

Question Paper Code : 11295

B.E./B.Tech. DEGREE EXAMINATION, JANUARY 2013.

First Semester

(Common to all branches except Marine Engineering)

CY 2111/CY 14/080010001 — ENGINEERING CHEMISTRY — I

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define alkalinity in water. How is alkalinity classified?
2. Distinguish between soft water and demineralised water.
3. What is copolymerisation? Give an example.
4. How is Teflon prepared? Mention its uses.
5. Write the differences between physisorption and chemisorption.
6. Give the principle of ion exchange adsorption.
7. What are fissile nucleides and fertile nucleides?
8. What are secondary cells? Give an example.
9. How are refractories classified? Give one example each.
10. Name some important methods of manufacture of CNTs.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the methods of internal treatment of boiler water. (8)
(ii) Draw and explain break point chlorination curve. (8)

Or

- (b) (i) Explain the following boiler troubles :
 - (1) Scales and sludges
 - (2) Caustic embrittlement. (8)
- (ii) What is desalination? Explain one method of desalination in detail. (8)

12. (a) (i) Define the terms monomer and functionality. Explain condensation polymerisation with a suitable example. How does it differ from chain polymerisation? (8)
- (ii) Discuss the preparation, properties and uses of polycarbonate and poly ethylene terephthalate. (8)

Or

- (b) (i) What are thermoplastics and thermosetting plastics? Distinguish between the two. (8)
- (ii) What are the drawbacks of raw rubber? Describe the process to improve the properties of raw rubber in detail. (8)
13. (a) (i) Enumerate the factors influencing adsorption of gases on solids. (8)
- (ii) Derive an expression for Langmuir adsorption isotherm. What are its limitations? (8)

Or

- (b) (i) Explain the role of Ni catalyst in the hydrogenation of ethylene. What is the role of promoters in catalysis? (8)
- (ii) Describe the process of treatment of effluent by activated sludge process. Give any four applications of activated carbon. (8)
14. (a) (i) What are nuclear chain reactions? Explain how the amount of nuclear energy can be improved. (8)
- (ii) Explain the construction and working of a lead acid battery. (8)

Or

- (b) (i) What are fuel cells? Explain the construction and working of a fuel cell. (8)
- (ii) State the principle and application of solar batteries. (8)
15. (a) (i) Explain the following properties of a lubricant :
- (1) Viscosity and viscosity index
- (2) Flash and fire point. (8)
- (ii) What are abrasives? Explain Moh's scale of hardness. How is silicon carbide prepared? (8)

Or

- (b) (i) Explain the manufacture of alumina and magnesite bricks. (8)
- (ii) Write a note on solid lubricants. (8)