

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2021

Course: Sedimentary Petrology

Program: B.Sc Geology

Course Code: PEGS 2025

Semester: III

Time 03 hrs.

Max. Marks: 100

Instructions:

- Section A (Short answer type from Q1 to Q5, 4 marks each)
- Section B (Short notes type from Q6 to Q9, 10 marks each)
- Section C (Q10 and Q11, Long answer type)
- An internal option is given in questions 9 & 11.

SECTION A

(Short answer)

(5Q x 4M = 20 Marks)

S. N.		Marks	CO
Q1	Define in brief about the clastic and non-clastic sedimentary rocks with two examples of each types.	4	CO1
Q2	Describe the symmetric and asymmetric ripples with an example of an associated sedimentary environment.	2+2	CO1
Q3	Explain four controlling factors of Porosity (ϕ) and Permeability (k) in sedimentary rocks.	4	CO2
Q4	Identify True or False from the given statements- a) In the Dolomitization process, the Iron ions are replaced by calcium. b) Effective porosity refers to total void space in the rock. c) Aeolian origin sediments are very well-sorted. d) Chalk is a clastic sedimentary rock.	4 (1 mark each)	CO3
Q5	Identify True or False from the given statements- a) Clastic rock having a grain size between 1/16- 2cm is known as arenaceous rock. b) Point bars are formed at the young stage of a river. c) Turbidity currents do not contribute to transport coarser clastic sediments in shallow to deeper water. d) Maximum flooding surface (MFS) is marked between the TST and HST.	4 (1 mark each)	CO3

SECTION B

(Short note type)

(4Q x 10M = 40 Marks)

Q6	Describe five sedimentary structures produced by mechanical origin and their significance in paleoenvironmental analysis. (Draw appropriate diagram)	2x5=10	CO1
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Q7	Illustrate Lithification and Diagenesis processes.	5+5	CO2
Q8	Draw and explain the river processes of sediment erosion and transportation.	5+5	CO3
Q9	Explain the composition of carbonate rocks. Illustrate in detail about Limestone rocks classifications given by Dunham.	10	CO4
OR			
	Illustrate in detail about Dott's classification of Arenaceous rocks. Explain the basis of classification with an appropriate example.	5+5	
SECTION C			
(Long answer type)		(2Q x 20M = 40 Marks)	
Q10	Differentiate depositional environment of Alluvial fan, Delta and Submarine fan with respect to sedimentary textural maturity and depositional setting. (Draw appropriate diagrams to illustrate your answer)	20	CO4
Q11	<p>a) Explain Walther's law of facies correlation and its importance in geological interpretation of the depositional environment.</p> <p>b) Draw a depositional sequence with one cycle of sea-level change, annotated by system tracts, sequence boundaries and give their definition. Draw & explain the causes of variation in sediment depositional style of different systems tracts (starting from FSST to HST)</p>	10+10	CO5
OR			
	<p>a) Explain sequence stratigraphy and five controlling factors on deposition of sedimentary sequences.</p> <p>b) Draw and explain four stacking patterns supported by appropriate diagrams. Explain how sea-level changes/ variable sediment supply affects stacking patterns of different parasequences.</p>		