B.Sc. Part–II Semester—III Examination
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) Attempt **one** question from each Unit.

(3) Use of calculator is allowed.

1. (a) Fill in the blanks :— 2

(i) Radiation Pyrometer is a device used for measurement of _____.

(ii) During composting _____ matter is transformed into stable humus.

(iii) The process of formation of ester is called _____.

(iv) Sulphonation carried out with the help of SO_2 and Cl_2 is called ____.

(b) Choose the correct alternatives :— 2

(i) Which of the following is a mild hydrogenating agent ?

(a) Nickel (b) Cobalt

(c) Platinum (d) Iron

(ii) Corrosion of metals involves _____.

(a) Physical reaction (b) Chemical reaction

(c) Both (d) None

(iii) Glass thermometer utilizes volumetric expansion of _____.

(a) Mercury (b) Copper

(c) Oil (d) Water

(iv) