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

J 3168

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Second Semester

Chemical Engineering

CY 1154 — CHEMISTRY — II

(Common to B.Tech. Polymer Technology/Tex. Tech. (Fash. Tech)/B.E. – Petroleum Engineering)

(Regulation 2004)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the factors affecting vander waals forces?

2. Define bond order.

3. How is PVC prepared?

4. Write the monomers of 6:6 and Teflon.

5. Zinc is more readily corroded, when coupled with copper than with lead. Why?

6. What are the constituents of fire retardant paint?

7. What is colloidal conditioning?

8. What is meant by soft water and hard water?

9. Define gross calorific value and net calorific value.

10. What are the main constituents of gobar gas?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the crystal field splitting of d-orbital in octahedral complexes. (8)

(ii) What are the industrial applications of co-ordination complexes? (8)

Or

(b) (i) Explain the classification of solids on the basis of band gap. (8)

(ii) Explain the inter and intra molecular H-bonds with examples. (8)

12. (a) (i) Define the term addition and condensation polymers. Give Example. (8)

(ii) Detail out the preparation, properties and uses of polystyrene and Bakelite. (8)

Or

(b) (i) Discuss the mechanism of free radical polymerization. (8)

(ii) What are laminates? Explain the laminated plastics and laminated glass. (8)

13. (a) (i) What is meant by cathodic protection? Explain the two types of cathodic protection and their applications. (8)

(ii) What are various constituents of paints? Give examples and functions of each constituent. (8)

Or

(b) (i) Write notes on :

(1) Differential aeration corrosion

(2) Pitting corrosion. (4 + 4)

(ii) Describe the mechanism of electrochemical corrosion by hydrogen evolution and oxygen absorption. (8)

14. (a) (i) Describe the process of demineralization of water using ion exchange resin and specify its advantages over Zeolite process. (8)

(ii) Explain the various steps involved in the domestic water treatment. (8)

Or

(b) (i) What are boiler troubles? Write, in brief, about Calgon, Phosphate and Carbonate conditioning. (8)

(ii) What is desalination? How is this achieved by reverse Osmosis and electrolysis methods? (8)

15. (a) (i) How is flue gas analysis carried out? Explain with a neat diagram. (8)

(ii) What is meant by cracking? Discuss in detail about the moving bed catalytic cracking. (8)

Or

(b) (i) Describe briefly

(1) Bergius process

(2) Fischer-Tropsch process. (4 + 4)

(ii) What is the proximate analysis of coal? How is it done? (8)
