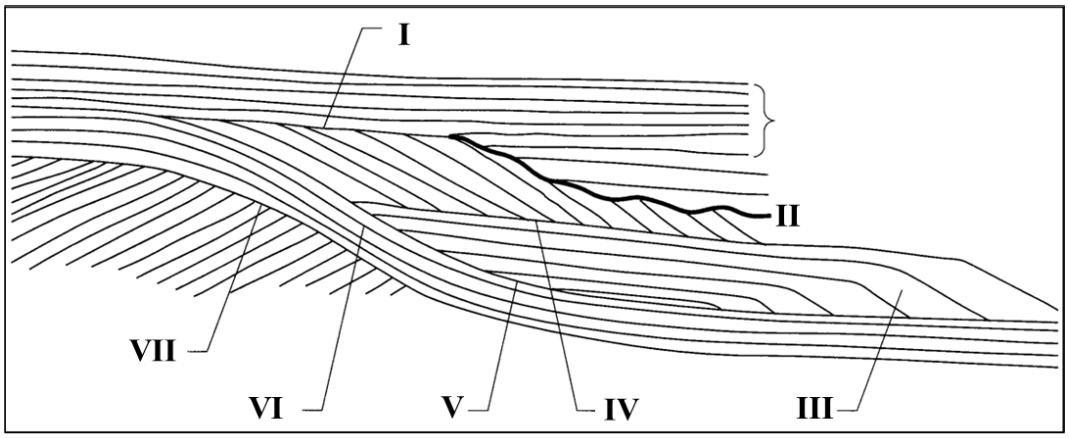
Name: **Enrolment No:**	

End-Semester Examination, December 2024

Course: **Sedimentology and Sequence Stratigraphy** **Semester : I**
Program: **M.Sc. Applied Geology** **Time : 03 hrs.**
Course Code: PEGS 7006 **Max. Marks: 100**
Instructions: *Draw properly annotated diagrams wherever necessary.*

SECTION A (5Qx4M=20Marks)

SN		Marks	CO
Q1	Discuss the concepts of porosity and permeability in sedimentary rocks, highlighting their significance and interrelationship.	**2+2**	**CO1**
Q2	Differentiate the formation of cross-bedding and herringbone cross-bedding.	**2+2**	**CO2**
Q3	Describe the four key differences in textural properties between reservoir rocks of fluvial and aeolian origin.	**4**	**CO2**
Q4	**True or false,** **a)** -2 is a phi value for a grain size of 0.25 mm. **b)** Darcy's Law is used to calculate the fluid viscosity. **c)** The Tidal flat sedimentary environment has an abundance of evaporates. **d)** According to Dott's classification the term Arkose describes a sandstone with 25% or more feldspar.	**4 (1 mark each)**	**CO1**
Q5	**True or false,** **a)** The fining upward sequence is indicative of marine transgression. **b)** Symmetrical ripples are expected to form in the deep-water environment. **c)** An MRS is marked between FSST and LST. **d)** The aggregational stacking pattern is formed during the FSST.	**4 (1 mark each)**	**CO2**
	SECTION B (4Qx10M= 40 Marks)		
Q6	Explain the processes of lithification and diagenesis in sedimentary rocks. Discuss the key factors that influence each process and how they contribute to the transformation of loose sediments into solid rock.	**5+5**	**CO3**
Q7	Explain the following, **a)** Graded bedding **b)** Basin floor fan and Slope fan formation in different stages	**5+5**	**CO1**
Q8	Explain sedimentary facies, their characteristics, and applications in depositional environments and paleoenvironment reconstruction.	**10**	**CO4**
Q9	Illustrate the process of dolomitization, highlighting the key conditions and mechanisms involved in this process.	**10**	**CO2**
	OR		

	Explain in detail the classification of rudaceous rocks, highlighting their key characteristics and the criteria used for their classification.		
SECTION-C (2Qx20M=40 Marks)			
Q10	**a)** Explain the changes in fluvial depositional environment along a river's course. **b)** Draw a detailed diagram of a river's longitudinal profile and describe the sedimentary characteristics of geomorphic features in different stages.	**8+12**	**CO3**
Q11	**(a)** Draw one cycle of sea-level change and annotate the depositional sequence, system tracts, and sequence boundaries with their definitions. Additionally, explain the causes of variation in the sedimentary depositional style of different system tracts. **(b)** Draw and annotate a diagram illustrating sediment depositional patterns, ranging from FSST to HST and correlate the formation of petroleum system elements (Reservoir, Cap and Source rocks) during different stages of the relative sea cycle. OR **(c)** Draw and explain four sediment stacking patterns. Explain how it provides insights into the depositional history of a sedimentary basin. **(d)** Interpret the below given stratal stacking patterns of aquatic sedimentary systems. Identify and define features I-VIII, and provide a detailed explanation of their formation processes. 	**10+10**	**CO4**

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