areas called _____.
a) Constructive plate margin
b) Destructive plate margin
c) Conservative plate margin
d) All of the above
- 7) Lines joining points of equal limb dip in successive layers through the fold profile are known as: _____.
a) Agonic lines
b) Isohyetes
c) Dip isogans
d) Contour lines
- 8) "Strain is proportional to stress in elastic deformation" is known as: _____.
a) Poisson's ratio
b) Hooke's law
c) Smith's law
d) None of these

B) Fill in the blank OR True /False.**04**

- 1) The angle between any line and its horizontal projection measured in a vertical plane is the _____ of the line.
- 2) Ptygmatic type of fold is associated with migmatite. (True/False)
- 3) A thrust fault is: A reverse fault with fault plane at < 45 degree. (True/False)
- 4) Transform fault is a: dip-slip fault. (True/False)

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

- a) Define of strike and dip with sketch.
- b) Write a short note on fault terminology.
- c) Write a short note on apparent dip and true dip.
- d) Write a short note on reverse fault with sketch.
- e) Write a short note on strike joints.
- f) Write a short note on benioff zone.
- g) Write a short note on Eparchaeon unconformity.
- h) Write a short note on volcanic mountain belts.

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

- a) Write a note on continental shelf, slope and abyssal plane with sketch.
- b) Write note plate tectonics and give brief account on transform plate boundary.
- c) Define fold and its geometry with proper sketch and label.
- d) Write a brief note on types of unconformity with sketch.

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

- a) Write a note on method of analysis of neotectonics.
- b) Give brief note on convergent plate boundaries with suitable example
- c) Write a note on Ocean margins and their characteristics and associated processes.

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

- a)** Write a note on sea floor spreading.
- b)** Write a note on process of formation of Himalaya.
- c)** Write a note on Tectonic framework of Indian subcontinent.

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**M.Sc. (Applied Geology) (Sem - II) (New) (NEP CBCS) Examination:
March/April - 2025
Fundamental of Remote Sensing and GIS (2333207)**

Day & Date: Tuesday, 20-May-2025
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) Who is the father of GIS?

a) Roger Williams	b) Pisharoth Rama Pisharoty
c) Kiran Kumar AlurSeelin	d) Roger Tomlinson
- 2) Which among the following is the first Indian remote sensing satellite.

a) Quick Bird	b) SPOT
c) IRS-1A	d) MOS
- 3) Which of the following is an example of a passive remote sensing technology?

a) Landsat	b) LiDAR
c) SONAR	d) RADAR
- 4) Polar orbiting satellites are generally placed at an altitude range of _____.

a) 7-15km	b) 7000-15000km
c) 700-1500km	d) 70-150km
- 5) DIP is known as _____.

a) Digital Image Process	b) Dot Image Process
c) Digital Image Product	d) All of the above
- 6) LISS-I is of spatial resolution _____.

a) 10 m	b) 90 m
c) 70 m	d) 72 m
- 7) Ratio between map distance and ground distance _____.

a) Map scale	b) Projection
c) Resample	d) Datum
- 8) The word RADAR is an acronym for _____.

a) Radio Detection and Rays
b) Reflection Detection and Range
c) Radio Device and Range
d) Radio Detection and Ranging

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

- 1) LISS is an example of Passive remote Sensing (True /False)
- 2) WiFS stand for _____.
- 3) In visible region, the blue light is having a wave length range of
- 4) The human eyes can detect infrared energy (True/False)

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

- a) Define Remote Sensing?
- b) Aerial photography
- c) What passive remote sensing?
- d) Define tone and texture in photo recognition
- e) What is false colour composite?
- f) What are binary images
- g) What is DEM?
- h) Global Positioning Systems?

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

- a) Write a note on Multispectral scanners.
- b) A camera having focal length of 30 cm is used to take vertical photography of a terrain having an average elevation of 1200 m. What is the height above the sea level at which the aircraft must fly in order to get the scale of 1: 7000?
- c) What are atmospheric windows
- d) Explain vector and raster data models in GIS

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

- a) Explain electromagnetic spectrum
- b) Describe Hardware and software requirement for GIS
- c) Explain the applications of remote sensing in mineral exploration

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

- a) write note on components of GIS
- b) Define Scattering explain type of scattering
- c) Give brief description of history and development of remote sensing.

