

R5953

Sub. Code

464101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

First Semester

Applied Geology

GENERAL GEOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

All questions carry equal marks.

1. What is palaeomagnetism?
2. Write short notes on plate boundaries.
3. Give a short account on Island Arcs.
4. Write notes on the submarine canyons.
5. Define Isostasy.
6. Write notes on marine transgression citing an example.
7. Explain the structure of volcano.
8. What is orogeny?
9. Write notes on floods.
10. What is tsunami? Write notes on its origin.

Part B

(5 × 5 = 25)

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

Each question carries equal marks.

Each answer should be in about 300 words.

11. (a) Enumerate the various theories regarding the origin of the earth.

Or

- (b) Give an account on the paleogeography and geodynamics of the Indian plate.

12. (a) Outline the sea floor spreading processes.

Or

- (b) Describe the evolution of Island arc systems.

13. (a) Describe the sea level changes during different geological time.

Or

- (b) Give an account on Airy and Pratt hypothesis.

14. (a) Describe the various types of Volcanisms with a note the products of volcanisms.

Or

- (b) Outline the various types of mountains and mountain building activities.

15. (a) Present the different types of landslides with neat diagrams.

Or

- (b) Explain the Tsunami warning prediction process and mitigation.

Part C

(3 × 10 = 30)

Answer any **three** questions in about 500 words each.

Each question carries equal marks.

16. Write an essay on the various methods of determining the age of the earth.
 17. Give a detailed account on the mid oceanic ridges.
 18. Outline the geological evidences of various continental boundaries.
 19. Write an essay on the relation between plate tectonics and volcanic activity.
 20. Describe the origin of earthquakes and their geological effects
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Sub. Code

464102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

First Semester

Applied Geology

ADVANCED CRYSTALLOGRAPHY AND MINERALOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

Each question carries equal marks.

1. Write notes on interfacial angle of a crystal.
2. What are the 32 classes of crystals?
3. Write notes on Isomorphism with an example.
4. Write notes on Twinning.
5. Write notes on quartz wedge.
6. Write notes on Pleochroism.
7. Write notes on Isotropic minerals.
8. Distinguish between Staurolite and Tourmaline.
9. Write notes on Mica group of minerals.
10. Give short notes on phosphates.

Part B

(5 × 5 = 25)

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

11. (a) Explain Schoenflies notation and Hermann Mauguin symbols.

Or

- (b) Give an account on the Cotangent and tangent relations.

12. (a) Describe the principles of X-ray diffraction.

Or

- (b) Explain the different types of twinning with a note on laws of twinning.

13. (a) Explain the quartz wedge, Mica plate and Gypsum plate.

Or

- (b) Distinguish between Birefringence and Extinction.

14. (a) Explain the physical properties, optical characters, and paragenesis of Olivine group of minerals.

Or

- (b) Describe the physical properties, optical characters, and chemical properties of Epidote group of minerals.

15. (a) Describe the physical and optical properties of Feldspar group of minerals.

Or

- (b) Distinguish physical, structural and optical properties of different Amphibole minerals.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe and distinguish between spherical, stereographic and gnomonic projections.
 17. Give a detailed account on the electron microscopy and its mineralogical applications.
 18. Explain the optical properties of Uniaxial and Biaxial minerals.
 19. Describe the physical properties, optical characters, and chemical composition of Garnet group of minerals.
 20. Describe the physical and optical properties of Pyroxene group of minerals.
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Sub. Code

464103

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

First Semester

Applied Geology

STRATIGRAPHY AND PALEONTOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

Each questions carry equal marks.

1. Give a short note on Chemostratigraphy.
2. Write notes on Event stratigraphy.
3. Write short notes on Kaladgi group of rocks.
4. Discuss the age of Saline series.
5. Write notes on the Siwalik rocks.
6. Mention the Palaeozoic Formations of India.
7. Write notes on Archaeopteryx.
8. Give a short note on the Gondwana flora of India.
9. Discuss in short the morphology of Diatoms.
10. Write notes on different types of microfossils.

Part B

(5 × 5 = 25)

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

11. (a) Give an account on the Principles of Stratigraphy.

Or

- (b) Describe the nomenclature and modern stratigraphic codes.

12. (a) Enumerate the stratigraphy and economic importance of Cuddapah super group of rocks.

Or

- (b) Describe the stratigraphy and economic importance of Dharwar super group of rocks.

13. (a) Describe the geological succession of Triassic rocks of Spiti.

Or

- (b) Give an account on the Deccan traps. Discuss their age.

14. (a) Discuss the evolution of Ammonites with examples.

