

Ex/SC/GEOL/UG/DSE/TH/01/A/2025

B.Sc. GEOLOGICAL SCIENCE EXAMINATION, 2025

(3rd Year, 1st Semester)

PAPER : DSE/TH/01/A

(EARTH AND CLIMATE)

Time : Two Hours

Full Marks : 40

(Use separate Answer Scripts for each Part.)

PART—I (20 Marks)

Q.No. 1 is compulsory and **any three** from the rest :

1. In the India map (attached), mark places showing : 5
(a) Areas receiving rainfall over 400 cm/yr
(b) Areas receiving less than 20 cm of rainfall/yr
(c) The direction of the south-west monsoon over India
(C2)
2. What are the natural factors that affect Earth's climate?
Explain briefly. 5
(C1)
3. State and discuss about the greenhouse gases that contribute
to global warming. 5
(C5)

GEOL-958

[Turn Over]

(2)

4. Write short notes on (any two) : 5

- (a) Younger Dryas
- (b) Coriolis Force
- (c) Thermohaline circulation

(C1)

5. Describe the regional variations in the climatic conditions of India with the help of suitable examples. 5

(C2)

PART—II (20 Marks)

Answer **any four** questions : 5×4=20

1. What is an open dynamic system? How does it differ from a close dynamic system? Explain in brief with examples. How is flux crucial for maintaining the steady state of the global environment system? 1+2+2

2. Present a schematic flow chart to show the energy budget of the present-day Earth. How does the greenhouse effect differ from global warming? 3+2

3. What does the term 'radiation balance' mean? How does the intensity of incoming and outgoing solar radiation varies with latitude? Discuss in brief by a graphical presentation. How is it possible for the polar regions to produce more outgoing radiation than incoming radiation? 1+2+2

(3)

4. Why does the temperature in the stratosphere rise with its height? Mention the importance of the stratosphere for the sustainability of the biosphere of the earth system. 2+3

5. What are the primary requirements for precipitation? How does cyclonic cooling differ from orographic cooling? Explain in brief. 2+3

★ ★ ★