Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - OCT 2023

Semester : Semester V - 2021

Course Code : PET2006

Course Name : Sem V - PET2006 - Fundamentals of Oil and Gas Production Technology

Program : B. TECH

Date : 30-OCT-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 3 = 15M)**

1. Define specific productivity index and mention its unit.

(CO1) [Knowledge]

2. Define productivity index.

(CO1) [Knowledge]

3. Elucidate Inflow Performance Relationship (IPR).

(CO2) [Knowledge]

4. State the Vogel's equation of IPR and mention different terms with unit.

(CO2) [Knowledge]

5. Mention two functions of pumping unit of SRP.

(CO2) [Knowledge]

PART C

ANSWER ALL THE QUESTIONS **(3 X 5 = 15M)**

6. Gas anchor is an integral part attached to the barrel of sucker rod pump and it helps in maintaining the functioning of plunger and pump section. Draw and mention in detail the function of gas anchor.

(CO1) [Comprehension]

7. An oil well is producing from an undersaturated reservoir that is characterized by a bubble-point pressure of 2130 psig. The current average reservoir pressure is 3000 psig. Available flow test data shows that the well produced 250 STB/day at a stabilized bottom hole flowing pressure of 2500 psig. Determine the values of flow rate at bottom hole flowing pressure of 3000, 2130, 1500 and 500 psig.

(CO1) [Comprehension]

8. Sucker rod pumps are designed to lift liquids from the bottom of the well bore and deliver at the surface with the help of alternating cycles performed by the plunger. With the help of neat diagram, mention the position of different valves during upstroke cycle and downstroke cycle of sucker rod pump.

(CO2) [Comprehension]

PART C

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

9. A well is producing from a saturated oil reservoir that exists at its saturation pressure of 4000 psig. The well is flowing at a stabilized rate of 600 STB/day and a Pwf of 3200 psig. Material balance calculations provide the following current and future predictions for oil saturation and PVT properties.

	Present	Future
$\bar{p}_r$	4000	3000
μ_o, cp	2.40	2.20
B_o, bbl/STB	1.20	1.15
k_{ro}	1.00	0.66

Generate the future IPR for the well at 3000 psig by using Standing's method.

(CO1) [Application]

10. A well is producing from a saturated reservoir with an average reservoir pressure of 2500 psig. Stabilized production test data indicated that the stabilized rate and wellbore pressure are 350 STB/day and 2000 psig, respectively. Using 1st approximation method, predict the IPR where the average reservoir pressure declines from 2500 psig to 2200 psig.

(CO2) [Application]