Or

- (b) Explain the different types of Dinosaurs and their extinction.

15. (a) Enumerate the different techniques of surface and core sampling, separation and SEM studies of microfossils.

Or

- (b) Describe the morphological characters of Ostracoda with neat sketches.

Part C

(3 × 10 = 30)

Answer any **three** questions in about 500 words each.

Each question carries equal marks.

16. Describe Litho, Bio and Chronostratigraphic units with examples. Add a note on the imperfections in the geological records.
17. Describe the stratigraphic succession and economic importance of Viadhyan super group of rocks.
18. Explain in detail the lithology, fossil content and economic importance of Jurassic rocks of Kutch.
19. Write an essay on the evolution and stratigraphic significance of Trilobites.
20. Describe the morphology, evolution and stratigraphic importance of Foraminifera with neat diagrams.

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Sub. Code

464104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

First Semester

Applied Geology

REMOTE SENSING AND GIS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Draw diagrams wherever necessary.

Part A

(10 × 2 = 20)

Answer **all the** questions.

1. Write about the mosaics.
2. Short notes on: Vertical exaggeration.
3. Write about the spectral signatures of vegetation.
4. Define :Electro Magnetic radiation.
5. Explain about spectral resolution.
6. Distinguish between: Supervised and unsupervised classifications.
7. What are raster data sets?
8. Write short notes on spatial data sets.
9. Give any two uses of shaded relief maps.
10. Write any two uses of DEM.

Part B

(5 × 5 = 25)

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

11. (a) Discuss about the stereoscope.

Or

- (b) Bring out the significance of aerial photographic scales.

12. (a) Write about electro magnetic radiation.

Or

- (b) Discuss about the spectral reflectance of earth objects.

13. (a) Brief about the principles of microwave remote sensing.

Or

- (b) Write about the spatial resolution of landsat imageries.

14. (a) Explain about the types of data entry methods in GIS.

Or

- (b) Write about the importance of data conversion techniques in GIS.

15. (a) Explain about the principles of differential GPS.

Or

- (b) Write about DTM and its application in geomorphological studies.

Part C

(3 × 10 = 30)

Answer any **three** of the following questions.

16. Discuss about the aerial photographs and its types.
17. Explain about the spectral signatures of water and vegetation.
18. Write about the recent developments in the field of remote sensing in India.
19. Enumerate the role of GIS in mapping mineral resources.
20. Discuss the role of GPS in geological studies.

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Sub. Code

464105

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

First Semester

Applied Geology

STRUCTURAL GEOLOGY AND GEOTECTONICS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Draw diagrams wherever necessary.

Part A

(10 × 2 = 20)

Answer **all the** questions.

1. Define :apparent dip.
2. What is lineation?
3. Explain about strike slip falt.
4. What is hinge of a fold?
5. Write about flowage folding.
6. Define : Stress and strain.
7. Explain: Mural Joints.
8. What is a dip slip falt?
9. Explain: Convergent boundaries.
10. How contour maps are helpful in demarcating tectonics?

Part B

(5 × 5 = 25)

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

11. (a) Bring about the relationship between true and vertical thickness.

Or

- (b) Discuss about the trends in outcrops and how to identify them.

12. (a) Discuss about the stress ellipsoids.

Or

- (b) Write about crenulation.

13. (a) What are unconformities discuss its types?

Or

- (b) Write about the parts of folds.

14. (a) Explain about the Horst and Graben structures.

Or

- (b) Discuss about sheet and tectonic joints.

15. (a) What is order of superposition and how to identify them in the field?

Or

- (b) Discuss about contour maps and its application in geological studies.

Part C

(3 × 10 = 30)

Answer any **three** of the following questions.

16. Write an essay on primary and secondary structures. Add a note on uses of Brunton Compass.

17. Write about the cleavages and its types.
 18. Discuss about the folds and its mechanisms.
 19. What are joints? Discuss about its types.
 20. Enumerate about the continental socearic drifting.
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R5958

Sub. Code

464301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

Third Semester

Applied Geology

ECONOMIC GEOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Each question carries equal marks.

1. Differentiate between tenor and grade of ore.
2. What are gangue minerals?
3. Give a short note on fluid inclusion.
4. What are platinum group of minerals?
5. Give a short account on the minerals used in paint and pigment industry.
6. Write notes on strategic minerals.
7. Write notes on Coal macerals.
8. Give a short account on the origin of Coal.
9. Write the technique of preparation of polished surface of ores.
10. Briefly give the techniques of investigation in ore mineral graphic studies.

Part B

(5 × 5 = 25)

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

Each question carries equal marks.

