B. Sc. (Geological Sciences) Examination, 2022

(3rd Year, 2nd Semester)

Environmental Geology

Paper – DSE / TH / 04B

Time : Two hours Full Marks : 40

(Use a separate Answer script for each Part)

PART I (20 Marks)

Answer any four questions from the following : (4×5)

1. Chose the cortrect option from the following : (5×1)

   i) Out of the following, which is not a significant contribution system to the Hydrologic cycle ?

   a) Pedosphere b) Atmosphere

   c) Biosphere d) Lithosphere

   ii) Kolkata city of West Bengal, India, is located within the Earthquake zone of

   a) Zone III b) Zone IV

   c) Zone I d) Zone II

   iii) Liquefaction of soil is tggered by

   a) Sudden seismic shock in dry granular soil in arid region

   b) Could bursting in residual soil in hilly terrain

   c) Rapid super saturation of fine gained cohesive soil

d) Excess rate of runoff in a steep hill slope with low vegetation

iv) Atmospheric Window centered on wavelength of

a) 8 – 110 μm b) 8 – 12 μm

c) 12 – 110 μm d) 110 – 400 μm

v) Entrainment of basal materials and radical increase of its momentum with a very short time interval is the typical characteristic of

a) Avalanche b) Rock fall

c) Debris flow d) Cloud bursting

2. What is 'vulnerability' of an area in concern of its exposure to natural disaster? How it is related with 'specific risk' and magnitude of hazardous event? Why heavy precipitation act as a triggering factor for the disaster caused by slope failure in hilly terrain ? – Explain in brief. 1+2+2

3. Mention the major parameters those are considered as key function to classify mass wasting process. Present a tabular chart to show the classification of natural mass wasting process proposed by IAEG (2001). 1+2+2

4. Why global warming is considered as an outcome of positive feedback? What is the most predominant greenhouse gas in the present day atmosphere? Why Chlorofluorocarbons (CFCs) and hydro-

chlorofluorocarbons (HCFCs) are most effective gases in concern to global warmiing during anhtropocecne? 2+1+2

5. Distinguish in between (any two) 2.5×2

a) Close – Static System and Open – Dynamic System

b) Lahar and Slurry flow

c) Green house effect and global warming

PART II (20 Marks)

Answer Question No. 6 and any two from the rest

6. Write short notes on 2×2+4

a) Atmospheric layers

b) Heavy metal pollution

7. What is the Coriolis Effect? What impact does it have on atmospheric circulation? What is Ekman transport? (2+4+2=8)

8. What is pedosphere? Which factors are responsible for soil formation? What is soil profile? (2+2+4=8)

9. How do you distinguish 'Oligotrophic Lake' and 'Eutrophic Lake'? What impact does it have on aquatic orgnisms? Give an account on the hydro-geochemistry of fluoride? What are the defluoridation processes? (3+3+2=8)