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**M.Sc. (Applied Geology) (Sem - III) (New) (NEP CBCS) Examination:
March/April - 2025
Geophysical and Geochemical Exploration (2333301)**

Day & Date: Thursday, 15-May-2025
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) Inclination is the angle between degrees of the magnetic field _____.
 - a) Above and below the horizontal
 - b) Below the horizontal
 - c) Both a and b
 - d) None of the above
- 2) What is the scale of mapping used in detailed exploration?
 - a) >1:5000
 - b) 1:25000
 - c) 1:10000
 - d) <1:5000
- 3) What is the role of a geophysicist in mineral exploration?
 - a) To collect rock samples
 - b) To analyze mineral composition
 - c) To interpret geophysical data
 - d) To design drilling programs
- 4) What is the principle behind the magnetic method?
 - a) Measurement of Earth's gravitational field
 - b) Measurement of Earth's seismic velocity
 - c) Measurement of Earth's electrical field
 - d) Measurement of Earth's magnetic field
- 5) What is the main disadvantage of using GPR?
 - a) Sensitivity to moisture content
 - b) High cost
 - c) Low resolution
 - d) Difficulty in interpreting data
- 6) What is the role of geophysicist in environmental studies?
 - a) To monitor groundwater contamination
 - b) To assess landfill stability
 - c) To detect underground storage tanks
 - d) All of the above

- 7) Instrument used in magnetic survey is _____.
a) Magnetometer b) Gravimeter
c) Thermometer d) None of the above
- 8) Which of the following is not a primary geochemical sampling medium?
a) Soil b) Rock
c) Water d) Air

B) Write True/False**04**

- 1) Gravity survey can be used to detect dense ore bodies like those containing iron ore or lead-zinc sulfide.
- 2) Stream sediment geochemistry is primarily used to explore for placer deposits.
- 3) Geobotanical indicators are plant species or plant communities that are associated with specific mineral deposits.
- 4) Resistivity surveys measure the electrical conductivity of the subsurface.

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

- a) Prospecting
- b) Ferromagnetic
- c) Any two objectives of mineral exploration
- d) Reconnaissance Survey
- e) Sample
- f) Ore
- g) Gravity
- h) Paramagnetic

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

- a) Explain any two types of sampling methods.
- b) Write a note on Geochemical mobility and dispersion.
- c) Write merits and demerits of geobotanical indicators.
- d) Difference between seismic reflection and refraction

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

- a) Write in detail about gravity method.
- b) Explain cable tool drilling with its advantages and disadvantages.
- c) Write a note on types of electrical surveys.

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

- a) Write a note on magnetic method.
- b) Write classification of geochemical surveys.
- c) Write a note on biogeochemical and geobotanical survey.

Day & Date: Saturday, 17-May-2025
Time: 11:00 AM To 01:30 PM

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

08

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

- 1) What is the full form of CIL?
- 2) Kerala is the largest producer of Thorium in India. (True / False)
- 3) _____ is the richest oil deposits in India.
- 4) Fossil fuels can be made in the laboratory. (True / False)

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

- a) Define fossil fuel.
- b) What are the disadvantages of fossil fuels?
- c) Explain any two types of coal.
- d) What is Coal seam?
- e) What is Radioactive substances?
- f) Explain any two types of radio active decay.
- g) What are the hazards of radioactivity?
- h) What is Geochronology?

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

- a) What are the benefits of Underground Coal Gasification?
- b) Explain any two types of structural traps.
- c) Describe the types of fuel.
- d) Methods of exploration for radioactive mineral deposits.

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

- a) Write a brief note mineralogy and geochemistry of thorium radioactive minerals.
- b) Write note on Origin of coal.
- c) Write a brief note on Coal bed Methane (CBM).

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

- a) Write a note on coal hydrogenation and coal combustion.
- b) Write brief note on conventional energy resource.
- c) Give an account of the geology and hydrocarbon occurrence in Cauvery basin.

