

EARTH SYSTEM SCIENCE

MODEL QUESTION PAPER – SET 1

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 of the following is a terrestrial planet?

(a) Jupiter (b) Earth (c) Saturn (d) Neptune

2. The age of the Earth is approximately:

(a) 2.6 billion years (b) 4.54 billion years (c) 10 billion years (d) 1.2 billion years

3. The boundary between the crust and mantle is called:

(a) Gutenberg discontinuity (b) Moho discontinuity (c) Lehmann discontinuity (d) Conrad discontinuity

4. Sea-floor spreading is mainly associated with:

(a) Mid-oceanic ridges (b) Ocean trenches (c) Transform faults only (d) Continental shields

5. The force responsible for the apparent deflection of moving air and ocean currents is:

(a) Gravity (b) Centrifugal force (c) Coriolis force (d) Magnetic force

Q2. Explain the major differences between terrestrial and Jovian planets. (5 marks)

Q3. Describe the main layers of the Earth's interior and mention one important characteristic of each. (5 marks)

GROUP B

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

Q4. Discuss the origin and evolution of the Universe, Solar System and Earth. Explain the important parameters of Earth such as size, shape, mass, density, rotation, revolution and age.

Q5. Explain the concept of plate tectonics. Discuss sea-floor spreading and continental drift and show how these ideas support plate movement.

Q6. Describe mid-oceanic ridges, ocean trenches, transform faults and island arcs. Explain their relationship with plate boundaries.

Q7. Explain earthquakes and earthquake belts. Discuss the causes of earthquakes and the global distribution of major earthquake zones.

Q8. Describe volcanoes, their major types and products. Explain the distribution of volcanoes in relation to plate tectonic settings.

Q9. Explain the hydrosphere and atmosphere, including ocean currents, Coriolis force, wave erosion and beach processes, atmospheric circulation and Earth's heat budget.