

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination December 2018

Programme Name: B. TECH [GSE & GIE]

Semester : V

Course Name : Petroleum Geology

Time : 03 hrs

Course Code : EASC 311

Max. Marks : 100

Nos. of page(s) : 01

Instructions:

SECTION A [Attempt all Questions: 5X4= 20 Marks]

S. No.		Marks	CO
Q 1	Define the Thermal Alteration Index [TAI], Vitrinite Reflectance and Kerogen.	2+1+1	CO1
Q 2	Justify the statement "Hydrocarbon are generated from the organic matters"	4	
Q 3	Illustrate the carbonate rock porosity.	4	
Q 4	List any four geological structures, which supports hydrocarbon accumulations.	4	CO3
Q 5	Define the capillary pressure and elaborate its role in hydrocarbon migration.	4	CO3

SECTION B [Attempt all Questions: 8X5=40 Marks]

Q 6	Explain and Illustrate any three migration mechanism of hydrocarbon from source to reservoir accumulation.	8	CO2
Q 7	Write a Short Notes on: i- Frontier Basin ii- Petroleum system	4+4	CO6
Q 8	Classify the petroliferous basins of India into different categories based on exploration and production status. Illustrate petroleum system for any one of them.	6+2	CO6
Q9	Give the classification of reservoir rock. Describe siliciclastic rock as reservoir. OR List the chemical composition and molecular structures of hydrocarbons. Classify the Hydrocarbons based on API and specific gravity.	4+4	CO2
Q 10	Differentiate any two with suitable figure: i- Unconformity trap & Palaeogeomorphic trap ii- Folded trap & Faulted trap iii- Stratigraphic trap & Fractured trap	4+4	CO4

SECTION C [Attempt any one Question: 20 Marks]

Q 11	Draw and explain the cross sections of four possible geological settings through which large amount of organic matters can accumulate. Explain the role of environmental conditions, which promote the accumulation of organic matter for hydrocarbon formation. Graphically Illustrate, where the oil and gas window occurs and show relative volume of each hydrocarbon, which can be produce along with the depth profile, in the plot show the temperature range for the oil and gas window. Assume surface temperature 30°C and geothermal gradient 30°C/km.	10+5+5	CO 5
Q 12	Describe the global geological distribution of hydrocarbon resources. Explain the status of Indian hydrocarbon reserves and their distribution, with example.	10+10	CO4

OR			
13 (a)	<p>Calculate the maximum hydrocarbon column height, which trapped in sandstone and below shale, before the shale breached. Assume that rock is water wet. The parameters are recorded as:</p> <p style="padding-left: 40px;">Pore throat diameter in sandstone: 40μm. Pore throat diameter in shale: 10μm. Interfacial tension: 18 Dynes/cm Hydrocarbon density: 900 kg/m³ Freshwater density : 1000 kg/m³</p>	10+10	
13 (b)	<p>Draw a cross section through an extensional basin. Label the footwall, hanging wall and the position of potential reservoirs.</p>		