

EARTH SYSTEM SCIENCE

MODEL QUESTION PAPER – SET 3

SEMESTER I ■ MAJOR COURSE – MJ 1

Full Marks: 75

Time: 3 Hours

Pass Marks: 40

Instructions:

1. Answer all questions in Group A. 2. In Group B, answer any four questions out of six. 3. Figures, where required, should be neat and properly labelled.

GROUP A

Q1. Choose the correct answer. ($5 \times 1 = 5$)

1. Which planet is the largest in the Solar System?

(a) Earth (b) Mars (c) Jupiter (d) Venus

2. The Earth's magnetic field is generated mainly by processes in the:

(a) Crust (b) Mantle (c) Outer core (d) Inner core only

3. A deep, narrow depression commonly associated with subduction is a:

(a) Rift valley (b) Trench (c) Mid-ocean ridge (d) Shield

4. Atmospheric circulation is strongly influenced by:

(a) Unequal heating of Earth (b) Only earthquakes (c) Only tides (d) Meteorites

5. The principle of faunal succession is based on the observation that:

(a) Fossils occur randomly (b) Fossil organisms succeed one another in a definite order (c) All fossils have the same age (d) Rocks never contain fossils

Q2. Differentiate between rotation and revolution of the Earth and state one effect of each. (5 marks)

Q3. What is uniformitarianism? Explain its importance in interpreting geological history. (5 marks)

GROUP B

Answer any FOUR questions. Each question carries 15 marks. ($4 \times 15 = 60$)

Q4. Explain Earth as a planet in the Solar System. Discuss its origin, shape, size, mass, density, rotational and revolutionary parameters and age.

Q5. Discuss the internal structure of Earth and explain the major discontinuities. Add a note on the origin of Earth's magnetic field.

Q6. Explain the origin of oceans, continents, mountains and rift valleys in the framework of plate tectonics.

Q7. Describe the causes, characteristics and distribution of earthquakes and earthquake belts. Explain how plate boundaries are related to seismic activity.

Q8. Discuss atmospheric circulation and Earth's heat budget. Explain how unequal solar heating influences winds and climate patterns.

Q9. Explain how stratigraphic records help us understand the geological past. Discuss stratigraphy, geological time scale, laws of superposition and faunal succession, and the concept of uniformitarianism.