Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester IV - B.Tech PET - 2021

Course Code : PET2004

Course Name : Sem IV - PET2004 - Fundamentals of Petroleum Reservoir Engineering

Program : B.Tech. Petroleum Engineering

Date : 12-APR-2023
Time : 2:00PM -3:30PM

Max Marks : 50

Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Arrange the following in increasing order of compressibility factor.
oil, water, rock, gas

(CO1) [Knowledge]

2. What is wettability? Write its significance.

(CO1) [Knowledge]

3. Define permeability. What are its different types? Write its units.

(CO1) [Knowledge]

4. What is the significance of negetive sign in darcy law?

(CO2) [Knowledge]

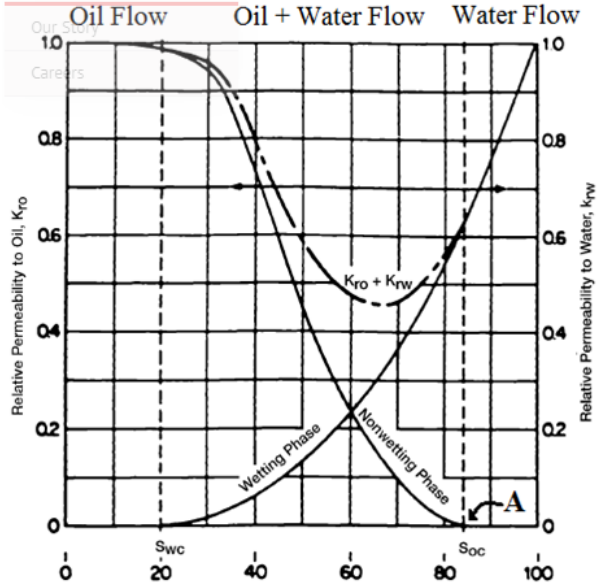
5. Differentiate between steady state and unsteady state condition.

(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

6. "Wetting phase always occupy the smaller pores and non wetting phase always occupy larger pores". Justify the statement using relative permeability concept. Explain all the four points in relative permeability graph given below.



(CO1) [Comprehension]

7. Hydrocarbon reservoir can be classified based on initial reservoir pressure and composition of reservoir fluid. Clasify the hydrocarbon reservoir based on above mentioned parameter. Explain retrograde condensate phenomena with diagram.

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

8. An oil well in the Nameless Field is producing at a stabilized rate of 600 STB/day at a stabilized bottom-hole flowing pressure of 1800 psi. Analysis of the pressure buildup test data indicates that the pay zone is characterized by a permeability of 120 md and a uniform thickness of 25 ft. The well drains an area of approximately 40 acres. The following additional data is available:

rw = 0.25 ft A = 40 acres

Bo = 1.25 bbl/STB μo = 2.5 cp

Determine the pressure profile (distribution) and list the pressure drop across 1 ft intervals from rw to 1.25 ft, 4 to 5 ft, 19 to 20 ft, 99 to 100 ft, and 744 to 745 ft.

(CO2) [Application]