H 1164

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Second Semester

Mechanical Engineering

CM 132 — CHEMISTRY — II

(Common to Civil, ICE, IT, CSE, EEE, ECE, EIE, Biomedical and Mechatronics Engineering)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Mention four main types of organic reactions.

2. Apply law of mass action to the reaction $A + B \rightleftarrows C + D$.

3. Differentiate between homochain and heterochain polymers.

4. What are liquid resins?

5. What are irreversible cells? Give an example.

6. What is corrosion? What is rust?

7. Name two ores of any element and write their chemical formulae.

8. What is meant by quenching in heat treatment of metals?

9. Mention the secondary operations of powder metallurgy.

10. What are the limitations of powder metallurgy?

PART B — (5 × 16 = 80 marks)

11. (i) Discuss any four methods of preparation of metal powders in powder metallurgy. (8)

(ii) Explain different methods of compacting adopted in powder metallurgy. (8)

12. (a) (i) Write the mechanism of any one electrophilic aromatic substitution reaction. (8)

(ii) What are refractory materials? What are the important characteristics of refractories? (8)

Or

(b) (i) Draw the Ellingam diagram and illustrate its importance. (8)

(ii) State phase rule and explain the terms involved in it. (8)

13. (a) (i) Differentiate between commodity and engineering plastics. Give the preparation, properties and uses of one commodity and engineering plastic each. (8)

(ii) What are composite materials? Classify composites and discuss any four of them. (8)

Or

(b) (i) What are polymer blends, polymer alloys, SMC and fibres? Give one example each. (8)

(ii) Discuss the process of manufacture of soda glass. (8)

14. (a) (i) What is meant by electromotive series? What are its applications? (8)

(ii) How is a work-piece designed by electrochemical machining? (8)

Or

(b) (i) Illustrate the importance of 'electrowinning' in metallurgy. (8)

(ii) How is corrosion controlled by sacrificial anode and impressed current techniques? (8)

15. (a) (i) Discuss any two methods of concentrating ores. (8)

(ii) Draw the phase diagram of iron-carbon system and indicate the areas, lines and points (No explanation required). (8)

Or

(b) (i) Write the reactions involved in any four methods of conversion of an ore into its onide. (8)

(ii) Discuss different heat treatment methods and their effects on metals and alloys. (8)