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

Question Paper Code : Q 2172

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Second Semester

Mechanical Engineering

CY 1153 — CHEMISTRY — II

(Regulation 2004)

(Common to B.E. Aeronautical Engineering, Automobile Engineering, Mechatronics and Production Engineering)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Gross calorific value and Net calorific value?

2. What are the requisites of a metallurgical coke?

3. Write a brief account on Moh's scale of hardness.

4. What is cloud point and pour point? Give their significance in lubrication.

5. Write a brief account on pitting corrosion with a suitable example.

6. What is Caustic Embrittlement?

7. Write short notes on Thermal Analysis.

8. How is metal powder produced by electrolysis process?

9. What is the principle for the estimation of calcium by EDTA titration?

10. What is a calibration curve? How is it used in determining unknown concentration in colorimetry?

PART B — (5 × 16 = 80 marks)

11. (a) Describe the manufacture of metallurgical coke by Otto Hoffman's method. (16)

Or

(b) (i) Discuss the principle and procedure for the analysis of flue gas using Orsat's apparatus. (10)

(ii) Discuss the manufacture of Water gas. (6)

12. (a) (i) Discuss the characteristics of solid lubricants. (6)

(ii) What is viscosity index? Describe the method of determining viscosity index of lubricating oil. (10)

Or

(b) (i) What is plastic deformation? Explain. (8)

(ii) Give the preparation, properties and uses of Norbide. (8)

13. (a) (i) Explain the mechanism of electrochemical corrosion with suitable examples. (10)

(ii) Write notes on differential aeration corrosion. (6)

Or

(b) (i) Describe the principle and process of ion exchange in water softening treatment. (10)

(ii) Write notes on the internal treatment of water. (6)

14. (a) (i) Describe the phase rule for a simple eutectic system showing its phase diagram. (10)

(ii) Explain how the phase diagram for two component system can be constructed. (6)

Or

(b) (i) Describe the preparation of metal powders by

(1) chemical reduction (4)

(2) atomization. (4)

(ii) Write notes on Blending, Compacting and Sintering of metal powder. (8)

15. (a) Describe the principle of atomic absorption spectroscopy. Explain how the metals can be estimated quantitatively, with a suitable example. (16)

Hoffman's
(16)

Or

(b) (i) Describe the quantitative estimation of Copper by Iodometry. (8)

flue gas
(10)

(ii) Explain the procedure of determining Lead by Gravimetry. (8)

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