



PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST-1

Even Semester: 2018-19

Course Code: PET 216

Course Name: Enhanced Oil Recovery

Programme & Sem: B.Tech & VIII Sem (Group-I)

Date: 01 March 2019

Time: 01 Hours

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 calculator is permitted.

Part A

Answer **all** Questions. **Each** question carries **five** marks. (2Qx05M=10)

1. What are the most frequent causes for failure of EOR (any five)?
2. Define ROS? "Remaining oil saturation is greater than residual oil saturation of the rock."- State reasons.

Part B

Answer **all** Questions. **Each** question carries **ten** marks. (2Qx10M=20)

3. Draw a neat flow diagram of various EOR processes and label it properly.
4. (a) What are the two important parameters for the success of EOR project? (2M)
(b) List out the assumptions of Turner's methods for gas injection technique. (8M)

Part C

Answer the Question. Question carries **ten** marks. (1Qx10M=10)

5. Explicate the physical conditions of hydrocarbon systems at fixed temperatures and pressure conditions with a triangular graph.



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST - 2

Even Semester: 2018-19

Course Code: PET 216

Course Name: Enhanced Oil Recovery

Program & Sem: B.Tech & VIII Sem (Group-1)

Date: 13 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.

Part A

Answer the Question. The Question carries **fifteen** marks. (1Qx15M=15)

1. (a) What are the conditions required for polymer mobility control? (5M)
- (b) What is the data to be obtained in the laboratory for EOR design process? (5M)
- (c) Draw a schematic diagram of an emulsion polymer field mixing system? (5M)

Part B

Answer the Question. The Question carries **ten** marks. (1Qx10M=10)

2. (a) Explain the effect of variables on SPI and oil displacement efficiency? (6M)
- (b) Explain the effect of temperature on bubble size? (4M)

Part C

Answer the Question. The Question carries **fifteen** marks. (1Qx15M=15)

3. What are the major requirements and considerations for a suitable alkaline flooding (Reservoir Characteristics)?



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19

Course Code: PET 216

Course Name: Enhanced Oil Recovery

Program & Sem: B.Tech & VIII (Group-I)

Date: 20 May 2019

Time: 3 Hours

Max Marks: 80

Weightage: 40%

Instructions:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.

Part A

Answer **all** Questions. **Each** Question carries **one** mark.

(1Qx20M=20)

1.

- (i) The recovery of oil by _____ is the primary intent of cyclic operations.
- (ii) In triangular graph of miscible flooding, In which region critical mixtures miscible in oil
(a) Region A (b) Region B (c) Region C (d) Region D
- (iii) LPG is also miscible with driving gas at pressure above _____
- (iv) The total recovery from picton reservoir was estimated _____
(a) 70% (b) 71% (c) 72% (d) 73%
- (v) The CO₂ is injected at a velocity no greater than _____ ft/day
(a) 30 (b) 40 (c) 50 (d) 60
- (vi) In a gravity stable flood _____ is injected above the oil zone.
- (vii) Carboxymethylcellulose (CMC) solutions are _____ fluids
(a) Newtonian (b) Non-Newtonian (c) Rheopectic (d) Thixotropic
- (viii) _____ are more susceptible to microbial attack than PAM
- (ix) Transportation facilities available at the site can influence the _____
(a) Production (b) Design (c) Volume (d) Drilling
- (x) For PAM/AA solutions _____ effects play an important role in determining injectivity.
- (xi) Lowest _____ is obtained for an optimum concentration
(a) pH (b) IFT (c) Wettability (d) ROS
- (xii) The presence of _____ reduces the bulk alkaline concentration required to achieve low IFT.

- (xiii) The _____ group usually consists of a long hydrocarbon chain.
- (xiv) The _____ may lead to effective improvements in EOR surfactants even though more expensive
 (a) Petroleum sulfonates (b) Synthetic sulfonates
- (xv) The oil recovery for the hot-water zone is largely governed by the _____ of the oil involved.
- (xvi) For successful steam injection project, depth range is _____
- (xvii) The oil-water-rock contact angle decreases as temperature _____
 (a) Increases (b) Decreases (c) Neutral (d) None
- (xviii) With increasing temperature, the relative permeability curves shift to the _____
 (a) right (b) left (c) top (d) bottom
- (xix) _____ also have specialized functions of transport of materials within the cell and secretion of materials to the exterior.
- (xx) It has been shown that the ISC process is suitable to displace oils of API gravity
 (a) $> 10^0$ (b) $< 10^0$ (c) $= 10^0$ (d) All

Part B

Answer **all** Questions. Each **Question** carries **ten** marks. (4Qx10M=40)

2. List out the major potential environmental problems associated with chemicals.
3. Write the formula for **Ignition time** and **Specific heat of formation** with proper terms and units.
4. Define Petroleum Reservoir, and mention the types of recovery process with the help of flow diagram.
5. (a) What are the four recommendations for gas injection pilot testing? (4M)
 (b) List out the assumptions of Welge methods for gas injection EOR technique. (6M)

Part C

Answer **both** Questions. Each **Question** carries **ten** marks. (2Qx10M=20)

6. Explain the change of capillary pressure as a function of pore penetration with the help of neat diagram.
7. (a) List out three categories of lifting problems for heavy crudes with reason. (4M)
 (b) Mention the factors believed that steam will increase oil recovery. (6M)