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Set P

**M.Sc. (Applied Geology) (Sem - III) (New) (NEP CBCS) Examination:
March/April - 2025
Advance Surveying and Mapping (2333311)**

Day & Date: Monday, 19-May-2025
Time: 11:00 AM To 01:30 PM

Max. Marks: 60

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.

08

- 1) The plane table surveying is _____.
 - a) most suitable for preparing small-scale maps
 - b) less costly than a theodolite survey
 - c) particularly advantageous in magnetic area
 - d) all of the above
- 2) A metallic tape is made up of _____.
 - a) Steel
 - b) Invar
 - c) Linen
 - d) Cloths and wire
- 3) Local attraction in compass surveying may exist due to _____.
 - a) incorrect levelling of the magnetic needle
 - b) loss of magnetism of the needle
 - c) friction of the needle at the pivot
 - d) presence of magnetic substances near the instrument
- 4) In a prismatic compass, the zero is marked on the _____.
 - a) North end
 - b) South end
 - c) East end
 - d) West end
- 5) What is the horizontal angle which it makes with the Arbitrary meridian through one of the extremities of the line?
 - a) True bearing
 - b) Magnetic bearing
 - c) Arbitrary bearing
 - d) Dip
- 6) Alidade is used for _____.
 - a) Sighting
 - b) Levelling
 - c) Transferring point to ground
 - d) Drawing lines
- 7) Which of the following is not required for chain surveying?
 - a) Dumpy level
 - b) Pegs
 - c) Arrows
 - d) 20 m chain

- 8) In which of the following type of surveying in the mean surface of the earth is considered as a plane and the spheroidal shape is neglected?
- a) Plane Surveying
 - b) Geodetic Surveying
 - c) Hydrographic Surveying
 - d) Topographic Surveying

B) State True or False.**04**

- 1) A relatively fixed point of known elevation above datum is called bench mark. (True/False).
- 2) Levelling is a branch of surveying objects of which is to establish points at a given elevation or at different elevations with respect to given or assumed datum. (True/False).
- 3) Prismatic Compass is based on the reduced bearing system. (True/False)
- 4) GPS can work for day time only. (True/False)

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

- a) Definition of surveying
- b) What is meridian.
- c) Uses of Brunton compass.
- d) Modal analysis
- e) DGPS
- f) Concept of scale
- g) Any two types of geological sampling method.
- h) Application of mass spectroscopy in Earth science study.

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

- a) Dumpy level
- b) RF factor
- c) Plane and geodetic surveying
- d) Principal of X ray Fluorescence (XRF)

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

- a) Explain the procedure to take readings using theodolite.
- b) Write full note on chain offsetting.
- c) Discuss various uses of toposheet.

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

- a) What is map projection? Explain its importance and types.
- b) Define bench mark and also explain various type of bench mark.
- c) Explain detail procedure of preparation of thin section of rocks.

Seat No.	
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Set P

**M.Sc. (Applied Geology) (Sem - III) (Old) (CBCS) Examination:
March/April - 2025
Climatology & Oceanography (MSC019301)**

Day & Date: Thursday, 15-May-2025
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
2) Figures to right indicate full marks.

Q.1 A) Choose correct alternative. 10

- 1) The environmental laps rate or normal laps rate in the atmosphere is _____.
 a) 6.5 °C per kilometer b) 8.5 °C per kilometer
 c) 11.5 °C per kilometer d) 0.5 °C per kilometer
- 2) Ozone is generated between _____.
 a) 10 to 15 km b) 15 to 30 km
 c) 30 to 45 km d) 45 to 50 km
- 3) Using satellite measurements accumulated since the late 1970s, scientists estimate Earth's average albedo is about _____.
 a) 0.30 b) 1.00
 c) 0.70 d) 0.15
- 4) Location of deeps in the ocean is generally _____.
 a) Perpendicular to the recent folded mountains of the earth's crust
 b) Parallel to the recent folded mountains of the earth crust
 c) Oblique to the recent folded mountains of the earth's crust
 d) None of the above
- 5) The horizontal and vertical distribution of the temperature in the ocean is mainly affect by _____.
 a) Latitude
 b) Unequal distribution of land and water
 c) Ocean currents
 d) All of the above
- 6) The Ocean ridge system is _____.
 a) Interconnected worldwide from ocean to ocean
 b) Limited to particular ocean
 c) Except Artic Ocean, Interconnected throughout all the oceans
 d) Every Ocean has its own ridge system and not interconnected

