Name: Enrolment No:	⛶ UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: Subsurface Mapping and Modelling   **Semester: VII**
Program: B. Tech GSE   **Time 03 hrs.**
Course Code: PEGS 4010   **Max. Marks: 100**

SECTION A [5x4=20marks]
1. **Each Question will carry 4 Marks**
2. **Instruction: Complete the statement / fill the correct answer(s)**

S. No.	Question	CO
Q 1	List out the permeability and lithology logs	CO1
Q2	Differentiate and relate Isochore and Isopach map?	CO1
Q3	What are non interpolative methods in subsurface modelling ?	CO1
Q4	(a) Isolith map is prepared from … .. (lithology/elevation) data (b) The spacing of contour lines is a function of the …. .. (slope/size) of the surface being contoured (c) In seismic data interpretation apparent dip is … (less than/greater than) true dip for dipping bed (d) A contour line …. (can/can not) merge with contours of the same value or different values.	CO2
Q5	a) Triangulation is ….(direct/indirect) and gridding is …..(direct/indirect) computer contouring techniques b) Estimating values at grid nodes generally uses …..(nearest /natural) Neighbors technique c) Drilling of well in Inaccessible surface location will require ….. (directional/vertical) well d) Seismic coherence attributes help in delineating ….(structure/lithology)	CO2

SECTION B[4x10=40marks]
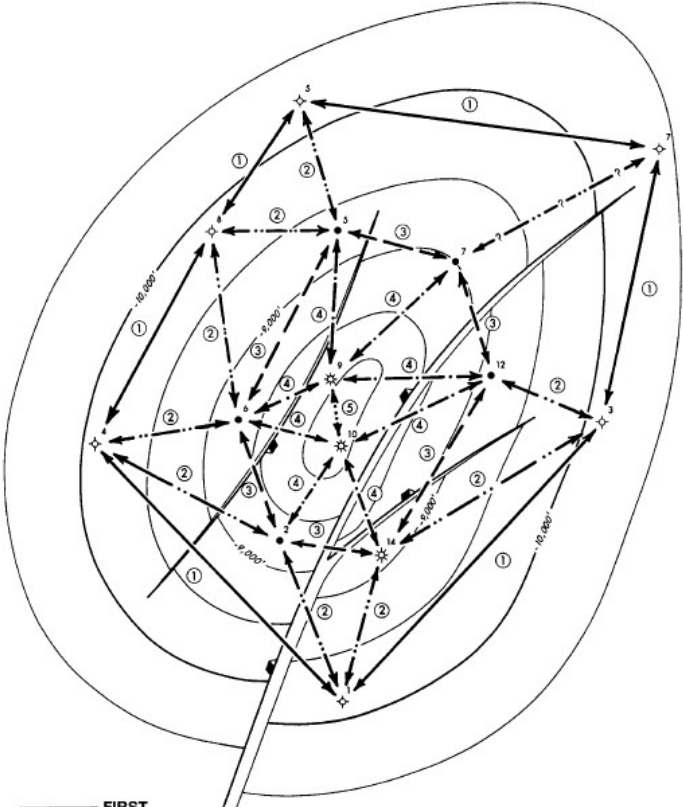1. **Each question will carry 10 marks**
2. **Instruction: Write short / brief notes**

Q 6	Briefly explain the various Nearest Neighbour methods of creating grid surface from data points	CO3
Q 7	Evaluate the steps involve in identifying variation of stratigraphy and missing section of a fault in log correlation techniques using SP and Resistivity log	CO3

Q 8	Evaluate the integrated approach of gravity and magnetic survey in sub surface modelling	CO4

Q 9	Evaluate the different types of well logging techniques with their applications in mapping of subsurface formation	CO4
	OR	
	Explain the various types of directional drilling well with suitable sketch diagram identifying various components	

Section C [2x20=40marks]

1. **Each question will carry 20 marks.**
2. **Instruction: Write long answer.**

Q10	Examine the steps involve in .correlating well in delineating subsurface formations from given diagram	CO6
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	OR	
	Explain in detail on seismic data analysis and interpretation in 3D subsurface mapping and modelling	
Q11	Explain in detail on various mathematical and geostatistical methods being used in various stages of subsurface modelling	**CO5**