

Name:

Roll No:



## UPES

### End Sem Examination, May-2023

Programme Name: M. Tech Petroleum Engineering

Course Name: Enhanced Oil Recovery Techniques

Course Code: PEAU 7009

Semester: II

Time: 03 hrs

Max. Marks: 100

#### Instructions:

- All questions are compulsory.
- All the abbreviations used in the paper have their usual meanings.
- However, internal choice has been provided. You have to attempt only one of the alternatives in all such questions.

#### SECTION A (5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Define reserve estimations and RF.	04	CO1
Q2	Distinguish between EOR & IOR.	04	CO2
Q3	Define MMP and MMC.	04	CO3
Q4	Define Residual resistance factor and permeability reduction factor.	04	CO2
Q5	Discuss Mobility ratio in details along with the favorable and unfavorable conditions.	04	CO1

#### SECTION B (4Qx10M=40 Marks)

Q6	Explain in detail about SAGD EOR process with neat sketch with reservoir specifications.	10	CO2
Q7	Classify the reservoir based on the principal source of reservoir energy and critical analysis from the context of EOR.	10	CO3
Q8	Explain in brief about the chemical flooding. Discuss the good planning and selection criteria for polymer flooding.	10	CO4
Q9	Discuss Micellar flooding process and effects of brine salinity concentration on Micellar flooding process.	10	CO5

	<b>OR</b>		
	Differentiate between Immiscible and miscible gas injection processes.		
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
Q10	<p>Explain in detail about forward combustion process with neat sketch. Discuss CO<sub>2</sub> Miscible flooding process with mechanism.</p> <p style="text-align: center;"><b>OR</b></p> <p>Explain hyperbolic and harmonic decline curve method and calculate the data based on given well data:</p> <p>A well with a current hyperbolic decline of 1.5% per month and b=0.6 currently produces at 300 STB/D</p> <ol style="list-style-type: none"> <li>Production rate be in 2 years</li> <li>Cumulative production be in those 2 years</li> <li>Decline rate be in 2 years</li> <li>Time to reach a rate of 10 stb/d</li> </ol>	<b>20</b>	<b>CO4</b>
Q11	<p>Discuss the thermal EOR status in the context of Indian scenario and also Justify why steam is preferred over hot water in Thermal EOR.</p> <p>Find the enthalpy of steam and change in enthalpy necessary to convert 76 percent of water in to steam under at certain 500 psia and 450 °F and the enthalpy of saturated liquid hf = 424 Btu/lbm and the enthalpy of vaporization hfg = 780.5 Btu/lbm</p>	<b>20</b>	<b>CO5</b>

**All the Best!!**