

**S-0319**

**Sub. Code**

**23BGE1C1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**First Semester**

**Geology**

**GENERAL GEOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define volcanic crater.
2. What is seismograph?
3. Define mountains.
4. What is sea floor spreading?
5. Define groundwater.
6. What is karst topography?
7. What do you mean base level of erosion?
8. Define glaciers.
9. What are sea currents?
10. What are coral reefs?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) What are extinct volcanoes? – Describe.

Or

- (b) Describe seismic waves with sketch.

12. (a) What is mountain chain? – Describe with example.

Or

- (b) Illustrate Pratt's theory of Isostasy with sketch

13. (a) Outline geological work of wind.

Or

- (b) Differentiate Hot springs and geysers.

14. (a) Outline graded profile of a river with sketch.

Or

- (b) Describe braided river stream with sketch.

15. (a) Write note on types of tides.

Or

- (b) Describe types of shorelines with sketch.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Define earthquake. Evaluate Mercalli's intensity scale of earthquake measurement.
17. Explain plate boundaries and mechanism of plate motion with sketch.

18. Discuss geological work and landforms produced by groundwater.
  19. Explain different types of drainage patterns with sketch.
  20. What are lakes and give a detailed account on Indian lakes?
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**S-0320**

**Sub. Code**

**23BGE1C2**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**First Semester**

**Geology**

**GEOSTATISTICS**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define statistics.
2. What is tabulation of data?
3. Define a bar diagram.
4. What is a histogram?
5. Define arithmetic mean.
6. What is the mode?
7. Define quartile deviation.
8. What is the least square method?
9. Define correlation.
10. What is regression?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write about the scope of statistics.

Or

- (b) Describe the steps in constructing a frequency distribution.

12. (a) What are the advantages of using pie diagrams?

Or

- (b) Describe about the merits and demerits of the median.

13. (a) Define range and explain its uses.

Or

- (b) Differentiate between absolute and relative measures of dispersion.

14. (a) Describe method of least squares for fitting a straight line.

Or

- (b) What is Karl Pearson's coefficient of correlation? Add note on its significance.

15. (a) Write about the Spearman's rank correlation method.

Or

- (b) Describe the properties of regression equations.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the different types of graphical representation of data.
  17. Explain the various measures of central tendency with their merits and demerits.
  18. Discuss different measures of dispersion with formulas and examples.
  19. Explain curve fitting using the least square method for a straight line and parabola.
  20. Compare and contrast correlation and regression with applications.
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**S-0321**

**Sub. Code**

**23BGE1S1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**First Semester**

**Geology**

**UNDERSTANDING THE EARTH**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is the shape of the Earth?
2. Define Crust.
3. What is the Mohorovicic Discontinuity?
4. Define Earth's magnetic field.
5. Define sea-floor spreading.
6. What is a transform fault?
7. Define the Coriolis force and its impact on ocean currents.
8. Define wave erosion
9. Define major and trace elements.
10. What is the role of geochemical cycles in Earth's system?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Differentiate between meteorites and asteroids.

Or

- (b) Describe the differences between terrestrial and Jovian planets.

12. (a) Compare the lithosphere and asthenosphere.

Or

- (b) Describe the composition and structure of Earth's atmosphere.

13. (a) Elucidate the differences between continental drift and plate tectonics.

Or

- (b) Write note on the formation of volcanic island arcs.

14. (a) Describe the relationship between atmospheric circulation and weather patterns.

Or

- (b) Elucidate how wave erosion affects coastal regions.

15. (a) Describe the significance of weathering in geochemical cycles.

Or

- (b) Describe the geochemical behavior of major elements in Earth's crust and mantle.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the origin and evolution of the universe according to the Big Bang theory.
  17. Explain the composition and properties of Earth's crust, mantle, and core
  18. Discuss the causes and effects of earthquakes in different tectonic settings.
  19. Discuss the factors influencing global climate change.
  20. Explain the significance of isotopic fractionation in geochemical processes.
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**S-0322**

**Sub. Code**

**23BGE1FC**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**First Semester**

**Geology**

**FUNDAMENTALS OF GEOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Define Tidal Hypothesis.
2. What are Inner planets and outer planets?
3. What is meant by Mohorovic discontinuity?
4. Define Sial and Sima.
5. Define Exfoliation.
6. What are the types of weathering?
7. What is ElNino?
8. List out the tropospheric phenomena?
9. What are Mid ocean ridges?
10. Define Submarine Canyon.

