S–3079

Sub. Code
23MGE1C1

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Geology

PHYSICAL GEOLOGY AND GEOMORPHOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Mention the size of the earth.

2. Define Mid-oceanic ridges.

3. Define mesa and buttes.

4. What is geodesy?

5. Define weathering.

6. Note on erosion.

7. Define the formation of a river meander.

8. Define sand dunes.

9. Note on quaternary landscapes.

10. Define fluvial landscapes.

Part B (5 × 5 = 25)

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

11. (a) Write a brief account of orogeny and epeirogeny.

Or

(b) Give the short account of Isostasy and its type with neat diagram.

12. (a) Elucidate the application of geomorphology in lithology.

Or

(b) Enumerate the seismic belts of the earth.

13. (a) Discriminate about geomorphic agents.

Or

(b) Give a brief account of Exogenic processes.

14. (a) Describe volcanic landforms.

Or

(b) Describe the Karst topography.

15. (a) Give a brief account of geomorphic features of India.

Or

(b) Write short note on coastal landscapes.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the types of plate boundaries with neat diagram.

17. Write an essay on earthquakes and related landscapes.

18. Give a detailed account on mass movement and its types.

19. Write an essay about the geomorphic classification of landforms.

20. Enumerate the accretional land forms in Aeolian landscape with suitable diagrams.

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S–3080	Sub. Code
	23MGE1C2

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Geology

MINERALOGY AND INSTRUMENTATION TECHNIQUES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the Axial ratio.

2. Write notes on crystal defects.

3. Difference between space lattice and crystal lattice.

4. Bragg's Equation.

5. Write short notes on Isomorphism.

6. What is the name of Fluorescent rock?

7. Define the Pleochroism.

8. What is the relation between velocity, Wavelength, and frequency for light?

9. What is the principle of Nephelometry?

10. What is the principle of mass spectroscopy?

Part B (5 × 5 = 25)

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

11. (a) Write notes on the following :

(i) Miller Indices

(ii) Crystal Forms

Or

(b) Describe the twinning in crystal with examples.

12. (a) Elucidate the use of X-ray fluorescence (XRF) in mineral analysis, describe its advantages and limitations.

Or

(b) Write notes on the following :

(i) Law of Crystallography

(ii) Crystal Symmetry

13. (a) Write the chemical composition, physical and optical properties of feldspar group of minerals.

Or

(b) Write the chemical composition, physical and optical properties of pyroxene group of minerals.

14. (a) Describe with neat sketch various parts of polarizing microscope and its functions.

Or

(b) Write notes on the following :

(i) Refractive Index

(ii) Pleochroism

15. (a) Enumerate the principle behind flame photometry and describe its advantages and limitations in elemental analysis.

Or

(b) Compare and contrast UV spectroscopy with X-ray spectroscopy in terms of their principles, applications.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on Shoenflion crystal notation of 32 classes with suitable examples and sketches.

17. Define extinction. Write in detail about the determination of extinction angle with neat sketches.

18. Write an essay on physical, chemical, optical properties and uses of Quartz group of minerals.

19. Discuss pleochroism and interference colour in terms of mineral optics.

20. Give detailed explanation about quantitative analysis using UV spectroscopy.

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S–3081

Sub. Code
23MGE1E1

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Geology

Elective – STRATIGRAPHY OF INDIA AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are pre Cambrians?
2. List out the economic minerals of Dharwar with their Indian distribution.
3. Define Math quartzites.
4. What are Umia beds?
5. Economic riches of Deccan Traps.
6. Karewa formation – Define.
7. Subdivisions of Geological Time.
8. Biostratigraphic correlation.
9. Define sequence.
10. What is magneto stratigraphy?

Part B (5 × 5 = 25)

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

11. (a) Write a brief note on the economic importance of Dharwars.

Or

(b) Describe on the disposition of Cuddapah system. Draw a neat sketch.

12. (a) Describe the climate and sedimentation of Goudwana.

Or

(b) Write a short note on cretaceous of Trichinopoly.

13. (a) Write a brief note on Pleistocene glaciation.

Or

(b) Give the economic significance of Lower Miocene System.

14. (a) Write a brief note on Lithostratigraphic Units.

Or

(b) Write the significance of Biozones in Biostratigraphic correlation.

15. (a) Write a brief note on Radiometric dating methods.

Or

(b) Give short note on causes of sea level fluctuations.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Elucidate on Dharwar supergroup, its type area, geological succession and economic importance.

17. Write a detailed account on Goudwana system, its structure, geological succession, depositional environment and economic significance.

