I D NO.	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 40% Max Marks: 40 Max Time: 2 hrs. 09 May 2018, Wednesday

ENDTERM FINAL EXAMINATION MAY 2018

Even Semester 2017-18 Course: **PET 213 Petroleum Production Engineering** VI Sem. Petroleum

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Instructions:

(i) *Read the question properly and answer accordingly.*
(ii) *Question paper consists of 3 parts.*
(iii) Scientific and Non-programmable calculators are permitted

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Part A

(3 Q x 4 M = 12 Marks)

1. For the following situation suggest the best artificial lift technology that can be used.
   a. An onshore well is having a lot liquid loading due to water produced along with crude. The crude is having 40^0API gravity and 400 GLR.
   b. An onshore well which is almost vertical is producing at a depth of 5,000 ft. Expected Production rate is 1000 BPD.
   c. An offshore rig has 2 to 3 producing wells (single reservoir). Little amount of gas and sand is expected. Production rate expected to be around 10,000 BPD.
   d. An offshore well where production rate is expected at 30,000 BPD. The crude has a 30^0API and gravel packing completion has been done.
2. What are the different components of progressive cavity pumps?
3. In a Well, The following data is provided:
   Pump Depth: 8,000 ft
   Tubing Pressure: 160 psig

Pump Intake Pressure (PIP): 280 psig

Production Rate: 3400 bpd

Mixture Gradient: 0.45 psi/ft

Tubing OD: 2 7/8 in. (New).

Calculate the Total Dynamic Head (TDH).

Part B

(2 Q x 5 M = 10 Marks)

4. Explain in detail on what factors we decide to use continuous or intermittent gas lift?
5. List and draw the different types of completion in hydraulic lift system.

Part C

(2 Q x 9 M = 18 Marks)

6. What are the design guidelines for electrical submersible pump?

7. Draw a neat diagram of Plunger lift system and label all its parts.

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Weightage: 20% Max Marks: 20 Max Time: 1 hr. 27 March Tuesday 2018

TEST – 2 **SET A**

Even Semester 2017-18 Course: **PET 213 Petroleum Production Engineering** IV Sem. Petroleum

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Instruction:

(i) Read the question properly and answer accordingly.

(ii) Question paper consists of 2 parts.

(iii) Scientific and Non-programmable calculators are permitted.

Part A

(1 Q x 5 M = 05 Marks)

1. What is production forecast? How can a complete production forecast be carried out?

Part B

(1 Q x 8 M = 08 Marks)

2. For the data given in the following table, Do the Tubing string performance analysis by plotting pressure traverse in the tubing string:

Table 1

Reservoir pressure	3,000 psia
Tubing ID	1.75 in.
Wellhead pressure	550 psia
Productivity index above bubble point	1.2 stb/d-psi
Producing gas–liquid ratio (GLR)	1,200 scf/stb
Water cut (WC)	22 %
Oil gravity	35 ^{o}API
Water-specific gravity	1.05, 1 for fresh-water
Gas-specific gravity	0.75, 1 for air
Formation volume factor of oil	1.2 rb/stb
Wellhead temperature	100 ^{o}F
Tubing shoe depth	4,500 ft
Bottom-hole temperature	150 ^{o}F

Take density of water = 62.4 lb/ft^3, density of air = 0.07647 lb/ft^3.

Part C

(1 Q x 7 M = 07 Marks)

3. For the data given in table 1, predict the operating point by plotting the graph.

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SCHOOL OF ENGINEERING

Weightage: 20 % Max Marks: 20 Max Time: 1 hr. 22 Feb Thursday 2018

TEST – 1

Even Semester 2017-18 Course: **PET 213 Petroleum Production Engineering** VI Sem. Petroleum

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Instruction:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part A

(1 Q x 8 M = 08 Marks)

1. In the below figure No.1 write what are the names of 1 to 9. What does well head include? What is the use of Christmas tree? Write one advantage of bottom-hole choke, upstream burner and downstream burner?

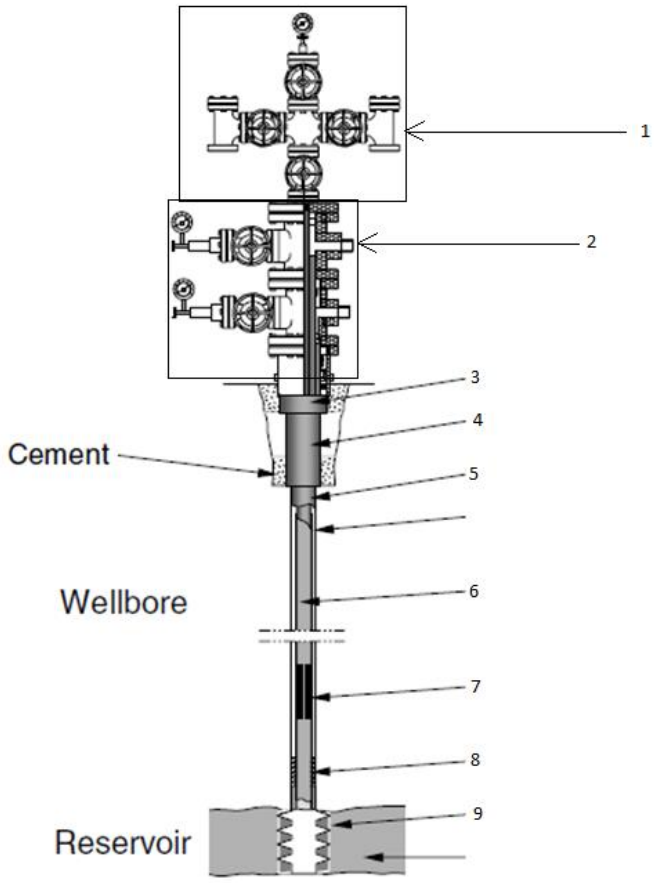

Fig No.1

Part B

(1 Q x 6 M = 06 Marks)

2. The solution GOR of a crude oil is 800 scf/stb at 5000 psia and 175 ^{o}F. Given the following PVT data given in table No.1, estimate density and viscosity of the crude oil at the pressure and temperature:

Table No. 1

Bubble point pressure:	2500 psia
Oil Gravity:	40 ^{o}API
Gas- Specific Gravity:	0.81, for air=1

The following equations can be used.

$$\rho_o = \frac{62.4\,\gamma_0 + 0.0136\,R_s\gamma_g}{0.972 + 0.000147\left[R_s\sqrt{\frac{\gamma_g}{\gamma_0}} + 1.25T\right]^{1.175}}$$

$$a = R_s\left[2.2 * 10^{-7}R_s - 7.4 * 10^{-4}\right]$$

$$c = 8.62 * 10^{-5}R_s$$

$$d = 1.1 * 10^{-3}R_s$$

$$e = 3.74 * 10^{-3}R_s$$

$$b = \frac{0.68}{10^c} + \frac{0.25}{10^d} + \frac{0.062}{10^e}$$

Part C

(1 Q x 6 M = 06 Marks)

3. Construct IPR of two wells in an under saturated oil reservoir using the generalized Vogel equation. The following data are given in the Table No 2:

Table No.2

	Reservoir Pressure:	$\bar{P}$ = 4,500 psia
	Bubble Point Pressure	P_b= 2750 psia
Well A	Tested flowing bottom hole pressure	P_{wf1}= 3,250 psia
	Tested production rate	q_1= 528 stb/day
Well B	Tested flowing bottom hole pressure	P_{wf2}= 2,000 psia
	Tested production rate	q_2= 1500 stb/day