

2024

GEOLOGY

PAPER : GELM010104 / GEOL010104

(EARTH SYSTEMS SCIENCE)

Full Marks : 45

Time : 2 Hours

The figures in the margin indicate full marks for the questions

1. Fill in the blanks with appropriate words : 1x5=5
 - a) The discontinuity located between crust and mantle is known as
 - b) The wind pattern that forms near the tropopause, characterized by high-speed winds is known as
 - c) The point of origin of earthquake, located at subsurface is called
 - d) The movement of water from the surface to the deep ocean is called
 - e) The concept of Uniformitarianism was first introduced by
2. Answer any five from the following questions : 2x5=10
 - a) Products of Volcano.
 - b) Hydrological cycle.
 - c) Depositional landforms formed by aeolian activity.
 - d) Major plate boundaries with suitable diagram
 - e) Effect of Coriolis force.

- f) Major soil types.
- g) Laws of superposition
- h) Electromagnetic field for Earth.

3. Write briefly on the following (any four) : 4x5=20

- a) Internal structure of the earth with suitable diagram.
- b) Soil profile with suitable diagram.
- c) Nebular hypothesis on the origin of the earth
- d) Define insolation and explain how the earth distributes heat across different latitudes.
- e) Geological time scale
- f) Mass wasting and its type.
- g) Describe the Earth's carbon cycle, including its key components, processes, and human impacts.

4. Answer any one from the following questions:

- a) Fluvial processes and associated landforms. 10
- b) Write an explanatory note on the vertical profiles of ocean temperature and salinity, and elaborate on the role of the thermohaline circulation, in modulating global climate patterns. 5+5
- c) Write short notes on : 5+5
 - i) Earth's heat budget,
 - ii) Carbon cycle.