Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

School of Engineering

Mid - Term Examinations - November 2024

Semester: V | **Date**:04-11-2024

Course Code: PET2014 | **Time**: 02:00pm to03:30pm

Course Name: Geophysical Methods for Oil and Gas Exploration | **Max Marks**: 50

Program: B. Tech. (Petroleum Engineering) | **Weightage**: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2 marks. **5Qx2M=10M**

1	Fill in the Blanks with Single Word: van Krevelen Diagram plots the hydrogen-to-carbon (H/C) ratio against the oxygen-to-carbon (O/C) ratio of organic materials, typically derived from _____ analysis or _____ data.	**2 Marks**	**L1**	**CO1**
2	List two surface indications of petroleum accumulation.	**2 Marks**	**L1**	**CO1**
3	Define "Fossil".	**2 Marks**	**L1**	**CO1**
4	Fill in the Blanks with Single Word: Geological exploration data have found their greatest utility when integrated with _____ and _____ data. Poorly applied, the combination of surface and subsurface exploration methods leads to better prospect evaluation and risk assessment.	**2 Marks**	**L1**	**CO2**
5	List any two potential benefits of a successful geochemical exploration program.	**2 Marks**	**L1**	**CO2**

Part B

Answer ALL Questions. Each question carries 10 marks. **4QX10M=40M**

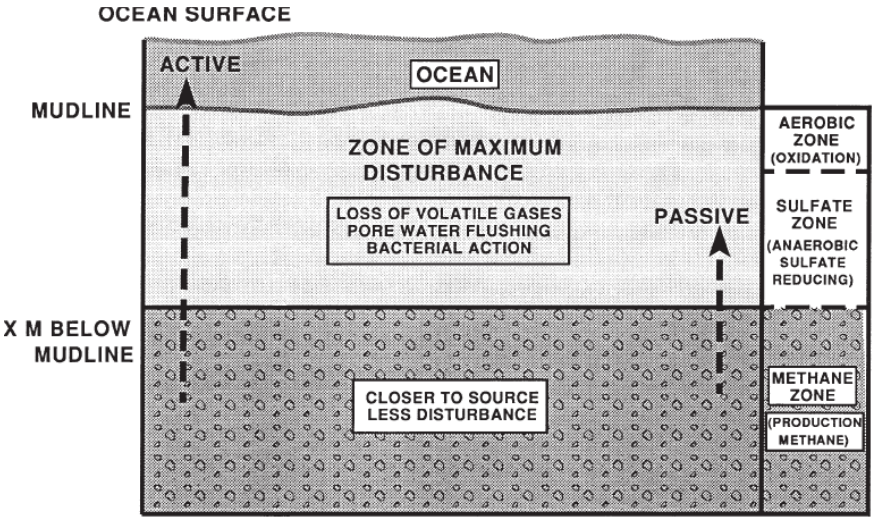
6	(a) Discuss the van Krevelen Diagram used in geochemistry and petroleum geology. (b) Explain the types of kerogen identified using van Krevelen Diagram.	**5 + 5 Marks**	**L2**	**CO1**
	or			
7	Surface indications of petroleum accumulation are natural signs that suggest the presence of hydrocarbons (oil and gas) beneath	**10 Marks**	**L2**	**CO1**

the Earth's surface. Explain at least five surface indications of petroleum accumulation.

8	Nanoliths, often referring to coccoliths in the context of oil and gas exploration, are minute calcium carbonate ($CaCO_3$) structures produced by coccolithophores, a type of planktonic algae. These nanoliths play a significant role in petroleum geology due to their abundance in marine sediments and their usefulness in various exploration processes. Explain the applications of Nanoliths in (a) Source Rock Evaluation, and (b) Reservoir Characterization and Correlation.	**5+5 Marks**	**L2**	**CO1**

or

9	Discuss the use of Calcareous Nanofossils in oil and gas exploration.	**10 Marks**	**L2**	**CO1**
10	The figure below illustrates the zone of maximum disturbance in shallow marine sediments. Discuss the figure.	**10 Marks**	**L2**	**CO2**



Or

11	Explain the (a) Significance of Anomalies, and (b) Benefits of Surface Geochemical Exploration.	**5 + 5 Marks**	**L2**	**CO2**

12	The surface geochemical expression of petroleum seepage can take many forms. Illustrate five evidences of surface geochemical expression.	**10 Marks**	**L3**	**CO2**
	or			
13	Discuss the principle geochemical methods used for (a) Offshore Exploration, and (b) Onshore Exploration.	**5+5ss Marks**	**L3**	**CO2**