**Part B**

(5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b).

11. (a) Give an account of the merits and demerits of Planetesimal Hypothesis.

Or

- (b) Describe scope and branches of geology.

12. (a) Describe various discontinuities encountered within the interior of the earth.

Or

- (b) Describe the three layered structure of the earth.

13. (a) Enumerate the various geomorphic agents of transport.

Or

- (b) Give account on the relief features of third order.

14. (a) Describe the Composition of atmosphere.

Or

- (b) Write note on the types of Slow mass flowage.

15. (a) Write a brief note on Sea mounts and guyots.

Or

- (b) Distinguish between the features of Continental shelf and Continental rise.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Illustrate on Earth as a member of Solar system. Add a note on inner planets and outer planets.
  17. Write in detail on the Age of the earth and various methods of age determination of the earth.
  18. Illustrate the role of geomorphic agents with respect to peneplanation concept.
  19. Discuss the types of mass wasting with neat diagrams.
  20. Write in detail on the various structures of Ocean basin.
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**S-0323**

**Sub. Code**

**23BGE2C1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Second Semester**

**Geology**

**PALAEONTOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. Define Palaeontology.
2. What is meant by index fossils?
3. Define interseptal ridge.
4. Write two economic importance of corals.
5. Define articulate and mention the order.
6. What is adductor impression?
7. Write any two suture pattern of cephalopoda.
8. Define palaeobotany.
9. Mention any two examples for vertebrate fossils in India.
10. Define dinosaurs.

**Part B**

(5 × 5 = 25)

Answer **all** the questions. Choosing either (a) or (b).

11. (a) Write note on Petrification and Carbonisation.

Or

- (b) Give a brief note on spores and pollen.

12. (a) Describe the distinct features of palaeozoic crinoids.

Or

- (b) Describe the general morphology of blastoidea.

13. (a) Give a brief note on classification and geological history of brachiopoda.

Or

- (b) Write a note on the sutures of cephalopoda.

14. (a) Write note on Lepidodendron with neat sketches.

Or

- (b) Categorize the morphology of graptolites.

15. (a) Write short note on ornithomimid dinosaurs.

Or

- (b) Give brief account on vertebrate fossils of India.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the nature and mode of preservation of fossils.
  17. Explain the morphology, classification of Echinods with neat sketches.
  18. Write an essay on morphology, classification and geological history of pelecypoda with neat sketches.
  19. Discuss about the morphology, classification and geological history of Trilobites.
  20. Describe the followings
    - (a) Dinosaurs
    - (b) Saurischian dinosaur.
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**S-0324**

**Sub. Code**

**23BGE2S1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Second Semester**

**Geology**

**BASICS OF EARTH SCIENCES**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. List the theories explaining the formation of Universe.
2. What are outer planets?
3. Define Atmosphere.
4. List the types of satellite Orbits.
5. Define Half-life.
6. What is Conrad discontinuity?
7. Define Unconformities.
8. What are recumbent fold?
9. What is 'replacement'?
10. What is absolute dating? Give example.

**Part B**

(5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b).

11. (a) Write a short note on Nebular Hypothesis.

Or

- (b) Give a brief note on characteristics of Solar system.

12. (a) Enumerate Solstice and Equinox.

Or

- (b) Write the difference between Asteroids, Comets and Meteors.

13. (a) Give a note on Mantle.

Or

- (b) Give a note on types of Seismic waves.

14. (a) Write the parts of fault with neat diagram.

Or

- (b) What are plate boundaries? Define its types.

15. (a) What are fossil parks in Tamil Nadu? Write their Significance.

Or

- (b) Give a note on major geologic events in Palaeozoic era.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Illustrate various hypotheses on Evolution of Universe.
  17. Describe about layers of Atmosphere in detail.
  18. Give a detailed note on various radiometric methods in detecting the age of earth.
  19. Explain the types of folds with neat sketch.
  20. Give a detailed outline on types of fossilization and its mode of preservations.
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**S-0325**

**Sub. Code**

**23BGE2S2**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Second Semester**

**Geology**

**STRATIGRAPHY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** the questions.

1. What are physiographic division of India?
2. Define Archaean's
3. Define Eparchaeon Unconformity?
4. Define Rewa series
5. What is the Geological significance of Permo Carbaniferous rocks in thdia?
6. Which is the Vindhyan equivalentents in Peninsulas India
7. Name the rocks in the Lameta beds
8. What are intertrappean beds, where it occurs?
9. Importance of Siwaliks.
10. Indogangetic alluviam.

