April 2025
B.A./B.Sc.
Sixth Semester
DISCIPLINE SPECIFIC ELECTIVE – 4
PHYSICS
Course Code: PHD 6.21(C)
(Physics of Earth)

Total Mark: 70 *Pass Mark: 28*
Time: 3 hours

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. (a) Discuss the origin of the universe and the different stages followed by in creation of the elements. 12
   (b) Why is it important to understand the Earth systems? 2

2. (a) Explain cosmic microwave background (CMB). How does the CMB support the Big Bang picture? 3+5=8
   (b) What are asteroids? How are they formed? 2
   (c) Explain the movement of the solar system. 4

UNIT–II

3. (a) Based on the seismic investigations, explain the internal structure of the earth. 6
   (b) Distinguish the types of glaciers on the basis of their stage of development, size, shape, and the relationship between the supply and flow areas. 8

4. (a) Explain the two categories for the geological processes: 8
      (i) Endogenous processes
      (ii) Exogenous processes
   (b) Define drainage pattern and classify the most common drainage pattern known. How are the rivers in India classified? 1+2+3=6

UNIT–III

5. (a) Write the different types of geophysical methods used for Earth investigations. Explain in brief about the principle used for seismic method in geophysical investigations. 3+5=8
   (b) Deduce the relation for the potential due to a single current electrode at the surface. 6

6. (a) What are plate tectonics? Explain how earthquake belts are distributed on the globe, based on the geographical distribution? 1+4=5
   (b) How does Coriolis forces effect the ocean current system? 3
   (c) What is carbon cycle? Why is it important? What role does it play in maintaining a steady state of the biosphere? 2+2+2=6

UNIT–IV

7. (a) Why is the study of stratigraphy important to understanding the Earth's history? 4
   (b) Write a short note on the geologic concept of time. During which period in the age of the Earth was the terrestrial life well established? 3+1=4
   (c) How did the concept of uniformitarianism develop in history? What are its limitations? 4+2=6

8. (a) Explain in brief about the law of faunal succession? How does the principle of faunal succession allow geologist to consider the possibility of correlating events in historical perspective? 2+4=6
   (b) Is it possible to explain the origin of life in terms of inorganic processes affecting materials that occur naturally on the surface of the Earth? 8

UNIT–V

9. (a) Discuss the effects of air pollution on the stratosphere. How do greenhouse gas emissions relate to the climate change? 4+4=8
   (b) What are the main challenges of human population growth? Why is stabilising our population important? 4+2=6

10. (a) What is nuclear waste? Mention few of the problems inherent with their disposal. How long does the nuclear waste remain radioactive? 1+3+2=6

(b) Discuss the causes and impacts of deforestation. 3

(c) Write a short note on biodiversity conservation. As an individual, how will you contribute to protecting biodiversity in your daily lives? 2+3=5
