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Question Paper Code : A 3873

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2010.

Second Semester

Mechanical Engineering

CM 132 — CHEMISTRY — II

(Common to Civil Engineering, Instrumentation and Control Engineering, Information Technology, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Biomedical Engineering and Mechatronics Engineering)

(Regulation 2001)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define entropy.
2. Why does one of the carbon atoms in the carbonation carry a single positive charge?
3. Give examples for polymer alloy.
4. What is a composite material?
5. What are reversible cells? Give an example.
6. Give two applications of electromotive series.
7. List two ores of any element and write their chemical formulae.
8. What is meant by quenching in heat treatment of metals?
9. State any two limitations of powder metallurgy.
10. What is meant by the secondary operation, coining, as applicable to powder metallurgy?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Give the detailed mechanism of any one type of organic reaction. (8)
(ii) Discuss the features and applications of Ellingham diagram. (8)

Or

- (b) (i) Describe any three important properties of refractory materials. (8)
(ii) Explain the features of a two component alloy system with a phase diagram. (8)
12. (a) (i) Give the preparation, properties and uses of commodity and engineering plastics. (8)
(ii) Differentiate among DMC, BMC and SMC used in plastic production process. (8)

Or

- (b) (i) Discuss the features of particle reinforced, fibre reinforced and structural composites. (8)
(ii) Distinguish between polymer blends and polymer alloys. Give one example each for polymer blend and polymer alloy and mention their uses. (8)
13. (a) (i) Explain the process of electrochemical machining with a diagram. (8)
(ii) Mention at least eight ways of controlling corrosion. (8)

Or

- (b) (i) Explain how an electrochemical sensor senses a signal and converts it to a electrical signal. (8)
(ii) How is aluminum extracted by Electro-Winning process? (8)
14. (a) (i) What is meant by electromotive series? Give its applications. (8)
(ii) Explain how a work-piece designed by electrochemical machining. (8)

Or

- (b) (i) Illustrate the importance of 'electrowinning' in metallurgy. (8)
(ii) Describe how corrosion is controlled by sacrificial anode and impressed current techniques. (8)

15. (a) (i) Mention the sequence of processes followed in powder metallurgy techniques. (8)
- (ii) What is meant by compacting in powder metallurgy? Mention any six of them. (8)

Or

- (b) (i) What are the applications of powder metallurgy? (8)
- (ii) Write a note on special alloys. (8)
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