**Part B**

(5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b).

11. (a) What are the major stratigraphic formations of India?

Or

- (b) Write short note about of Archaean rocks of peninsula.

12. (a) Write short note about the Papagni series.

Or

- (b) Give a brief note on various characteristics and economic importance of Vindhyan.

13. (a) Apply climate on sedimentation of Gondwana's.

Or

- (b) Give a brief account of Palaeozoic rocks of salt range with reference to various geologic time units.

14. (a) Give a brief account about Jurassic system of Kutch.

Or

- (b) Give an account on Paleoclimate and sedimentary history of Mesozoic rocks.

15. (a) Explicit note on the stratigraphy of Varkala beds and Cuddalore sandstone.

Or

- (b) Describe the characteristics of Karewa formation.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the stratigraphy of Archaean and its economic importance.
  17. Explain Cuddapah system.
  18. Discuss about the coal deposits distribution in Gondwana super group
  19. Enumerate in detail about characteristics and description on Cretaceous of Trichy.
  20. Enumerate in detail about descriptive study of Siwalik's.
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**S-0326**

**Sub. Code**

**23BGE3C1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025.**

**Third Semester**

**Geology**

**MINERALOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is isomorphism? Give one example.
2. What is specific gravity?
3. What is monochromatic light?
4. Define refraction and reflection.
5. What is dichroism? Give an example.
6. What is an extinction angle?
7. Name the different members of feldspar.
8. What is quartz? Mention the varieties of quartz?
9. What is the chemical composition of zircon?
10. Name any two minerals from the amphibole group.

**Part B**

(5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b).

11. (a) How does magnetism help in mineral identification?

Or

- (b) Describe the effect of electricity on minerals.

12. (a) What are the uses of quartz wedge and mica plate?

Or

- (b) Differentiate isotropic and anisotropic minerals with examples.

13. (a) Give a brief account of silicate structure and their classification.

Or

- (b) Describe the uniaxial indicatrices.

14. (a) Describe the members of Olivine group with chemical composition.

Or

- (b) Write note on members of Garnet group with chemical composition.

15. (a) Write a note on Talc and steatite.

Or

- (b) Describe the properties of Kyanite and Doomite.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the physical properties of minerals based on light, heat and magnetism.
  17. Explain the construction, working and different part of a petrological microscope.
  18. Discuss dichroism and pleochroism with examples.
  19. Write a detailed note on the Feldspar group.
  20. Compare and contrast the properties and occurrences of sillimanite, Kyanite, staurolite, highlighting their geological importance.
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**S-0327**

**Sub. Code**

**23BGE3C2**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Third Semester**

**Geology**

**CRYSTALLOGRAPHY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define Unit cell.
2. What is space group?
3. Define hemimorphic form.
4. Define Holohedral form.
5. Define Tetragonal system.
6. Define Trirhomboheral class.
7. Mention different classes found in Orthorhombic system.
8. Type mineral of monoclinic system.
9. Define Twinning plane.
10. Define Twinning.

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write short notes on Law of Rational indices.

Or

- (b) Describe contact goniometer with a neat sketches.

12. (a) Enumerate symmetry elements and forms of normal class of Isometric system.

Or

- (b) Describe different forms of crystal.

13. (a) Describe normal class of Tetragonal system.

Or

- (b) Short note on scalenohedral class of Hexagonal system.

14. (a) Describe normal class of orthorhombic system.

Or

- (b) Short note on rhombic bipyramidal class of orthorhombic system.