- 7) Thick wedges of sediments deposited at the base of continental slope are called as _____.
a) Continental slope b) Continent
c) Abyssal plain d) Continental rise
- 8) Aleutian trench located in _____.
a) Pacific Ocean b) Atlantic Ocean
c) Arctic Ocean d) Indian Ocean
- 9) Ocean currents are generated due to _____.
a) Temperature difference b) Salinity difference
c) Density difference d) All of the above
- 10) Isohalines are _____.
a) The line that join the places of equal salinity
b) The line that join the places of equal temperature
c) The line that join the places of equal humidity
d) The line that join the places of equal precipitation

B) Fill in the blanks OR write true/false.**06**

- 1) Atmospheric pressure is measured by means of an instrument called as _____.
- 2) The atmosphere exerts pressure of 1034 gm per square cm at sea level. (True/False).
- 3) Equatorial low pressure belt lies between 10° N and 10°S. (True/False)
- 4) Sodium's calculated residence time in the ocean of 68 million years is one of the longest residence times for an element (True/False)
- 5) The average annual temperature of the northern hemisphere oceans is around _____ while the average annual temperature of the southern hemisphere oceans is around 16°C.
- 6) _____ is expressed as the amount of salt in grams dissolved in seawater per 1000gm.

Q.2 Write a short note on.**16**

- a) Explain Submarine Canyons with net sketch and label.
- b) Write a note on major chemical constituents in the sea water.
- c) Write a note on density distribution in the ocean.
- d) Write a note on any four factors of distribution of the temperature over the Earth.

Q.3 Answer the following.**16**

- a) Discuss in brief controls of climates with sketch.
- b) Give brief account on solar radiation and albedo.

- Q.4 Answer the following. 16**
- a) Give brief note on morphology of the India Ocean with suitable examples.
 - b) Write a brief note on distribution of atmospheric pressure over the earth.
- Q.5 Answer the following. 16**
- a) Give brief account on sound transmission in sea water.
 - b) Write a note on factors affecting wind motion.
- Q.6 Answer the following. 16**
- a) With suitable example write brief account on mid oceanic ridge.
 - b) Write a note on continental margins. Explain difference between active continental margin and passive continental margin with suitable examples.
- Q.7 Answer the following. 16**
- a) Give brief account on Petroleum occurrences and exploration activity around the margins of the Indian Ocean.
 - b) Write a note on Single-Cell Model and Three-Cell Model of the General Circulation.

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**M.Sc. (Applied Geology) (Sem - IV) (New) (NEP CBCS) Examination:
March/April - 2025
Ore Geology (2333401)**

Day & Date: Wednesday, 14-May-2025
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) Which of the following is / are ores of Tungsten?
 - a) Scheelite
 - b) Azurite
 - c) Pyrite
 - d) Psilomelane
- 2) Polymetallic nodules of the ocean floor contain significant amounts of _____.
 - a) U-Th-Nb
 - b) Pb-Zn-Ti
 - c) Hg-Mo-Pt
 - d) Cu-Ni-Co
- 3) "Gossan" is a _____.
 - a) Calcareous residue
 - b) Siliceous residue
 - c) Ferruginous residual
 - d) Organic residue
- 4) The lower unaffected part of the oxidation and supergene enrichment deposits is Called _____.
 - a) Zone of oxidation
 - b) Zone of supergen sulphide enrichment
 - c) Hypogene
 - d) Mesogene zone
- 5) The deposits that have formed simultaneously with the enclosing rock are called _____.
 - a) Syngenetic
 - b) Epigenetic
 - c) Hydrothermal
 - d) Metamorphic
- 6) Which one of the following mineral/s is an example of Late Magmatic deposit?
 - a) Magnetite
 - b) Ilmenite
 - c) Chromite
 - d) All the above
- 7) Hydrothermal deposits mostly _____.
 - a) Epigenetic
 - b) Syngenetic
 - c) Residual
 - d) Placers

