



# ANDHRA UNIVERSITY TRANS-DISCIPLINARY RESEARCH HUB

## GEOLOGY

### **Unit 1: Mineralogy and Petrology**

Introduction to mineralogy and crystallography, Mineral classification and identification  
Igneous, metamorphic, and sedimentary rocks and their formation processes, Petrography  
and petrology of common rock types

### **Unit 2: Structural Geology**

Principles of structural geology, Stress and strain analysis, Faults, folds, and other  
structural features, Plate tectonics and its relationship to structural geology

### **Unit 3: Sedimentology and Stratigraphy**

Sedimentary environments and their depositional processes, Sedimentary structures and  
facies, Stratigraphic principles and correlation, Sequence stratigraphy and its application  
to understanding earth history

### **Unit 4: Geophysics and Geodynamics**

Principles of geophysics and seismic methods, Heat flow, mantle convection, and plate  
tectonics, Earthquake seismology and hazard analysis, Gravity, magnetic, and electrical  
methods for subsurface exploration

### **Unit 5: Environmental Geology**

Principles of environmental geology, Geologic hazards, including earthquakes, landslides,  
and floods, Groundwater hydrology and contamination, Geologic resources and their  
management.



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## MODEL QUESTION PAPER

### GEOLOGY

**Time: 3hrs Max Marks: 100**

**Answer ALL the questions. All carry equal marks (5x20=100)**

1a) Describe the classification of minerals based on their crystal structure and chemical composition. Give examples of each.

OR

b) Explain the process of igneous rock formation and identify the different types of igneous rocks.

2a) Explain the principle of uniformitarianism and how it applies to structural geology.

OR

b) Describe the different types of stress and strain in rocks and their effects on rock deformation.

3a) Explain the principle of superposition and its application in stratigraphy.

OR

b) Describe the different depositional environments and the corresponding sedimentary facies.

4a) Explain the different types of seismic waves and how they are used to study the Earth's interior.

OR

b) Describe the process of mantle convection and its role in plate tectonics.

5a) Describe the concept of geologic hazards and their impact on human society.

OR

b) Discuss the different types of landslides and their mechanisms of formation.

6.a) Describe the process of metamorphism and how it transforms rocks. Give examples of different types of metamorphic rocks.

OR

b) Explain the process of sedimentary rock formation and identify the different types of sedimentary rocks.

7.a) Identify the different types of folds and faults and describe their geometry and mechanisms of formation.

OR

b) Explain the concept of plate tectonics and its influence on the structural geology of the Earth's crust.

8. a) Discuss the different types of sedimentary structures and their significance in interpreting depositional environments.