18. Write an essay on the significance of Deccan traps in the stratigraphy of India. Add a note on its mineralogy and how it is related to black cotton soil which facilitates the economy of the nation?

19. Elucidate on the various geochronological methods in stratigraphy. Add a note on the importance of lithostratigraphic and biostratigraphic units.

20. Write an elaborate account on sequence stratigraphy and its applications. Add a note on the various types of depositional sequences.

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S–3082

Sub. Code
23MGE1E2

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Geology

Elective – RECENT TRENDS IN PALAEONTOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Petrification.
2. Define 'Ichno fossils'
3. What is Coenogenesis?
4. What is Ontogenetic analysis?
5. Define Hominoides.
6. List the Siwalik mammals.
7. What is Umbo?
8. What is cephalon?
9. What are nanofossils? Give examples.
10. Define Planktonic foraminifera.

Part B (5 × 5 = 25)

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

11. (a) Write the significance of Carbon isotopes in climate studies.

Or

(b) Write a note on the uses of foraminifera in biostratigraphic correlation.

12. (a) Differentiate Phylogenetic and Ontogenetic analysis.

Or

(b) Write a note on Biomineralisation.

13. (a) Write a short note on modern theories on Human Evolution.

Or

(b) Give a note on the evolution Proboscidae.

14. (a) Write a short note on the Geological history of Graptoloidea.

Or

(b) Give a brief note on the morphology of Trilobites.

15. (a) Write a note on coccoliths.

Or

(b) Give a note on types of microfossils on the basis of composition.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Illustrate the significance of fossils in paleoclimate studies.

17. Give an detailed account on Trace fossils and their uses.

18. Explain the distribution of Tertiary vertebrates in India.

19. Discuss the morphology, distribution, and geologic history of Echinoids with a diagram.

20. Explain the Sampling and sample processing techniques of Microfossils.

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S–3083

Sub. Code
23MGE2C1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Geology

STRUCTURAL GEOLOGY AND GEOTECTONICS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List the plate tectonics Movement.

2. Define axial plane with Sketch.

3. What is the difference between a slickenside and a slickenline.

4. Write notes on plate boundaries.

5. Explain rheology.

6. Define thrust fault.

7. What is isostasy?

8. Discuss the Horst and Graben.

9. What are Equal Angle and Equal area Projection?

10. Write the Enechelon fractures.

Part B $(5 \times 5 = 25)$

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

11. (a) Describe the paleostress analysis.

Or

(b) Explain the concept of stress and strain in rock mechanics.

12. (a) Explain the role of fluids in deformation processes.

Or

(b) Summaries the joints and unconformities.

13. (a) Write notes on the Plate tectonics Concept and principle.

Or

(b) Discover the Fault and related structure.

14. (a) Develop the orogeny and epeirogeny prosesses.

Or

(b) Summaries the Mechanics of plate tectonics.

15. (a) Describe the mountain chains activities.

Or

(b) Describe the continental shield.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Compare with different types of failure and sliding criteria.

17. Elaborate the Techniques of strain analysis.

18. Interpret the global evidences of neotectonics.

19. Discuss about the Geodynamics of Indian Plates.

20. Elaborate the magnetic anomalies of mid-oceanic ridges.

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S–3084

Sub. Code
23MGE2C2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Geology

APPLIED PETROLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Distinguish between monomineralic rock and polymineralic rock with example.

2. Define Igneous Texture.

3. Give the various Forms of igneous rock.

4. Cementing materials in sedimentary rock with Examples.

5. Define Granite.

6. Define conglomerates.

7. What is mean by metasomatism?

8. What do you understand by metamorphism?

9. Define the Arenites and Lutites.

10. Write notes on clastic texture of sedimentary rocks.

Part B (5 × 5 = 25)

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

11. (a) Describe the Liquid immiscibility and Assimilation.

Or

(b) Discover the Three-component systems.

12. (a) Explain the petrogenesis of Ophiolites.

Or

(b) Describe the Binary and Ternary magma system.

13. (a) Write the kinds of Metamorphism.

Or

(b) Discover the Metamorphic Zones concept.

14. (a) Develop the diagenesis process of sediments.

Or

(b) Summaries the sediment cycle.

15. (a) Describe the deep sea facies.

Or

(b) Enumerate the REE.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the classification of Igneous rock.