- 8) Cavities in the vein left unfilled are called as _____.
a) Crustification b) Vugs
c) Comb structure d) None of these**

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

04

- 1) _____ mineral is characterized by cherry red streak.
- 2) Chromite is primarily found in ultramafic igneous rocks. (True / False)
- 3) Deposits that form after the host rock is already present are called _____ Epigenetic deposits.
- 4) Quartz mineral has 2.65 g/cm^3 specific gravity. (True / False)

Q.2 Answer the following question (Any Six)

12

- a) Juvenil waters
- b) Define syngenetic and epigenetic deposit.
- c) Volcanogenic deposits
- d) Strata bound ore deposit
- e) Physical and Optical properties of important ore minerals
- f) Explain potassic alterations.
- g) Write a full note on fluid Inclusion.
- h) Metasomatism

Q.3 Answer the following question (Any Three)

12

- a) Ores in igneous rocks
- b) Heavy mineral separation method
- c) Lindgren's classification of ore deposits
- d) Residual deposit

Q.4 Answer the following question (Any Two)

12

- Explain in detail Metallogenic epochs in India.
- Paragenesis and Zoning
- Give classification of Fluid Inclusion based on their origin.

Q.5 Answer the following question (Any Two)

12

- a) National Mineral Policy
- b) Discuss late magmatic deposit.
- c) Stratigraphic, lithological and Structural controls on mineral localization.

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Set	P
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**M.Sc. (Applied Geology) (Sem - IV) (New) (NEP CBCS) Examination:
March/April - 2025
Hydrogeology (2333402)**

Day & Date: Friday, 16-May-2025
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 hydrograph primarily represents: _____.
 - a) Water quality
 - b) Rainfall vs temperature
 - c) Stream discharge over time
 - d) Groundwater table fluctuations
- 2) Water table fluctuation is influenced by: _____.
 - a) Seismic activity
 - b) Barometric pressure
 - c) Rainfall, withdrawal, and recharge
 - d) None of the above
- 3) Which rock type has the least permeability?
 - a) Sandstone
 - b) Granite
 - c) Limestone
 - d) Shale
- 4) Hydro stratigraphic units are defined based on: _____.
 - a) Rock color
 - b) Age of rocks
 - c) Water bearing properties
 - d) Fossil content
- 5) Wetlands play an important role in: _____.
 - a) Increasing runoff
 - b) Decreasing infiltration
 - c) Groundwater recharge and flood control
 - d) Preventing evaporation
- 6) Groundwater moves from areas of: _____.
 - a) Low pressure to high pressure
 - b) High hydraulic head to low hydraulic head
 - c) Surface to atmosphere
 - d) Ocean to land

- 7) Tidal efficiency is related to: _____.
 a) Groundwater pumping
 b) Soil erosion
 c) Precipitation events
 d) Response of confined aquifers to ocean tides
- 8) Electrical analog models simulate groundwater flow using: _____.
 a) Electrical resistors b) Magnetic sensors
 c) Capillaries d) Fluid channels

B) Fill in the blank OR write true/false**04**

- 1) Transmissivity is the rate at which groundwater is transmitted through a unit width of aquifer. True/False
- 2) _____, lakes or oceans are constant-head boundaries.
- 3) Impermeable rock formations are leaky boundaries. True/False
- 4) Digital elevation model does not provide topographic insights into boundary influence. True/False

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

- a) Laminar flow.
 b) Define Aquitard with example.
 c) What is juvenile water?
 d) What is source in basin?
 e) Define watershed.
 f) What is confluence and tributary?
 g) What is pumping test?
 h) Water table contour map.

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

- a) Write a note on porosity and its types with diagrams.
 b) Define spring & its types.
 c) Write a note on rotary drilling.
 d) Factors affecting runoff and infiltration in drainage basin.

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

- a) Explain the role of remote sensing in hydrogeology.
 b) Write a note on Darcy's law and its application.
 c) Explain hydrological cycle in detail with well labeled diagram.

