

Ex/SC/GEOL/PG/DSE/TH/01B/2025

M.Sc. APPLIED GEOLOGY EXAMINATION, 2025

(2nd Year, 1st Semester)

PAPER : DSE/TH/01B

(SEQUENCE STRATIGRAPHY AND BASIN ANALYSIS)

Time : Two Hours

Full Marks : 40

(Use separate Answer-scripts for each Part)

PART—I (20 Marks)

Answer Question No. **1** and *any two* from the rest :

1. Write short notes on *any two* of the following : 5×2=10
 - (a) Paleocurrent patterns in Aeolian, Fluvial and Marine depositional systems **(CO1)**
 - (b) Role of microbiota in preservation of sediment during the Proterozoic time **(CO1)**
 - (c) Role of different plant groups for providing river bank stability in Phanerozoic time periods **(CO2)**
2. Why is the principle of uniformitarianism theory not always valid for carbonate sediments? 5 **(CO2)**
3. What is the major architecture of submarine fan sediments? Discuss briefly the character of inner and mid fan sediments. 5 **(CO2)**

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[Turn Over]

(2)

4. How do you explain the Spring-neap-Spring tidal cyclicities? Why is a tidal signature effective for identification of marine sediments? 5 (CO2)
5. Define sedimentary facies. Why is facies analysis a prerequisite for the basin evolution study? 5 (CO3)

PART—II (20 Marks)

Answer *any two* of the following :

1. (a) Which factors primarily control the sequence stratigraphic trends in a non-marine succession? How are these factors combined to determine the accommodation space in non-marine successions? (CO : 1 & 2) 2+3
- (b) Describe the developmental stages of a downstream-controlled fluvial sequence, characterizing each systems tract. (CO : 1 & 2) 5
2. (a) Write a note on different important surfaces of a sequence stratigraphic framework highlighting their importance in designating different systems tracts. (CO : 1) 7
- (b) Why does Lowstand Systems Tracts (LST) have lower preservation potential than Transgressive Systems Tracts (TST) in passive margin shallow marine settings? (CO : 1) 3

(3)

3. Distinguish between terrestrial rift basin and intracratonic basin. Write the characteristic features of a terrestrial rift basin. (CO : 2 & 3) 3+7

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