17. Elaborate the base equilibrium of binary and ternary silicate systems.

18. Interpret the textures and structures of sedimentary rock.

19. Discuss about the classification of metamorphic process.

20. Elaborate the petrography of sedimentary rock.

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S–3085	Sub. Code
	23MGE2E1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Geology

***Elective* — APPLIED REMOTE SENSING AND GIS**

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define EMR.
2. Define the active and passive remote sensing.
3. List the basic principles of GIS.
4. What is raster and vector data formats in GIS?
5. What are land cover classification using GIS techniques?
6. Define spatial resolution in remote sensing.
7. Define concept of spectral reflectance curve.
8. Define GPS.
9. LIDAR.
10. Write on Geometric correction.

Part B (5 × 5 = 25)

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

11. (a) Describe the aerial photography and its significance.

Or

(b) Discuss the spatial resolution and its importance.

12. (a) Describe the geostationary and polar orbiting satellites.

Or

(b) Explain the concept of FOV and IFOV in satellite remote sensing.

13. (a) Describe the supervised and unsupervised classification.

Or

(b) Discuss the basic principles of GIS.

14. (a) Explain what are factors affecting vertical exaggeration?

Or

(b) Discuss the role of data fusion in remote sensing and GIS integration.

15. (a) Outline the objectives of the Indian space programme.

Or

(b) Explain the concept of image restoration and provide application.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on exaggeration in geological studies based on aerial photographs.

17. Explain a relevant application of the chosen remote sensing system in environmental monitoring.

18. Describe the sensor characteristics in high-resolution satellite data and its applications.

19. Differentiate between geometric and radiometric corrections applied to satellite imagery.

20. Explain the application of GIS and remote sensing for groundwater exploration.

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S–3086

Sub. Code
23MGE2E2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Geology

Elective – ENVIRONMENTAL EARTH SCIENCE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the various environment components.
2. What is air pollution?
3. What are major greenhouse gases?
4. Define smog.
5. Consequence of climate change.
6. Give two benefits of composing.
7. Disadvantage of landfilling waste.
8. Give simple action individuals can take to reduce waste.
9. Difference between acute and chronic arsenic poisoning.
10. Chromium influence and its toxicity.

Part B (5 × 5 = 25)

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

11. (a) Distinguish between point source and non-point source pollution, with examples.

Or

(b) Explain the different ways in which human activities can contribute to water pollution.

12. (a) Distinguish between natural and anthropogenic sources of air pollution.

Or

(b) Explain how primary pollutants can react in the atmosphere to form secondary pollutants.

13. (a) Distinguish between greenhouse gases and other air pollutants, with examples.

Or

(b) Analyze the scientific evidence supporting the link between human activities and global warming.

14. (a) Compare and contrast different waste disposal methods based on their environmental impact.

Or

(b) Discuss the potential impact on recycling efforts and landfill capacity.

15. (a) Explain the geological sources of asbestos and discuss the challenges of managing asbestos.

Or

(b) Discuss the human health impacts of mercury poisoning, focusing on the nervous issues.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the impact of industrial waste, agricultural runoff, and domestic sewage on water quality.

17. Analyze the challenges associated with mitigating acid rain and discuss different strategies.

18. Discuss the potential consequences of climate change on sea levels and weather patterns.

19. Discuss strategies for waste reduction at the individual, household, and community levels.

20. Evaluate the effectiveness of bioremediation techniques for mitigating mercury contamination.

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S–3087

Sub. Code
23MGE2S1

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Geology

DISASTER MANAGEMENT

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define storm surges
2. What on urban flood?
3. Define climate change.
4. What is wildfire?
5. Define Poverty.
6. List out the disaster components.
7. Define disaster risk.
8. What is CRZ?
9. Write note on disaster mitigation?
10. Write notes an Stakeholder

Part B (5 × 5 = 25)

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

11. (a) Describe the physical and geodynamic characteristics of earthquake.

Or

(b) Discuss briefly physical and geodynamic characteristics of cyclones.

12. (a) Explain the greenhouse effect and how human activities contribute to global warming.

Or

(b) Discuss the potential consequences of unchecked climate change on various aspects.

13. (a) Explain the role of remote sensing and GIS in hazard prone areas identification.

Or

(b) Discuss the advantages and limitations of using technologies for hazard mapping.

14. (a) Discuss the concept of risk zonation and its importance in disaster preparedness.

Or

(b) Distinguish between risk reduction and disaster preparedness.

15. (a) Explain the interrelationship between mitigation and recovery in disaster management.

Or

(b) Discuss how effective mitigation strategies can contribute to efficient recovery process.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the different methods used for wildfire monitoring, including satellite imagery.

17. Discuss the potential impacts of rising sea levels on coastal communities and ecosystems.

18. Case Study: recent natural disaster event and discuss how remote sensing and GIS were used.

19. Explain the concept of the disaster cycle.

20. Discuss different types of early warning systems used for various hazards and their effectiveness.

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