



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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Mid - Term Examinations - March 2026

Date: 12- 03-2026

Time: 02:00pm - 03:30pm

School: SOE	Program: B.Tech. (PET)		
Course Code: PET3007	Course Name: Enhanced Oil and Gas Recovery Techniques		
Semester: VI	Max Marks: 50	Weightage: 25%	

CO - Levels	C01	C02	C03	C04	C05	C06
Marks	10	10	20	10		

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 2marks.

5Q x 2M=10M

1	State why polymer flooding generally applied after water flooding.	2 Marks	L1	C01
2	Explain how alkaline flooding leads to in-situ surfactant generation.	2 Marks	L2	C01
3	Describe how polymer flooding helps in improving the mobility ratio.	2 Marks	L2	C01
4	compute the relative permeability of water if Water cut = 0.70, $k_{ro} = 0.4, \mu_o = 10\text{cP}, \mu_w = 1\text{cP}$.	2 Marks	L2	C01
5	Describe the phenomenon of polymer retention for shut in of water channel.	2 Marks	L2	C01

Part B

Answer the Questions.

Total Marks 40M

6.	a.	Apply surfactant flooding concepts to illustrate the displacement principle and demonstrate the mechanisms responsible for enhanced oil recovery. Sketch a neat diagram and prepare suitable reservoir screening criteria for surfactant flooding.	10 Marks	L3	CO2
	b.	<i>Demonstrate</i> the operating mechanism of steam flooding for oil recovery with the help of a neat diagram and <i>determine</i> the screening criteria and limitations of steam flooding when applied to heavy oil reservoirs.	10 Marks	L3	CO3
Or					
7.	a.	Apply interfacial tension reduction concepts to determine the role of surfactant flooding and illustrate how achieving ultra-low interfacial tension improves microscopic displacement efficiency and reduces residual oil saturation.	10 Marks	L3	CO2
	b.	Interpret the thermal and physical effects of steam injection on reservoir fluids and rock properties and prepare the reservoir screening criteria while examining the operational challenges associated with steam flooding.	10 Marks	L3	CO3

8.	a.	Apply temperature effects to interpret variations in oil viscosity and relative permeability, and demonstrate how hot water flooding improves oil recovery in viscous oil reservoirs.	10 Marks	L3	CO3
	b.	Illustrate and determine the operating principle of in-situ combustion as an enhanced oil recovery technique. Sketch a neat, well-labeled diagram and differentiate between forward and reverse in-situ combustion.	10 Marks	L3	CO4
Or					
9.	a.	Demonstrate the principle and operating mechanism of hot water flooding in oil displacement and examine its performance in comparison with conventional water flooding.	10 Marks	L3	CO3
	b.	Illustrate the in-situ combustion process and interpret reservoir selection criteria while evaluating the advantages and limitations of forward and reverse in-situ combustion in heavy oil reservoirs.	10 Marks	L3	CO4