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

- a) Explain types of well.
 b) Describe classification of aquifers with well labeled diagram.
 c) Write any three hydraulic properties of rock.

Day & Date: Tuesday, 20-May-2025
Time: 03:00 AM To 05:30 PM

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

08

- Page 1 of 2

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

- 1) The word disaster comes from_____ Language.
- 2) When did 'Earth Day' celebrated?
- 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) How does remote sensing aid in drought monitoring?
- f) Why is Maharashtra particularly vulnerable to droughts?
- g) What geological factors contributed to the Killari earthquake?
- h) Explain the concept of coastal zone management

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

- a) Food web
- b) Use of excessive fertilizers
- c) Explain in short BOD & COD.
- d) Environmental protection acts

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

- a) Discuss in detail Biogeochemical cycle.
- b) What are floods? explain cause and suggest mitigation measures.
- c) What are natural hazards. Explain causes of landslide

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

- a) Control and management of waste materials.
- b) Define pollution. Discuss in detail causes and effects of Air pollution.
- c) Write a note on natural disaster like Koyana Earthquake.

Seat No.	
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Set **P**

**M.Sc. (Applied Geology) (Sem - IV) (New/Old) (CBCS) Examination:
March/April - 2025
Fuel Geology (MSC019402)**

Day & Date: Friday, 16-May-2025
Time: 03:00 PM To 06:00 PM

Max. Marks: 80

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.**10**

- 1) The process of converting coal into coke is called _____.
a) Carbonization b) Carbonation
c) Coking d) Isomerization
- 2) _____ state has the largest coal reserves in India.
a) Assam b) Chhattisgarh
c) Jharkhand d) Maharashtra
- 3) Which of the following is least likely to contain an oil trap?
a) An anticline b) Fault
c) Natural stratigraphy d) Syncline
- 4) Which of the following is a non-conventional energy resource?
a) Solar b) Crude oil
c) Biomass d) Coal
- 5) Good quality of coal should have _____ % of oxygen.
a) high b) 0
c) 100 d) low
- 6) Plant materials, vegetation and waste from living things are regarded as _____.
a) Fossil fuel b) Coal
c) Bio mass d) Crude
- 7) Which state have maximum thorium deposits?
a) Andhra Pradesh b) Jharkhand
c) Tamil Nadu d) Kerala
- 8) According to the inorganic theory in which form does the petroleum is found under the earth's crust?
a) Metal Flourites b) Metal carbides
c) Metal pyrites d) Metal oxides

- 9) Which geological era have maximum reserves of oil and gas?
a) Mesozoic rocks b) Tertiary rocks
c) Palaeozoic rocks d) Proterozoic rock
- 10) The TOC in a good potential source rock is _____.
a) 0.5-1% b) 0.1-0.5%
c) 2-10% d) 0.01-2%

B) Fill in the blank or Write True or False.**06**

- 1) The unit for measuring crude oil density is _____.
- 2) _____ is the primary source of thorium in India.
- 3) The age of Rajasthan basin is Cretaceous to Pliocene, (True/False)
- 4) In general, Sandstone is a good reservoir rock. (True/False)
- 5) Only _____ type of coal can be coked effectively.
- 6) A layer of impermeable rock, called the _____ prevents the upward or lateral escape of the petroleum.

Q.2 Write a short note on.**16**

- a) Define and explain Lithotypes.
- b) Write a note on oil migration.
- c) Write a note on Fluidized Bed Combustion.
- d) Write a short note on distribution of Uranium deposits in India.

Q.3 Answer the following.**16**

- a) Write a detailed note on non-conventional natural resources.
- b) Write a note on traps, explain its types with labelled diagrams.

Q.4 Answer the following.**16**

- a) Write a note on the types of coals.
- b) Write a detailed note on Mumbai Offshore basin.

Q.5 Answer the following.**16**

- a) Write a note on gamma ray logging.
- b) Explain the status of conventional energy resources in India.

Q.6 Answer the following.**16**

- a) Write a detailed note on the significance of fuels in economic development.
- b) Explain the categorization of petroliferous basins. Give suitable examples.