Each answer should be in about 300 words.

11. (a) Enumerate the evaporate deposits with examples.

Or

- (b) Describe the oxidation and supergene enrichment of formation of mineral deposits.

12. (a) Give an account on the Lindgren's classification of the ore minerals.

Or

- (b) Describe Bateman's classification of ore minerals.

13. (a) Explain the mode of occurrence and origin of minerals used in Refractory industry.

Or

- (b) Give in account on the mode of occurrence, and distribution of minerals used in cement industry.

14. (a) Outline the Coalification processes.

Or

- (b) Give the geology and distribution of Neyveli lignite deposits.

15. (a) Enumerate the applications of ore microscopy.

Or

- (b) Draw a neat sketch of ore microscope and libel the pats.

Part C

(3 × 10 = 30)

Answer any **three** questions in about 500 words each.

Each question carries equal marks.

16. Elaborate on the hydrothermal processes of mineral formation with neat sketches.
 17. Write an essay on the metallogenic Epochs and provinces.
 18. Describe the mineralogy, distribution and mode of occurrence of Gold deposits in India.
 19. Explain in detail the origin, classification, and distribution of Coal deposits in India.
 20. Describe the National mineral policy and its role in National economy.
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R5959

Sub. Code

464302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

Third Semester

Applied Geology

HYDROGEOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Write notes on Darcy's law.
2. Distinguish between specific yield and specific retention.
3. Give a short note on percolation ponds.
4. Write notes on check dams.
5. Write notes on cone of depression.
6. Give a short note on Aquifer Storativity.
7. What do you mean by ground water quality?
8. How do you do a pump test?
9. Write notes on self potential logging.
10. Distinguish between trace elements and major and minor elements.

Part B

(5 × 5 = 25)

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

Each answer should be in about 300 words each.

Each answer carries equal mark.

11. (a) Outline vertical distribution of ground water.

Or

- (b) Write notes on the role of porosity and permeability in the movement of ground water.

12. (a) Describe in detail the classification of aquifers and their types.

Or

- (b) Give an account on rain water harvesting.

13. (a) Discuss the geological problems faced during the construction of wells in soft and hard rock areas.

Or

- (b) Outline the different ground water Artificial recharge methods and their significance.

14. (a) Discuss the Jacob's and Chow's methods.

Or

- (b) Enumerate the watershed characteristics and utility of well logging techniques.

15. (a) Explain the role of village level groups in the conservation and use of ground water.

Or

- (b) Discuss different types of agricultural pesticide pollution of ground water.

Part C

(3 × 10 = 30)

Answer any **three** questions is about 500 words each.

Each question carries equal marks.

16. Write an essay on the components of the hydrologic cycle with a neat sketch.
17. Describe sea water intrusion and its preventive measures.
18. Enumerate the various electrical resistivity methods of ground water exploration.
19. Write an essay on various ground water provinces of India.
20. Describe the quality of ground water with reference to its trace element concentration and its treatment.

R5960

Sub. Code

464502

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

Third Semester

Applied Geology

GEOCHEMISTRY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions. Draw diagrams wherever necessary.

Each questions carries equal marks.

1. Explain : enthalpy.
2. Define Gibbs phase rule.
3. Write notes on open and closed system.
4. Describe polymorphism.
5. Discuss about the conic strength of a solution.
6. Write about radioactive decay.
7. Write notes on Geochronology.
8. What are REEs?
9. Explain about dispersion.
10. Write notes on diffusion.

Part B

(5 × 5 = 25)

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

Draw diagrams wherever necessary.

11. (a) Discuss geochemical cycle.

Or

- (b) Brief about the rheological bonation of earth.

12. (a) Write about the laws of thermodynamics.

Or

- (b) Discuss about the factors that determine the mineral dissolution rate in a solution.

13. (a) Explain about the phase diagrams.

Or

- (b) Brief about the biogeochemical cycling of nitrogen.

14. (a) Enumerate about the Rb-Sv system.

Or

- (b) Write about P-T phase diagrams.

15. (a) Bring about the significance of water in understanding the melting of rocks.

Or

- (b) Explain about geochemical sampling.

Part C

(3 × 10 = 30)

Answer any **three** questions in about 500 words.

Draw diagram wherever necessary.

16. Explain about the dispersion and mobility of geochemical elements.
 17. Write down the steps and procedures to be adopted during whole-rock geochemical analysis.
 18. Explain about litho biogeochemical surveying.
 19. Discuss about the isotopic exchange between minerals and water.
 20. Write about oxygen fugacity diagrams and its significance in geochemical process.
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