

2023
B.A./B.Sc.
Sixth Semester
DISCIPLINE SPECIFIC ELECTIVE – 4
PHYSICS
Course Code: PHD 6.21(C)
(Physics of Earth)

Total Mark: 70
Time: 3 hours

Pass Mark: 28

Answer five questions, taking one from each unit.

UNIT-I

1. (a) Why is it important to understand the Earth systems? 3
(b) “Humans may not be alone in the universe.” Comment on this by calculating the number of life that may exist in the visible universe. 6
(c) Why is our galaxy called the Milky Way? How many solar systems are there in the Milky Way galaxy? 2+3=5
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) On the basis of their stage of development, size, shape and the relationship between the supply and flow areas, distinguish the types of glaciers. 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) Name the different types of geophysical methods used for Earth investigations. Write the principles used for gravity method in geophysical investigations. $6+2=8$
(b) Deduce the relation for the potential due to a single current electrode at the surface. 6
6. (a) What are plate tectonics? Based on the geographical distribution, how are earthquake belts distributed on the globe? $1+4=5$
(b) How does Coriolis force 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) What is stratigraphy? Why is it important? $2+2=4$
(b) Write a short note on the geologic concept of time. During which period in the age of the Earth was 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) What is 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? Write few of the problems inherent with their disposal. How long does nuclear waste remain radioactive? 1+3+2=6

(b) Discuss the causes and impacts of deforestation. 4

(c) As an individual, what role will you play in biodiversity conservation? 4
