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Question Paper Code : 57267

B.E./B. Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Second Semester

Civil Engineering

CY 6251 – ENGINEERING CHEMISTRY – II

(Common to all Branches except Marine Engineering)

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. List out the requirements of boiler feed water.
2. Why Calgon conditioning is better than phosphate conditioning ?
3. What is an electrochemical series ?
4. What are the essential ingredients of paints ?
5. What are batteries ?
6. Differentiate between nuclear fission and nuclear fusion.
7. Define abrasives.
8. What are refractories ?
9. What is meant by calorific value of a fuel ?
10. Give the composition of producer gas.

PART - B (5 × 16 = 80 Marks)

11. (a) (i) With neat diagram, explain the Zeolite process for water treatment. (8)
- (ii) Describe the demineralization process of water softening and write down the reaction involved in it. (8)

OR

- (b) (i) Explain with neat diagram, the desalination of brackish water of reverse osmosis method. (8)
- (ii) Describe the carbonate and phosphate conditioning of water to overcome the boiler feed problems. (8)
12. (a) (i) Explain how corrosion is controlled by sacrificial anode. (8)
- (ii) Derive Nernst equation and write its applications. (8)

OR

- (b) (i) Discuss the importance of design and material selection in controlling corrosion. (8)
- (ii) Write a note on
- Galvanic corrosion
 - Differential aerated corrosion (8)
13. (a) (i) Describe the construction of lead-acid battery with reaction occurring during discharging. (8)
- (ii) What is a breeder reactor? Describe with a neat diagram the conversion of U-235 into Pu-239. (8)

OR

(b) (i) With a neat diagram, explain the working principle of H_2-O_2 fuel cell with cell reaction. (8)

(ii) Explain how electric power is generated by using wind energy. (8)

14. (a) (i) Explain the terms "Dimensional stability" and "Thermal spalling". (8)

(ii) Describe the manufacturing process of borosilicate glass. (8)

OR

(b) (i) Describe with a neat diagram how Portland cement is manufactured by a wet process. (8)

(ii) Write down the properties and uses of

- Waterproof cement

- White cement (8)

15. (a) (i) What is meant by Proximate analysis? (8)

(ii) Describe with neat diagram how flue gas is analyzed by Orsat method. (8)

OR

(b) (i) With neat diagram, explain the manufacturing of metallurgical coke by Otto-Hoffman method. (8)

(ii) Discuss the production and applications of water gas. (8)