Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course Name: M. Sc. Petroleum Geoscience **Semester:** III
Program: Basin Analysis **Time: 3** hrs**.**
Course Code: PEGS 8008 **Max. Marks:** 100
Nos. of page(s) 2

Instructions

I. All questions are compulsory.
II. Read question carefully and write appropriate answer.
III. Write correct unit in after numerical calculation.
IV. Use neat diagram with proper labeling to explain the answer.

SECTION A
(5Qx4M=20Marks)

S. No.		**Marks**	**CO**
Q 1	Define components of a Sedimentary basin.	**4**	**CO1**
Q 2	Illustrate growth fault and salt diapirism.	**4**	**CO2**
Q 3	Define petro physical properties of sedimentary rocks.	**4**	**CO4**
Q 4	Explain, the components of basin analysis.	**4**	**CO5**
Q 5	State the applications of porosity and permeability in reservoir rock analysis.	**4**	**CO3**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Differentiate the following - a. Relative Sea Level & Base Level b. Alluvial fan & Delta OR Write short notes on the following- a. Sedimentary response model b. Sedimentary cycles	**10**	**CO2**
Q 7	Give the concept of subsurface mapping. What are the significance of Isopach map and fence diagram in basin analysis?	**10**	**CO3**
Q 8	Discuss the causes of subsidence and subsidence analysis methods. Relate the dynamic topography with subsidence mechanism.	**10**	**CO5**
Q 9	In a sedimentary basin, a thickness of 100m and porosity 20% of a sedimentary unit is recorded from a borehole depth at 4 km, whereas same sedimentary unit has 50% initial porosity at the surface. Evaluate the original thickness and compacted thickness of the sedimentary unit.	**10**	**CO4**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Discuss the concept of delta formation. How can they be classified? Describe the rocks related characteristics in ancient deltaic deposition.	**20**	**CO4**

Q 11	Discuss about the concept of sedimentary rock analysis and back stripping techniques. State the significance of depositional models used in geo-history analysis. OR Large area of continent consists of 30 km of crust with density 2.8 Mg/m3 over 90 km of material with density 3.1 Mg/m^3. The asthenosphere density is 3.2 Mg/m^3 . This region is covered with a 1.6 km thickness of ice of density 0.9 Mg/m^3 . The ice-covered region is assumed in isostatic equilibrium. Then, the ice melts. By how much will the rock surface of the continent change when the new isostatic equilibrium is re-established?	**20**	**CO5**