PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST-1

Even Semester: 2018-19   **Date**: 06 March 2019

Course Code: PET 405   **Time**: 01 Hour

Course Name: Petroleum Corrosion Technology   **Max Marks**: 40

Programme & Sem: B.Tech & VIII Sem (Group-I)   **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 **two** marks.   (4Qx2M=8)

1. Why corrosion study is an important part of oil and gas industry?

2. Write different types of corrosive environments.

3. How 'pH value' affects corrosion in any metallic equipment?

4. Why Magnesium, iron or steel having tendency to corrode?

Part B

Answer **both** the Questions. **Each** question carries **eight** marks.   (2Qx8M=16)

5. Why heat treatment of steels executed? Describe four different processes in brief.

6. Explain corrosion processes with their basic reactions for all the conditions.

Part C

Answer the Question. Question carries **sixteen** marks.   (1Qx16M=16[8+8])

7. Explain different types of corrosion with diagrams. Discuss various forms that creates during the localized corrosion with neat sketches.

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TEST - 2

Even Semester: 2018-19

Course Code: PET 405

Course Name: Petroleum Corrosion Technology

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

Date: 16 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. Why internal coatings are required for oil and gas industry equipment?

2. How many coating classifications are there in oil and gas industry?

3. What are vehicle and pigment?

4. Why primer is important to prevent corrosion?

Part B

Answer **both** the Questions. **Each** question carries **eight** marks.   (2Qx8M=16)

5. Describe the importance of cathodic protection criteria with a suitable diagram.

6. Discuss different types of protective coatings under two different conditions.

Part C

Answer the Question. The Question carries **sixteen** marks.   (1Qx16M=16)

7. Explain the protective coating system with a neat diagram. Discuss the various inspection tools for different conditions with neat sketches.

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END TERM FINAL EXAMINATION

Even Semester: 2018-19   **Date**: 22-05-2019

Course Code: PET 405   **Time**: 3 Hour

Course Name: Petroleum Corrosion Technology   **Max Marks**: 80

Programme & Sem: Petroleum Engineering & VIII (OE)   **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.
(iv) Part C consists of two questions only with options. Choose only one to answer it.

Part A

Answer **all** the Questions. **Each** question carries **two** marks.   (2Qx10M=20M)

1. Corrosion Cell:
   a. Anode   b. Cathode   c. Electrolyte   d. All

2. Is 'Temperature' increase or decrease the corrosion rate?

   (Yes/No/Both/None)

3. Atmospheric corrosion severity depends on what factors?
   a. Industrial and marine or seacoast
   b. High humidity only
   c. Industrial and high humidity
   d. All

4. _____ plays an important role for affecting corrosion severity if the water contains suspended solids.

5. What is corrosive environment?

6. If 'pH' increases then corrosion rate decreases (Yes/No).

7. Name the factor which is not affecting the corrosivity of the soil.

   a. Moisture   b. Salt   c. Temperature   d. Air

8. What is SRB and how it affects the corrosion rate?

9. Define coupon.

10. Corrosion monitoring and measurements done by-

    a. Coupons   b. Chemical analysis   c. Probes   d. All

Part B

Answer **all** the Questions. **Each** question carries **ten** marks.   (3Qx10M=30M)

11. Describe the different methods for the detection and monitoring of internal corrosion.

12. Discuss the utility of hydrogen probe with examples to prevent corrosion in oil and gas industry.

13. What is drying and discuss about the different drying methods for protection of the metal.

Part C

Answer **both** the Question. Question carries **fifteen** marks.   (2Qx15M=30M)

14. Discuss the procedure of protective coating using in oil and gas industries? Explain about the categories of chemical composition. Discuss various coating systems with a neat diagram.

OR

Explain the difference between anodic and cathodic protection. What are the different cathodic protection systems?

15. What are coupon and mountings? Explain the monitoring of a gas handling system with a neat diagram of various coupon locations. What is corrosion rate and write the equation of it. A mild steel coupon weighing 10.9265 grams and having an exposed area of 2.96 square inches was installed in a process on August 27th. On November 13th, after 78 days in the process, it was removed and cleaned. The weight was found to be 10.5560 grams and density is 7.85 g/cc. Calculate the overall corrosion rate in mpy.

OR

Discuss the fundamental mechanisms of corrosion inhibitors. Also, discuss the different types of corrosion inhibitors.