QP CODE: 24900200

Reg No:.....

Name:.....

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

FIRST SEMESTER MGU-UGP (HONOURS) REGULAR EXAMINATION NOVEMBER 2024

First Semester

Discipline Specific Core Course - MG1DSCPEG100 - FUNDAMENTALS OF PETROLEUM GEOCHEMISTRY

(2024 ADMISSION ONWARDS)

Duration: 1.5 Hours Maximum Marks: 50

Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Interest (I), Appreciation (Ap), and Skill (S)

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

[Learning Domain][CO No(s)]

Part A
Multiple Choice Questions
Answer all questions.
Each question carries one mark.

1 Petroleum is primarily composed of which type of hydrocarbons? [K] [1]

a) Saturated hydrocarbons b) Unsaturated hydrocarbons
c) Aromatic hydrocarbons d) All of the above

2 The Abiogenic Theory posits that petroleum originates from: [U] [1]

a) Decayed plant matter b) Organic material subjected to heat and pressure
c) Deep Earth processes involving carbon and hydrogen compounds d) Surface weathering of rocks

3 Which factor does NOT directly influence the migration of petroleum? [K] [2]

a) Pressure b) Temperature
c) Biological activity d) Permeability of rocks

4 Recognize the key benefit of using remote sensing in petroleum exploration [K] [3]

a) High-resolution imaging of the subsurface
b) Detailed information on oil and gas composition
c) Wide area coverage to identify surface anomalies
d) Measuring the density of rock formations

5 Select the well-logging technique measures the natural radioactivity of rock formations [K] [3]

a) Resistivity Logging
b) Density Logging
c) Gamma-Ray Logging
d) Acoustic Logging

6 Recognize the primary purpose of conducting a resistivity log in a borehole? [K] [3]

a) To measure the electrical resistance of the drilling equipment
b) To detect the presence of hydrocarbons by measuring the resistivity of rock formations
c) To map the magnetic properties of the subsurface
d) To measure the gravitational pull on the borehole

7 Select which of the following hydrocarbon is primarily found in natural gas? [K] [4]

a) Benzene
b) Ethylene
c) Methane
d) Cyclohexane

8 Identify the role of sulphur compounds in crude oil refining [U] [4]

a) They enhance octane rating
b) They increase viscosity
c) They can lead to corrosion
d) They act as catalysts

9 Recognize which hydrocarbon is typically liquid at room temperature? [K] [5]

a) Methane
b) Ethane
c) Hexane
d) Propane

10 Identify which of the following hydrocarbons would generally have the highest flash point? [K] [5]

a) Gasoline
b) Kerosene
c) Diesel
d) Methanol

(10 × 1 = 10)

Part B

Short Answer Type Questions
Answer any four questions.
Each question carries three marks.

11 List out the benefits of deasphalting process [An] [1]

12 Illustrate migration of hydrocarbons from carrier beds to reservoir rock [A] [2]

13 Write a short note on magnetic method in petroleum exploration and its key applications [A] [3]

14	Describe the role of trenching and pitting in petroleum exploration.	[U]	[3]
15	Summarize the implications of nitrogen compounds for crude oil pricing?	[U]	[4]
16	Explain the significance of a high calorific value for a fuel	[U]	[5]

(4 × 3 = 12)

Part C

Short Essay Type Questions

Answer any four questions.

Each question carries seven marks.

17	Justify that modern theory provides better explanation for origin of petroleum than other theories.	[E]	[1]
18	What is primary migration in the context of petroleum formation, and how does it differ from secondary migration?	[K]	[2]
19	Illustrate how does core sampling enhance the understanding of subsurface geology. Discuss its application in oil exploration.	[An]	[3]
20	Discuss the various surface and subsurface exploration techniques used in petroleum exploration.	[U]	[3]
21	Explain the significance of metallic and organometallic hydrocarbons in crude oil and their implications for refining.	[U]	[4]
22	Explain how the refractive index is used to characterize hydrocarbons and assess their quality.	[U]	[5]

(4 × 7 = 28)

END OF THE QUESTION PAPER

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