15. (a) Give a note on twinning in feldspars

Or

- (b) Write notes on twinning in staurolite and calcite.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain Bravais lattices and, plane groups and point groups.
  17. Describe the axial characters, system, symmetry elements and forms present in :
    - (a) Garnet
    - (b) Pyrite
    - (c) Cuprite.
  18. Enumerate Dihexagonal-bipyramidal and hexagonal bipyramidal — trigonal systems.
  19. Give detailed account on orthorhombic system.
  20. Write in detail about various laws of Twinning in crystals.
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**S-0328**

**Sub. Code**

**23BGE3S1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Third Semester**

**Geology**

**GEO-HERITAGE AND GEO-TOURISM**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define Geo Heritage.
2. List any two Socio economic benefits of Geo tourism.
3. What is Geo diversity?
4. What are the major threats to geo diversity?
5. Define Geoparks.
6. List potential geo parks in Tamil Nadu.
7. What are the potential Geo heritage sites in Himachal Pradesh?
8. What are the significant geo tourism places in Uttar Pradesh?
9. Define Geo relics. Give examples.
10. Name the drafted Geo heritage bill in India.

**Part B**

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Give a short note on concepts of Geoheritage.

Or

- (b) Write a note on significance of Geo conservation.

12. (a) Give a brief note on tools to protect Geo heritage.

Or

- (b) Write a note on influence of Geological features on society.

13. (a) Describe Geological monuments in Tamil Nadu.

Or

- (b) Give a note on Varkala cliffs in Kerala.

14. (a) Write a short note on Siwalik Fossil Park.

Or

- (b) Give a note on Sapphire mines of Kashmir.

15. (a) Write a note on guidelines for selection of geosites.

Or

- (b) Write in brief about role of national government in protection of Geoheritage.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss on creation, management and benefits of Geoparks in India.

17. Explain the major threats to geo diversity in India and conservation methods.

18. Illustrate the role of UNESCO Global Geoparks and Discuss potential geo heritage sites in India for future inclusion.
  19. Discuss the geological importance of stromatolite geo sites in Sikkim and evaluate the need for their conservation.
  20. Elaborate the challenges in Geoheritage legislation in India.
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**S-0329**

**Sub. Code**

**23BGE4C1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fourth Semester**

**Geology**

**STRUCTURAL GEOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define geological map.
2. Define dip and strike.
3. What is Recumbent fold?
4. Define Foliation.
5. What is heave and throw?
6. Define Hanging wall and Footwall.
7. Define joint.
8. What is a nappe?
9. What is an angular unconformity?
10. What is overlap?

**Part B**

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Enumerate the role of topographic maps in structural studies.

Or

- (b) Describe the structural geology and its scopes.

12. (a) Describe how folds are recognized in the field.

Or

- (b) What are the three stages of deformation in rocks?

13. (a) Elucidate the difference between a horst and a graben.

Or

- (b) Describe the relation of faults with other geological structures.

14. (a) Elucidate the difference between an inlier and an outlier

Or

- (b) Describe the occurrence of joints.

15. (a) What are the criteria to recognize overlap and offlap sequences?

Or

- (b) How can you distinguish between a fault and an unconformity?

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the GPS and their parts, function and uses.
  17. Describe the classification of folds based on geometry and orientation.
  18. Explain criteria for recognizing faults.
  19. Describe the following
    - (a) Nappe
    - (b) Klippe
  20. Discuss the different types of unconformities with examples and their significance.
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**S-0330**

**Sub. Code**

**23BGE4S1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fourth Semester**

**Geology**

**FIELD GEOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define Outcrops.
2. What is trenching?
3. What is dip? Write its types.
4. Define Contours.
5. What is True Thickness?
6. List the tools for the measurements of thickness of the bed.
7. Define Sampling.
8. What is cone and quartering?
9. What is scale of the map?
10. Define indexing.

**Part B**

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Write a short note on field equipments.

Or

- (b) Give a brief note on guidelines for identification fossils in field.

12. (a) Elucidate Clinometer with neat diagram.

Or

- (b) Write note on influence of dip and ground slope on outcrops.

13. (a) Distinguish between True and Vertical thickness of beds.

Or

- (b) Describe factors that causing repetition of outcrops.

14. (a) Write a short note on size and purity in sampling.

Or

- (b) Elucidate the guidelines for packing of samples.

15. (a) Give a note on various conventional signs of map.

