

**B.Sc. Semester-VI Examination, 2022-23****PHYSICS [Honours]**

Course ID : 62416 Course Code : SH/PHS/603/DSE-3/T-5

Course Title : Physics of Earth

Time : 2 Hours

Full Marks : 40

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***SECTION-I**

1. Answer any **five** questions: 2×5=10
- What is the age of Milky Way Galaxy? What is the average estimated age of our earth?
  - What do you mean by 'Meteor' and 'Meteorite'?
  - Mention the name of several types of 'Clouds' with their height from sea level.
  - Mention few factors which make an ecosystem fragile.
  - What is geothermal energy?
  - What are the greenhouse gases?

- Give the reason for origin of earth's magnetic field?
- Why interior of earth is so hot?

**SECTION-II**

2. Answer any **four** questions: 5×4=20
- What is biosphere? Explain its importance in shaping the environment? 2+3
  - Explain briefly the role of carbon and phosphorus cycle in maintaining the steady state.
  - Explain how temperature change with height in different atmospheric layer.
  - What is continental drift theory? What were evidences provided in support of this theory?
  - Why tides are formed? Explain different types of tides and their frequencies.
  - Explain plate tectonic theory in brief.

### SECTION-III

3. Answer any **one** question:  $10 \times 1 = 10$
- a) What is geophysical method of earth investigations? What is the meaning of 'GPR'? Discuss different layers of earth interior. What do you mean by 'Universal Lapse Rate'?  $2+1+5+2$
- b) Explain Big-Bang theory to explain the origin of universe. What are the evidences in support of it?  $7+3$

### B.Sc. Semester-VI Examination, 2022-23

#### PHYSICS [Honours]

Course ID : 62416 Course Code : SH/PHS/603/DSE-3/T-6

Course Title : Biological Physics

Time : 2 Hours

Full Marks : 40

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

#### SECTION-I

1. Answer any **five** questions:  $2 \times 5 = 10$
- a) What is cell differentiation and why is it important?
- b) What is monomer and polymer? Give examples.
- c) Define simple random walk and lazy random walk.
- d) What is a neural network?
- e) What is a regulatory network on gene expression?
- f) What is the importance of the foodweb?
- g) What is the application of random walk in biology?
- h) What is systems biology?

## SECTION-II

2. Answer any **four** questions:  $5 \times 4 = 20$
- a) What are the structure and function of cytoplasm in living cells?
  - b) Briefly describe the main differences between RNA and DNA. Write down the utility of a synthetic biological circuit.
  - c) Write down the cellular function of proteins in case of a living system.
  - d) What are allometric scaling laws? Explain with example.
  - e) "Brain as an information processing system."- Explain the statement.
  - f) What do you mean by self-sustaining ecosystem? Explain with example.

## SECTION-III

3. Answer any **one** question:  $10 \times 1 = 10$
- a) Differentiate between divergent evolution and convergent evolution? Write about the concept of genotype-phenotype map? What are the three aspects of biological evolution?  $3+4+3$

- b) Describe nucleic acid and specify its roll in a living organism. What are nucleotides and nitrogenous bases? How protein biosynthesis is associated with nucleic acids?  $3+4+3$
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