Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 09-10-2025 **Time:** 02.00pm to 03.30pm

School: SOE	**Program:** B.Tech. (PET)	
Course Code : PET2006	**Course Name:** Fundamentals of Oil and Gas Production Technology	
Semester: V	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	16	20	14	-	-	-

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	Relate the following conditions and draw rough IPR curve, clearly naming the axes a. Reservoir pressure above bubble point pressure thought out the life of the reservoir b. Initial reservoir pressure above bubble point, however later reservoir pressure decline below bubble point.	**2 Marks**	**L1**	**CO1**
2	Define “Specific Productivity Index”. Mention its unit and mathematical expression.	**2 Marks**	**L1**	**CO1**
3	Identify the key difference between Vogel IPR and Fetkovich IPR.	**2 Marks**	**L1**	**CO1**
4	List the different artificial lift systems employed in oil wells and recognize their purpose in enhancing production.	**2 Marks**	**L1**	**CO3**
5	A Sucker Rod Pump (SRP) unit is designated by “C-190D-100-71”. Identify the stroke length and Torque with unit.	**2 Marks**	**L1**	**CO3**

Part B

Answer the Questions. **Total Marks 40M**

6.	Given data: permeability = 7md, Average reservoir pressure = 2500 psi, h =20ft, skin = 5, viscosity of oil = 1.1cp, oil formation volume factor = 1.4 bbl/stb. Well spacing = 100 acres, wellbore radius = 0.4ft. Calculate: i. Absolute open flow. ii. Productivity Index. **iii.** Specific Productivity Index.	**10 Marks**	**L3**	**CO1**
	Or			
7.	Use Fetkovich's equation to (i) calculate the maximum flow capacity (q_{max}) for a well with reservoir pressure of 5000 psi, bubble point pressure of 2500 psi, flowing bottomhole pressure of 3000 psi, and flow rate of 200 bpd; and (ii) determine the flow rate (q) when P_{wf} = 2000 psi.	**10 Marks**	**L3**	**CO1**

