

B. SC. 1ST YEAR 1ST SEMESTER EXAMINATION, 2023

ESSENTIALS OF GEOLOGY

PAPER – GENERIC ELECTIVE

Time : Two hours

Full Marks : 40

(Use a separate Answer script for each Part)

PART – I (20 Marks)

Answer any **four** questions.

1. a) What are the major components of the Earth as a system?
b) Derive the equation to show the pressure variation inside the Earth. Use a graphical plot to illustrate the variation. 1+4=5
2. a) Form an equation to show the variation of temperature with depth in the Earth. Answer with a diagram.
b) Do compressional waves travel faster than shear waves in a given elastic medium? Explain the answer. 3+2=5
3. a) Describe the internal structure of the Earth revealed from elastic wave velocities.
b) With the help of P-wave velocity versus depth diagrams show the difference between oceanic and continental crusts. 3+2=5
4. a) What are the geological observations that indicate

[Turn over

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the dynamically active state of the Earth?

- b) Using a diagram show the declination and inclination of the magnetic field at a point on Earth's surface. $3+2=5$
5. a) What is meant by coordination number of ions in a lattice structure? Explain the answer with examples.
- b) Using diagrams explain the basic crystallographic elements used to define the major crystal systems. $2+3=5$
6. Describe the principal types of silicate structures of common minerals in rocks. 5

PART – II (20 Marks)

1. Answer any **five (5)** of the following: $1 \times 5 = 5$
- a) How did the ozone layer form on earth?
- b) What is the span of Proterozoic Eon?
- c) What is Uniformitarianism?
- d) What is Exfoliation?
- e) What is Outgassing?
- f) What is the name of volcanic equivalent of Granite rock?
- g) What is erosion?
2. Answer any **three (3)** of the following: $5 \times 3 = 15$

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- a) What is weathering of a rock? Discuss physical and chemical weathering with examples.
- b) How did oxygen rich atmosphere developed on earth? What was the composition of the Archean atmosphere?
- c) Discuss the soil profile with diagram?
- d) How do you define a Rock? What is the common type of rocks present on Earth Surface? Discuss Rock cycle.
- e) What are the essential components of life? Where did the life appear on earth? What are Hyperthermophiles organisms?