Q.7 Answer the following.**16**

- a) Write a detailed note on spontaneous combustion along with the associated chemical reactions. Comment on its preventive measures.
- b) Write a note on application of radioactivity in geochronometry.

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Set P

**M.Sc. (Applied Geology) (Sem - IV) (New/Old) (CBCS) Examination:
March/April - 2025
Environmental Geology & Disaster Management (MSC019403)**

Day & Date: Tuesday 20 May 2025
Time: 3:00 P.M. To 6:00 P.M

Max. Marks:80

- Instructions:** 1) Q. Nos. 1 and 2 are compulsory.
2) Attempt any three questions from Q. No. 3 to Q. No. 7.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. 10

- 1) Body waves consist of the: _____.
 a) P waves only b) S waves only
 c) P and S waves d) Surface waves
- 2) How many seismograph stations are needed to locate the epicenter of an earthquake?
 a) 1 b) 2
 c) 3 d) 4
- 3) Which one has examples of volcanoes caused by 'convergent tectonic plate, coming together?
 a) Mid Atlantic ridge b) Pacific ring of fire
 c) Both (a) and (b) d) None of these
- 4) Which of the following is mainly responsible for the causes of water pollution?
 a) Afforestation b) Oil refineries
 c) Paper factories d) Both b and c
- 5) Which of the following statements are true about CNG - Compressed natural gas?
 a) It is a clean fuel b) It is a harmful fuel
 c) It is a polluting fuel d) All of the above
- 6) When did Tsunami struck the east coast of India in recent times?
 a) December 26, 2004 b) December 26, 2014
 c) December 24, 2004 d) January 26, 1997
- 7) Which of the following agents is responsible for turning the Taj Mahal yellow?
 a) Sulphur b) Chlorine
 c) Sulphur dioxide d) Nitrogen dioxide

- 8) Natural disasters are _____.
 - a) Relatively slow movements in comparison to hazard
 - b) Relatively sudden and cause large scale disaster in comparison to hazard
 - c) Relatively small scale disaster
 - d) Disaster with no damage
- 9) When a mass of earth saturated with water slides down a hill slope it is called _____.
 - a) Ocean current
 - b) Landslide
 - c) Floods
 - d) Cyclones
- 10) What was the cause of Koyna Earthquake?
 - a) Current Pressure in Koyna reservoir
 - b) Hydraulic Pressure in Koyna reservoir
 - c) d) Cyclone in Koyna reservoir
 - d) d) None of the above

B) Fill in the blanks OR write true/false.

06

- 1) An active volcano Mauna Loa is located in _____.
- 2) Barren Island is an island located in the Andaman Sea. It is the only confirmed active volcano in the Indian subcontinent.
(True/False)
- 3) Bhopal Gas Disaster is a kind of natural disaster (True/False)
- 4) Richter scale is a logarithmic scale (True/False)
- 5) The 1993 _____ earthquake in central peninsular India is the latest intracratonic event.
- 6) What was the magnitude of koyna earthquake in 10 December 1967 _____.

Q.2 Write a short note on.

16

- Discuss in short ecologic pyramids.
- Write a note on Tsunami.
- Explain Waste disposal and recycling methods.
- Write a note on biogeochemical cycles.

Q.3 Answer the following.

16

- a)** What is air pollution? Write a note on causes of air pollution.
- b)** Write brief note on reservoir-induced seismicity zone in Maharashtra.

Q.4 Answer the following.

16

- Write a note on types of Landslide and sketch and label its morphology.
- Write a brief note on applications of remote sensing and GIS for disasters study like flood, landslide and Earthquakes.

- Q.5 Answer the following.** **16**
- a) Explain mitigations and measures for Earthquakes.
 - b) Write a note on drought prone regions of central Maharashtra.
- Q.6 Answer the following.** **16**
- a) Write a note on intracratonic seismicity of central India.
 - b) Write a note on coastal zone management.
- Q.7 Answer the following.** **16**
- a) Write a note on Environmental protection - legislative measures in India.
 - b) Write a note on causes of soil and water pollution.