G 115

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2003.

Second Semester

Chemical Engineering

(Common to Leather Technology/Polymer Technology/
Textile Technology/Textile Chemistry)

CH 131 — CHEMISTRY — II

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between COD and BOD.

2. What are the sources of soil pollution?

3. What are the changes taking place during the transformation of wood to coal?

4. Give the composition of one biogas.

5. How is plaster of paris produced?

6. Define an adhesive. Give two examples.

7. What is Kevlar fibre? Give one application of PETP.

8. Define composites with a suitable example.

9. Mention the functions of a lubricant.

10. What is ultramarine? Mention the uses of it.

PART B — (5 × 16 = 80 marks)

11. (i) Write the structures of the monomers of the following polymers (1) Nylon 6, 6 (2) Polyester (3) Polycarbonate (4) Polysulphone. (8)

(ii) List the applications of reinforced plastics mentioning the fillers and polymers in each application. (4)

(iii) Give the preparation and uses of polytetrafluoroethylene. (4)

12. (a) (i) Briefly explain : (1) Acid rain (2) Green house effect (3) Ozone depletion. (12)

(ii) Outline the air pollution control methods. (4)

Or

(b) (i) How is sewage treated by trickling filter process and activated sludge process? (8)

(ii) Describe the possible sources of air pollution. (8)

13. (a) (i) Derive the relationship between higher and lower calorific values. (4)

(ii) How is metallurgical coke obtained by By-product oven method? (6)

(iii) Give a brief account of refining of petroleum and the products obtained and their uses. (6)

Or

(b) (i) Define octane number and cetane number. (4)

(ii) Describe the proximate analysis of coal. (6)

(iii) Explain the fixed bed catalytic cracking for the manufacture of gasoline. (6)

14. (a) (i) What are the raw materials used for the manufacture of Portland cement? Describe the manufacture of cement by wet process. (8)

(ii) How do adhesives develop strength? (4)

(iii) Write notes on epoxides and urethanes. (4)

Or

(b) (i) Discuss the important characteristic properties of lime. (5)

(ii) Give a comparative account of fat lime and hydraulic lime. (5)

(iii) What are the advantages and limitations of adhesive bonding? (6)

15. (a) (i) Compare the structure of graphite and molybdenum disulphide and their use in lubrication. (6)

(ii) Write the general formula of sodium zeolite. Describe one application of zeolite. (6)

(iii) Explain the bleaching action of calcium hypochlorite and sulphur dioxide. (4)

Or

(b) (i) What are greases? When are they used? Give the preparation of Lithium grease. (6)

(ii) Describe the use of ion exchange resins in the purification of water. (6)

(iii) Give the preparation and uses of

(1) Silicon carbide

(2) Titanium dioxide. (4)
