Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 52881

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second Semester

Civil Engineering

CY 6251 — ENGINEERING CHEMISTRY – II

(Common to All Branches except Marine Engineering)

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention any two requirements of boiler feed water.
2. What is calgon conditioning of water?
3. Write the principle involved in electroless plating. Give an example.
4. Illustrate the use of electrochemical series giving an example.
5. Define nuclear chain reaction.
6. Alkaline battery is superior to dry cell. Why?
7. Define refractoriness.
8. What is the composition of Boro silicate glass?
9. What is the calorific value of coal?
10. What are producer gas and water gas?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the following boiler troubles :

(1) Sludge and Scale formation (4)

(2) Caustic embrittlement. (4)

(ii) Describe Reverse Osmosis method for desalination of water. (8)

Or

(b) (i) Describe on internal conditioning of water? (6)

(ii) Explain the demineralization of water by ion exchange process. (6)

(iii) How are exhausted cation and anion exchange resins regenerated? (4)

12. (a) (i) What is electrode potential? Discuss the cause of electrode potential. (8)

(ii) Derive the Nerns't equation for single electrode potential. (8)

Or

(b) (i) Write in detail about the constituents of paint. (10)

(ii) Discuss in detail about the electroplating of copper. (6)

13. (a) Explain the following :

(i) Nuclear fission and fusion (8)

(ii) Classification of nuclear reactor. (8)

Or

(b) Discuss the following :

(i) Wind energy and its harvest (8)

(ii) Hydrogen oxygen fuel cell. (8)

14. (a) (i) What are refractories? Explain any three of their important properties. (2 + 6)

(ii) What is glass? Discuss the manufacture of glass. (2 + 6)

Or

(b) (i) Describe the manufacture of cement by wet process. (8)

(ii) What are abrasives? How are they classified? Give any two examples for each category with their properties and uses. (2 + 2 + 4)

15. (a) (i) Define gross and net calorific values. Calculate gross and net calorific values of a coal sample containing 84% carbon, 1.5% sulphur, 6% nitrogen, 5.5% hydrogen and 8.4% oxygen. (3 + 5)

(ii) What is meant by proximate analysis of coal? What are the quantities estimated in this analysis and their significance? (2 + 6)

Or

(b) (i) What is metallurgical coke? How is it superior than coal? Describe any one method of manufacturing metallurgical coke. (2 + 2 + 4)

(ii) What is meant by knocking in petrol engines? How is knocking prevented? (4 + 4)