Or

- (b) Write the precautions to be carried out in locating the outcrops.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Elaborate the steps involved in estimation of ore reserves.
  17. Give an outline on Brunton compass with neat sketch.
  18. Write the procedures to measure the thickness of bed in detail.
  19. Explain the various types of sample collection.
  20. Discuss the geological map and report preparation in detail.
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**S-0331**

**Sub. Code**

**23BGE5C1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Geology**

**IGNEOUS PETROLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What are plutonic rocks?
2. Define metamorphism.
3. Distinguish between oversaturated and undersaturated igneous rocks.
4. What is meant by normative mineral composition?
5. What is unicomponent magma?
6. Which minerals are represented in the Forsterite—Silica system?
7. Define lamprophyre and name any two varieties.
8. Mention any two characteristic features of basalt.
9. List the compositions of carbonatites.
10. Define “petrographic province.

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Describe the classification of rocks based on their mode of formation.

Or

- (b) Describe the various intrusive forms of igneous rock.

12. (a) Illustrate the megascopic classification of igneous rocks.

Or

- (b) Explain the Tyrrel's Tabular Classification of igneous rocks.

13. (a) Discuss the binary system of Diopside–Anorthite and its significance.

Or

- (b) Explain the Albite–Anorthite system.

14. (a) Discuss in detail the petrography of diorite.

Or

- (b) Describe the composition, texture, and field occurrence of gabbro.

15. (a) Explain the diversity of igneous rocks in space and time.

Or

- (b) Explain the process of magmatic assimilation.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the processes involved in the formation of sedimentary rocks.
  17. Write detailed notes on the C.I.P.W. norm classification.
  18. Write an account of Bowen's Reaction Principle and its importance in the differentiation of magma.
  19. Describe the occurrence, petrographic characteristics of granite, Add notes on its mineral composition,
  20. Enumerate the construction and interpretation of variation diagrams, and its importance.
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**S-0332**

**Sub. Code**

**23BGE5C2**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Geology**

**SEDIMENTARY AND METAMORPHIC PETROLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Differentiate between disintegration and decomposition of rocks.
2. Define diagenesis in sedimentary geology.
3. How is clay formed as a residual deposit?
4. What is terra rossa?
5. Write a short note on calcareous chemical deposits.
6. Give short account on the chemical composition and use of gypsum.
7. Define palingenesis.
8. What is anatexis?
9. Define metasomatism.
10. What is injection metamorphism?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Describe the various agents and mechanisms involved in the transportation of sediments

Or

- (b) Classify sedimentary rocks broadly into residual, mechanical, chemical, and organic.

12. (a) Discuss the classification and mineral composition of the rudaceous group.

Or

- (b) Describe in detail the formation, composition, and texture of conglomerate.

13. (a) Explain in detail the different types of organic deposit.

Or

- (b) Discuss the formation, characteristics, and occurrence of siliceous deposits.

14. (a) Explain metamorphic facies, grades, and zones, and discuss their significance.

Or

- (b) Describe in detail the agents and kinds of metamorphism.

15. (a) Describe the process of dynamothermal metamorphism.

Or

- (b) Explain plutonic metamorphism and describe the rocks formed under this condition.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the mechanical, chemical and organic structures found in sedimentary rocks.
  17. Give an account of the arenaceous group of sedimentary rocks with their texture and mineralogy.
  18. Describe the classification and formation of chemical sedimentary deposits.
  19. Describe the various textures and structures of metamorphic rocks.
  20. Give the petrographic description of quartzite, slate, gneiss and marble.
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**S-0333**

**Sub. Code**

**23BGE5C3**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Geology**

**PHOTOGEOLOGY, REMOTE SENSING AND GIS**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define the term “scale” in aerial photography.
2. Define mosaic.
3. What is stereoscopy?
4. Define parallax.
5. Define pixel and row.
6. What is meant by “swath width”?
7. Define FOV and IFOV.
8. What are charge-coupled devices (CCDs)?
9. Define spatial data.
10. What is topology in GIS?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the scope and applications of aerial remote sensing in geology.

Or

- (b) Explain the flight procedure in aerial photography.

12. (a) Write notes on the applications of aerial photography and photogrammetry in geological studies.

Or

- (b) Discuss various photogrammetric instruments.

13. (a) Explain remote sensing platforms, sensors and multispectral scanning.

Or

- (b) Write a note on Indian Remote Sensing Satellites (IRSS) and their contributions to geology.

14. (a) Write notes on data products in remote sensing.

Or

- (b) Describe the difference between across-track and along-track scanning systems.

15. (a) Describe the working principle of GPS.

