Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – March 2026

Date: 11-03- 2026 **Time:** 11.45am to 01.15pm

School: SOE	**Program:** B.Tech - PET	
Course Code: PET2110	**Course Name:** Fundamentals of Oil and Gas Production Technology	
Semester: IV	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	16	14	10	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	List any two basic surface equipment used in oil and gas wells.	2 Marks	L1	CO1
2	Define Absolute Open flow and outline its significance.	2 Marks	L1	CO1
3	A Sucker Rod Pump (SRP) unit is designated by "C-640D-305-168". Identify this designation.	2 Marks	L1	CO1
4	Outline the use of (i) polished rod and stuffing box, (ii) horse head and bridle in SRP.	2 Marks	L1	CO2
5	**State** the impact of reservoir pressure decline on well deliverability.	2 Marks	L1	CO2

Part B

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

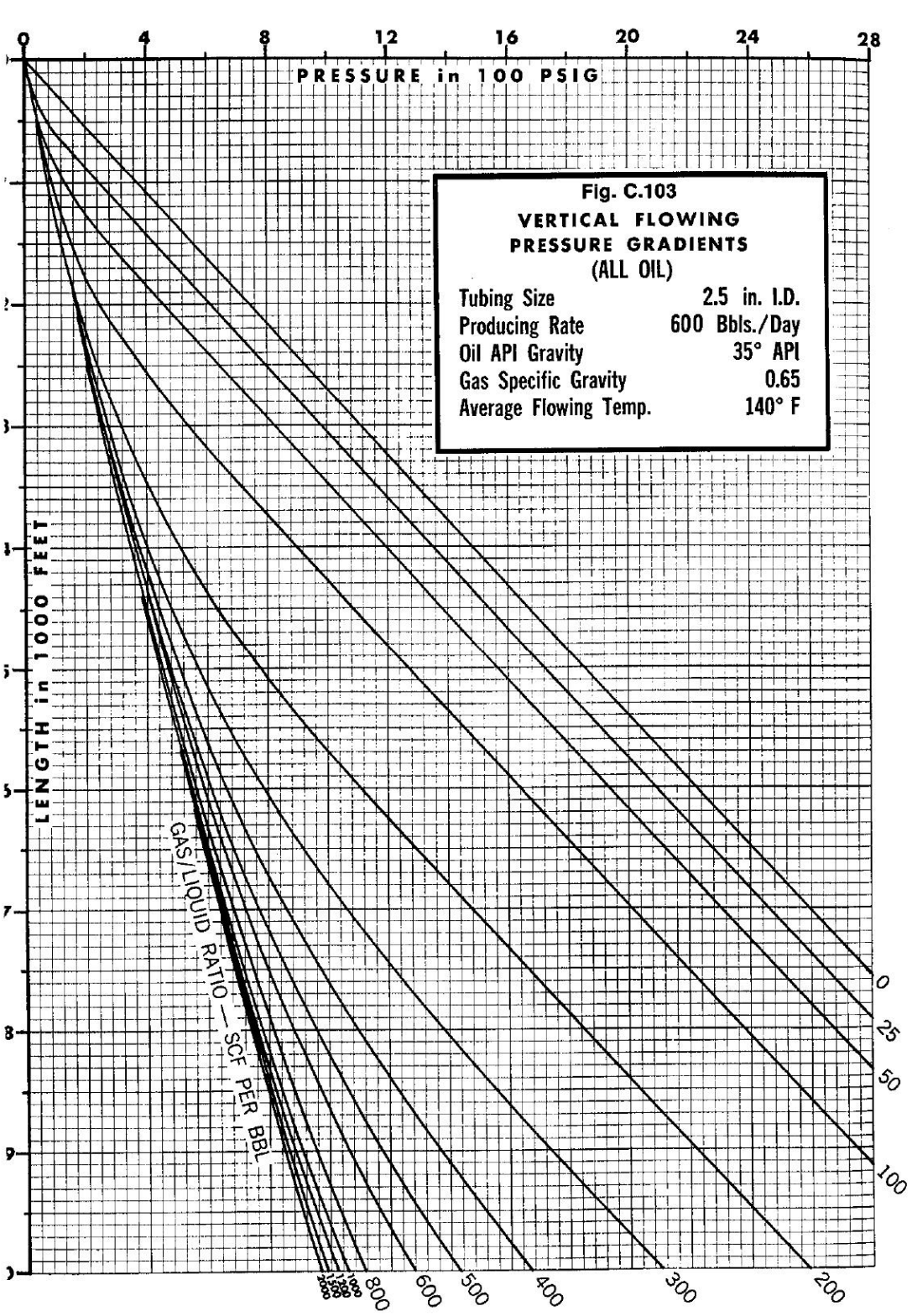
6.	Calculate the wellhead pressure (P_{wh}) using the given data. Given data: Well depth = 5500 ft Producing rate = 600 STB/day Tubing size = 2.5 inch GOR = 100 SCF/STB Reservoir pressure = 2600 psi Productivity Index = 1 (*Refer graph 1 at the end of the question paper*)	**10 Marks**	**L3**	**CO1**
	Or			
7.	Calculate the flowing bottomhole pressure (P_{wf}) using the given data. Given data: Well depth = 5500 ft Producing rate = 600 STB/day Tubing size = 2.5 inch GOR = 200 SCF/STB Wellhead pressure = 200 psi (*Refer graph 1 at the end of the question paper*)	**10 Marks**	**L3**	**CO1**

8.	Given: Average reservoir pressure = 2400psi, Flow efficiency = 0.7, flow rate = 70 bpd for Pwf = 1800 psi. Use Standing's Method to determine the following: a. Find Pwf'/Pr b. Plot a graph between Pwf/Pr and $qo/qomax$.	**10 Marks**	**L3**	**CO2**
	Or			
9.	Use Fetkovich's equation to (i) Calculate the maximum flow capacity (q_{max}) for a well with reservoir pressure of 4000 psi, bubble point pressure of 2000 psi, flowing bottomhole pressure of 3000 psi, and flow rate of 200 bpd; and (ii) Determine the flow rate (q) when P_{wf} = 1000 psi.	**10 Marks**	**L3**	**CO2**

10.	Classify the major surface components of an SRP and explain their functions with the help of a neat diagram.	**10 Marks**	**L2**	**CO3**
	Or			

11.	Describe the operating principle of a Sucker Rod Pump (SRP) and explain how sucker rod motion enables fluid lift and controls the action of standing and traveling valves with the help of a neat sketch.	**10 Marks**	**L2**	**CO3**

12.	A well has a pump with a 1¾ in plunger is set at 5430 ft of 1¾ in rods. The fluid level is known to be low and the tubing is anchored. With pumping speed at 18 spm and a 72 in stroke length, production is 421 bbl per day of fluid of specific gravity 0.87. Calculate: I. The effective plunger stroke length. II. The maximum and minimum polished rod loads. III. Counter balance effect. IV. Theoretical pump displacement. V. Volumetric pump efficiency. Given: Ar = 0.542 sq in, Ap =2.705 sq in.	**10 Marks**	**L3**	**CO4**
	Or			
13.	Interpret the counterbalancing effect of the counterweight in a pumping unit, and support your explanation with the appropriate governing equations.	**10 Marks**	**L3**	**CO4**


0
4
8
12
16
20
24
28
PRESSURE in 100 PSIG
LENGTH in 1000 FEET
GAS/LIQUID RATIO — SCF PER BBL
0
25
50
100
200
300
400
500
600
800
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