



PRESIDENCY UNIVERSITY,
BENGALURU
SCHOOL OF ENGINEERING

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TEST 1

Even Semester: 2018-19

Course Code: PET 214

Course Name: Surface Production Operations

Programme & Sem: B.Tech (PET) & VI Sem

Date: 05 March 2019

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

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

Part A

Answer **all** the Questions. **Each** question carries **two** marks.

(4Qx2M=8)

1. What is the use of Separator? How compressor plays a role in it?
2. Draw a diagram of tubing head and write all the specific features.
3. Why gas dehydration is an important part of upstream processing facilities?
4. What is surface gathering system? Mention types of surface gathering system?

Part B

Answer **both** the Questions. **Each** question carries **eight** marks.

(2Qx8M=16)

5. Why partial pressure of gas component is important during initial separation pressure? How separator pressure affects well fluid production in BPD? How it can be rectified?
6. Discuss about the different potential operating problems for the two-phase separator.

Part C

Answer the Question. Question carries **sixteen** marks.

((1Qx16M=16)[8+8])

7. Explain the functional sections of two-phase separator with proper diagram. Design a horizontal separator for 50% full liquid and separation occurs of 100 micron liquid droplets, where settling of liquid droplet is done through a gas only.



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 2

Odd Semester: 2018-19

Course Code: PET 214

Course Name: Surface Production Operations

Program & Sem: B.Tech & VI Sem

Date: 15 April 2019

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

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

Part A

Answer **all** the Questions. **Each** question carries **two** marks.

(4Qx2M=8)

1. How does settling time vary depending upon the stability of the emulsion?
2. What is the significance of 3-phase separator in petroleum industry?
3. How does chemical concentration vary if age of emulsion is less?
4. Why is field optimization important to phase separation?

Part B

Answer **both** the Questions. **Each** question carries **eight** marks.

(2Qx8M=16)

5. Discuss vertical heater-treater with a suitable diagram.
6. Explain the various factors that control stability of emulsion.

Part C

Answer the Question. The Question carries **sixteen** marks.

(1Qx16M=16)

7. How does emulsion affect the separation process? Why is oil pad height is an important factor in a 3-phase separator with a "bucket and weir" design? Derive an equation for the oil pad height, where a water weir should be set below an oil weir.



Roll No.

**PRESIDENCY UNIVERSITY,
BENGALURU**

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19

Course Code: PET 214

Course Name: Surface Production Operations

Programme & Sem: B.Tech & VI Sem

Date: 23-05-2019

Time: 3 Hour

Max Marks: 80

Weightage: 40%

Instructions:

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

Part A

Answer **all** the Questions. **Each** question carries **two** marks.

(10Qx2M=20)

1. I. Separation of produced fluid occurs in which of these following operation:
a. Drilling b. Workover c. Surface production d. Refining
- II. Choke is used to:
a. Control well fluids b. to kill the pressure of the reservoir c. Both a & b d. None
- III. Which stage of separation for produced fluid is more effective?
a. Single b. Double c. Multiple d. All
- IV. Lighter hydrocarbons contain:
a. Methane b. Ethane c. Propane d. All
- V. Horizontal separator with a "Boot" or Water Pot" is used for ____ liquid flow rates.
- VI. How many types of liquid level control schemes are there?
a. 1 b. 2 c. 3 d. None
- VII. How many types of storage tanks are used to store crude oil?
a. 1 b. 2 c. 3 d. 4
- VIII. Produced water are mainly having constituents of _____ and _____ solids.
- IX. _____ filter is used to remove dissolved and suspended particles from produced water.
- X. When oil, water, sediment collect together without breaking to separate water, oil and solid phases, the result is called _____.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks.

(3Qx10M=30)

2. Describe the process of free water knockout and flow splitter with suitable diagrams.

3. What makes electrostatic heater-treaters different from horizontal heater-treaters with neat sketch?
4. Explain different types of vapor recovery system. Write the system importance of vapor recovery module with a schematic diagram.

Part C

Answer **both** the Questions. **Each** question carries **fifteen** marks. (2Qx15M =30)

5. Derive a sizing equation for two-phase horizontal separator in the presence of 50% full of liquid for both gas capacity and liquid capacity constraint.

OR

What do you mean by bottle test? Explain in details about the different behavior of the system, which is an important characteristic of the bottle test.

6. Why produced water treatment is an important part of surface production operations and describe the characteristics of produced water in detail.

OR

Describe a typical produced water treating system with a neat diagram and explain about any two methods of primary treatment and secondary treatment with diagrams.



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019

Date: 25 July 2019

Course Code: PET 214

Time: 2 Hours

Course Name: Surface Production Operation

Max Marks: 80

Program & Sem: B. Tech (PET) & VI Sem (2015 Batch)

Weightage: 40%

Instructions:

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

Part A

Answer **all** the questions. **Each** question carries **two** marks.

(10Qx2M=20)

1. How many types of casing are there:
a. 1 b. 2 c. 3 d. All
2. If partial pressure of a component is high then molecules of the component in:
a. liquid b. gaseous c. solid d. None
3. Surface gathering system consists of how types:
a. Two b. Three c. Four d. None
4. The height of the oil weir in the three phase separator controls:
a. Liquid level b. Gas level c. Both d. None
5. _____ is used to gather gas pipelines.
6. How many types of liquid level control schemes are there:
a. 1 b. 2 c. 3 d. None
7. Vapor recovery systems consists of following methods:
a. Condensation system b. Activated carbon system c. Lean oil absorption system d. All
8. _____ is an enhanced gravity based separation method.
9. _____ is used to route the liquid though the oil-gas interface in the vertical separator.
10. _____ can be used to dissolve CaCO_3 and FeS scales.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks.

(3Qx10M=30)

11. Explain different types of vapor recovery system. Write the system importance of vapor recovery module with a schematic diagram.
12. What makes gunbarrel tank different from vertical heater-treaters with neat sketch?
13. Explain the different stages of desalting process with a neat schematic.

Part C

Answer **both** the questions. **Each** question carries **fifteen** marks.

(2Qx15M=30)

14. Why oil desalting is important for oil and gas industry? Explain different types of desalting equipment's with neat diagrams.

OR

Explain the differences between Surface Production Operations and Refinery Operations.

15. How retention time is important for skim tank? What are the various factors that can affect the performance of a skim tank? Describe the mechanism of enhanced gravity separation with a suitable diagram.

OR

Describe the characteristics of produced water in surface production operations and their remedial measures.