Or

- (b) Discuss and differentiate between raster and vector data formats.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the geometry of aerial photographs and describe the various types.
  17. Describe the fundamentals of aerial photo interpretation and explain interpretation elements.
  18. Discuss the electromagnetic spectrum and its interaction with the atmosphere and Earth's surface.
  19. Explain the types of scanning systems and detectors used in satellites.
  20. Describe the components of GIS with suitable examples.
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**S-0334**

**Sub. Code**

**23BGE5E1**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Geology**

**Elective – REGIONAL GEOLOGY**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. Define a shear zone and mention one important shear zone in Tamil Nadu.
2. Name the major tectonic divisions of Tamil Nadu.
3. What are alkali rocks? Give an example from Tamil Nadu
4. State the economic significance of Kadavur Anorthosites.
5. What are the Therani clay beds and where are they found?
6. What is Cenomanian Marine transgression?
7. List two precious stones found in Tamil Nadu.
8. Identify the location of Thorium deposits in Tamil Nadu.

9. Which district of Tamil Nadu is known for graphite beds and its importance.
10. What are the major components of beach placer deposits in southern Tamil Nadu?

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the tectonic framework of Tamil Nadu, highlighting major tectonic zones.

Or

- (b) Explain the geological and geomorphological characteristics of the Western Ghats in Tamil Nadu.

12. (a) Discuss the geological occurrence and characteristics of Anorthosites in Tamil Nadu.

Or

- (b) Evaluate the economic and industrial importance of Archaean rock formations in Tamil Nadu.

13. (a) Discuss the Gondwana Supergroup of Tamil Nadu,

Or

- (b) Analyze the distribution and geological setting of petroleum and natural gas in Tamil Nadu.

14. (a) Discuss the lithology, mode of occurrence, and distribution of Cuddalore Sandstone formation.

Or

- (b) Discuss the heavy mineral sands of Tamil Nadu.

15. (a) Describe the origin, mode of occurrence, and uses of the iron ore deposits of Kanjamalai.

Or

- (b) Explain the river sand deposits of Tamil Nadu and its occurrence.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the soil types of Tamil Nadu, their distribution, formation, and agricultural significance.
17. Write an essay on the Charnockite Group, with the petrography of Pallavaram charnockite.
18. Describe the Cretaceous formations of Trichy District, focusing on their lithology and fossil content.
19. Write an essay on Neyveli Lignite deposits in Tamil Nadu.
20. Describe in details on the beach placer deposits of Tamil Nadu.
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**S-0335**

**Sub. Code**

**23BGE5E2**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2025**

**Fifth Semester**

**Geology**

**Elective – MINERAL ECONOMICS AND INDUSTRIAL  
MINERALS**

**(CBCS – 2023 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(10 × 2 = 20)

Answer **all** questions.

1. What is the significance of minerals in the national economy?
2. Distinguish between strategic and critical minerals.
3. Define possible ore reserves.
4. What is the role of the Indian Bureau of Mines (IBM)?
5. What are industrial minerals?
6. Mention two uses of slate.
7. What are refractories?
8. Define abrasive minerals.

9. What is meant by granite block resource estimation?
10. Mention two problems commonly encountered in granite mining.

**Part B**

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the concepts of tenor, and grade.

Or

- (b) Define mineral economics and discuss its scope and importance in the national economy.

12. (a) Explain the concepts of mineral conservation and substitution in sustainable resource management.

Or

- (b) Discuss about Ore reserve estimation techniques.

13. (a) Explain the properties and industrial applications of granite.

Or

- (b) Explain the physical and chemical properties that make a good building stone.

14. (a) Discuss the industrial importance and distribution of minerals used in the fertilizer industry.

Or

- (b) Explain the characteristics and uses of minerals used in paint and pigment industries.

15. (a) Explain the techniques of granite resource estimation.

Or

- (b) Describe the stages in granite quarrying.

**Part C**

(3 × 10 = 30)

Answer any **three** questions.

16. Differentiate between strategic, critical, and essential minerals with special reference to India.
17. Describe India's Mines and Minerals Legislation and its role in regulating mineral resources.
18. Explain the geological occurrence, composition and uses of limestone and sandstone.
19. Enumerate the properties and uses of minerals used in refractory and ceramic industries.
20. Discuss the quarrying techniques and blasting methodologies used in granite extraction.
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