M. Sc. Applied Geology Examination, 2022

(2nd Year, 1st Semester)

Sequence Stratigraphy and Basin Analysis

Paper – DSE/TH/01B

Time : Two hours | Full Marks : 40

(Use a separate Answer script for each Part)

PART – I (20 Marks)

1. Briefly discuss the role of paleocurrent analysis in the study of basin evolution. 10

Or

(a) How does sediment get preserved in the rock record? Is the stratigraphic record complete? - Justify.

(b) Is there any bias in sediment preservation record between the Phanerozoic and the Precambrian? 5+5

2. How valid is the 'Law of Uniformitarianism' in case of carbonate formations? 5

3. How did the bank stability of meandering rivers vary with evolution of land plants during the Phanerozoic? 5

4. Write short notes on (any two) 5
   (i) Carbonate platform
   (ii) Decline of Stromatolite during the Phanerozoic
   (iii) Influence of microbial mats in Proterozoic sedimentary record.

PART – II (20 Marks)

Answer any **two** of the followings

1. Define systems tract. Write a note on different important surfaces of sequence stratigraphic framework highlighting their importance in designating different systems tracts. Why parasequences are always coarsening upward? 2+6+2

2. (a) Why standard sequence stratigraphic terminologies are not applicable for strictly non-marine sequence stratigraphic trends? Differentiate between low- and high-accommodation systems tracts. 2+3
   (b) Define the base level of erosion of a fluvial system. How does it control the sequence development pattern? 2+3

3. What are the major criteria for modern classification of sedimentary basins? Write down the major classes of this classification. Differentiate between active and dormant ocean basins. 3+1+6