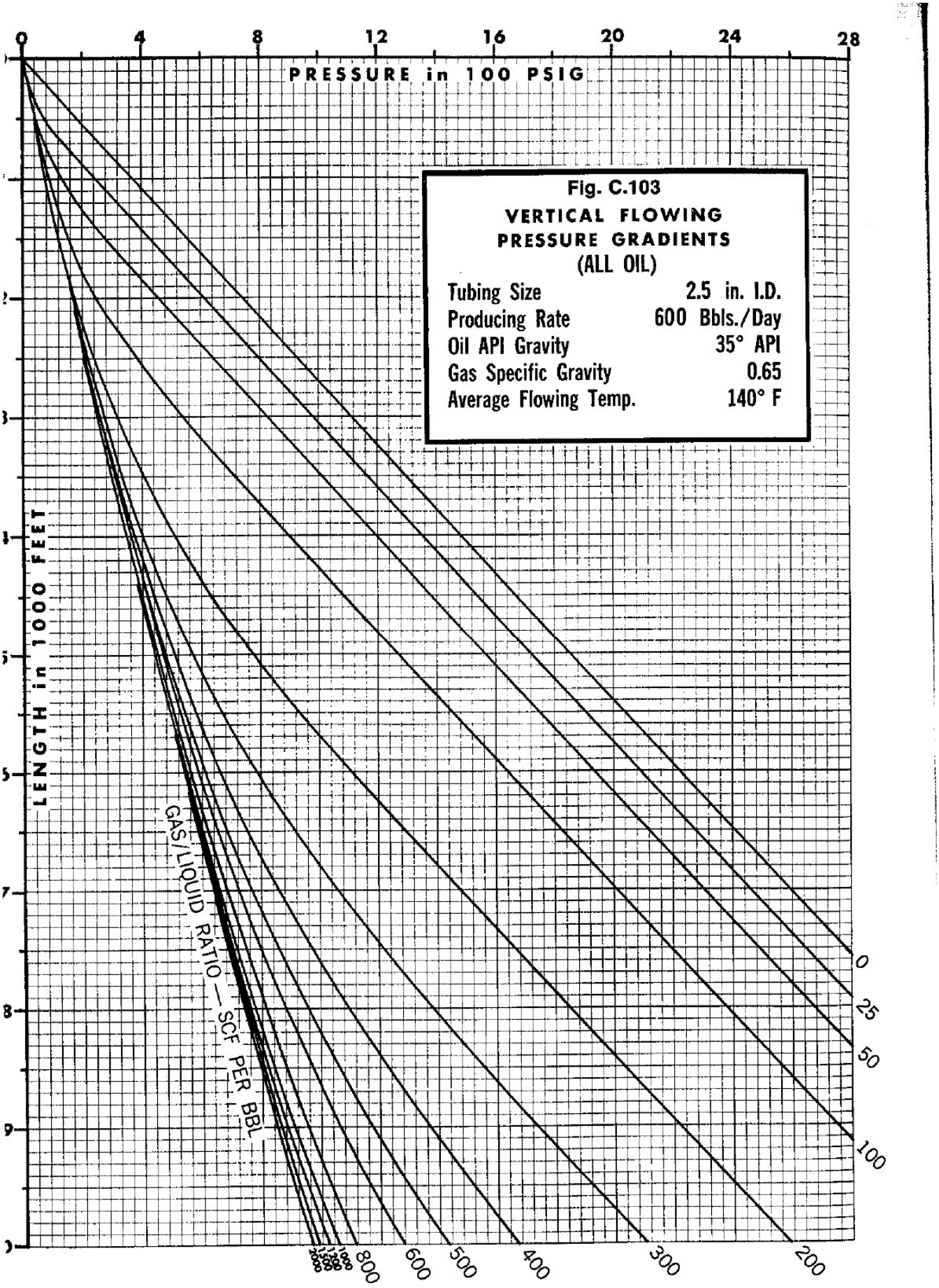
8.	Given Data: Reservoir pressure = 2500 psi Flowing bottomhole pressure = 1500 psi Flow rate = 90 bpd Calculate: a. q_{omax} b. q_o for P_{wf} = 800 psi c. Construct a complete IPR curve of q vs. P_{wf} Calculate the Pwf values for five different flow rates.	**10 Marks**	**L3**	**CO2**
	Or			
9.	Given data: Average reservoir pressure = 2500psi, Flow efficiency = 0.7, flow rate = 80 bpd for Pwf = 1800 psi. (a) Calculate the maximum flow rate possible from this well under the condition of FE=0.7 (b) Determine the flow rate (q_o) when P_{wf}=1000 psi for this well under the present condition.	**10 Marks**	**L3**	**CO2**

10.	Predict the wellhead pressure (P_{wh}) using the given data. Given data: Well depth = 5500 ft Producing rate = 600 STB/day Tubing size = 2.5 inch GOR = 100 SCF/STB Reservoir pressure = 2700 psi Productivity Index = 1 (*Refer graph 1 at the end of the question paper*)	**10 Marks**	**L3**	**CO2**

	Or			
11.	Predict the flowing bottomhole pressure (P_{wf}) using the given data. Given data: Well depth = 5000 ft Producing rate = 600 STB/day Tubing size = 2.5 inch GOR = 200 SCF/STB Wellhead pressure = 400 psi (*Refer graph 1 at the end of the question paper*)	**10 Marks**	**L3**	**CO2**

12.	**Describe the operating principle of a Sucker Rod Pump (SRP) and explain how the motion of the sucker rod facilitates fluid lifting through the downhole pump.**	**10 Marks**	**L2**	**CO3**
	Or			
13.	Locate the major components of the surface unit of a Sucker Rod Pump (SRP) with a neat diagram, and explain how the surface unit operates.	**10 Marks**	**L2**	**CO3**

Graph 1


0
4
8
12
16
20
24
28
PRESSURE in 100 PSIG
Fig. C.103
VERTICAL FLOWING
PRESSURE GRADIENTS
(ALL OIL)
Tubing Size 2.5 in. I.D.
Producing Rate 600 Bbls./Day
Oil API Gravity 35° API
Gas Specific Gravity 0.65
Average Flowing Temp. 140° F
LENGTH in 1000 FEET
GAS/LIQUID RATIO — SCF PER BBL
0
25
50
100
200
300
400
500
600
800