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Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: PET2118 **Course Name:** Methods for Oil and Gas Exploration

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3	CO4
Marks	24	22	40	4

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define kerogen and state how it contributes to petroleum generation from buried organic material.	2	CO1	BT1
2	Arrange the successive stages of petroleum generation in the appropriate sequence with respect to increasing burial depth.	2	CO1	BT1
3	Describe how fossils assist in well-to-well correlation and state the importance of biostratigraphy in petroleum exploration.	2	CO2	BT2
4	Two spherical bodies with masses of 10 kg and 8 kg are separated by 4 m. Compute the gravitational force acting between them.	2	CO4	BT2
5	Describe the factors on which gravitational acceleration at the Earth's surface varies.	2	CO4	BT2

PARTB: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT
06.A	Differentiate between the Organic and Inorganic theories of petroleum origin. Describe the fundamental concepts of both theories and justify the acceptance of the Organic Theory using relevant geological and geochemical evidence.	10	CO1	BT2
06.B	Use the principles of acid digestion to classify the functions of HCl and HF during fossil sample preparation. Determine the importance of following appropriate laboratory safety procedures while carrying out acid treatment.	10	CO2	BT3
07.A	Describe the Van Krevelen diagram and explain the significance of the H/C and O/C ratios in identifying kerogen types. Differentiate between Type I, Type II, Type III, and Type IV kerogen based on their organic composition and respective oil- and gas-generating capabilities.	10	CO1	BT2
07.B	An exploration well is being evaluated for possible hydrocarbon-bearing formations, and both core samples and drill cuttings have been obtained from various depths. Use a suitable sample-preparation procedure for these materials and illustrate the sequential steps required for palynological and micropaleontological analysis to determine the stratigraphic position and depositional history.	10	CO2	BT3

PARTC: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT

08.A	A sedimentary basin under exploration shows surface methane anomalies, minor oil films, and hydrocarbon staining. Geological investigations also reveal faults, fractures, and permeable carrier beds, although a commercial reservoir has not yet been established. Examine the mechanisms that may cause hydrocarbon seepage in the area and illustrate how buoyancy and pressure gradients facilitate hydrocarbon migration.	10	CO3	BT3
08.B	During exploration, geologists observe continuous hydrocarbon leakage at some locations and bitumen deposits preserved within older sedimentary rocks at others. Classify these observations as active, weak, intermittent, or fossil/paleo-seepage, as appropriate, and examine the distinguishing characteristics of present-day seepage and paleo-seepage.	10	CO3	BT3
09.A	Illustrate the fundamental principles of indirect geochemical exploration and classify the major indicators associated with hydrocarbon migration. Also predict, how remote sensing, spectral imaging, soil alteration, mineralogical changes, and geobotanical indicators can be used to detect surface anomalies related to petroleum systems.	10	CO3	BT3
09.B	Determine the fundamental principle of direct geochemical exploration and classify the principal methods employed for hydrocarbon detection. Illustrate the sequential steps involved in soil-gas sampling and examine the applications of gas chromatography in petroleum exploration.	10	CO3	BT3