B.Sc. (Part–II) Semester–III Examination

3S : INDUSTRIAL CHEMISTRY (R/V)

(Unit Processes and Process Equipments)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) Question No. **1** is compulsory and carries **8** marks.

(2) Remaining all **SIX** questions carry **12** marks each.

(3) Give chemical equations and draw diagram wherever necessary.

(4) Use of calculator is allowed.

1. (A) Fill in the blanks :— 2

(i) In hydrogenation of vegetable oil, glycerides of unsaturated fatty acid are converted into glycerides of _____ acid.

(ii) The mixed acid used in nitration is composed of HNO_3 and _____.

(iii) Mcleod gauge is generally used in the measurement of high _____.

(iv) Composting is the aerobic and _____ decomposition of organic matter present in the refuse by microorganisms.

(B) Choose the correct alternative :— 2

(i) Halogenation reactions involve the use of :

(a) Chlorine (b) Bromine

(c) Iodine (d) All of these

(ii) Which of the following is not an oxidising agent ?

(a) $KMnO_4$ (b) $K_2Cr_2O_7$

(c) HCl (d) HNO_3

(iii) Evolution of hydrogen type corrosion occurs in this environment :

(a) Acidic (b) Basic

(c) Neutral (d) All of these

(iv) Which of the following is a vigorous hydrogenation catalyst ?

(a) Copper (b) Nickel

(c) Palladium (d) Platinum

(C) Answer in **ONE** sentence :— 4

(i) What is sulphonation ?

(ii) Why the hardening of vegetable oil is carried out ?

(iii) Give the sources of radioactive waste.

(iv) Define passivity.

(Contd.)

UNIT—I

2. (A) What is alkylation ? Discus any three alkylating agents. 4

(B) Explain the manufacture of m-nitroaniline. 4

(C) Give an account of continuous nitration. 4

OR

3. (P) Discuss the manufacture of p-nitroacetanilide from acetanilide. 4

(Q) Describe cathodic reduction method of amination. 4

(R) Explain the vapour phase mechanism of alkylation. 4

UNIT—II

4. (A) Give an account of sulphonation of benzene. 4

(B) What is bromination ? Explain any three types of brominating agent. 4

(C) Discuss the thermodynamics of hydrolysis. 4

OR

5. (P) Explain any four factors affecting sulfonation. 4

(Q) Give an account of various hydrolysing agents. 4

(R) Discuss the manufacture of chlorobenzene. 4

UNIT—III

6. (A) Explain the manufacture of benzoic acid. 4

(B) Discuss the manufacture of methanol from carbon monoxide and hydrogen. 4

(C) What is esterification ? Explain the esterification of organic acid with olefin. 4

OR

7. (P) Give an account of vigorous and mild hydrogenation catalysts. 4

(Q) Discuss the manufacture of vinyl acetate. 4

(R) What is oxidation ? Explain any three types of oxidative reactions. 4

UNIT—IV

8. (A) Draw and explain glass thermometer. 4

(B) Discuss float type liquid level gauge. 4

(C) Draw and explain manometer. 4

OR

9. (P) Describe radiation pyrometer with diagram. 4

(Q) Give an account of Pirani gauge used in the measurement of pressure. 4

(R) Explain bell type liquid level gauge. 4

UNIT—V

10. (A) Give the mechanism of corrosion by hydrogen evolution. 4

(B) Describe underground corrosion. 4

(C) Draw and explain manufacturing process of oil paints. 4

OR

11. (P) Define corrosion. Discuss galvanic corrosion. 4

(Q) Discuss the factors affecting corrosion. 4

(R) Describe chemical and physical passivity. 4

UNIT—VI

12. (A) Define solid waste. Explain the types of solid waste with suitable examples. 4

(B) Explain composting as a solid waste treatment. 4

(C) Discuss biomedical waste. 4

OR

13. (P) Explain the method of industrial solid waste treatment and disposal by incineration. 4

(Q) Describe the types of hazardous solid waste. 4

(R) Give an account of recycling and reuse of solid waste. 4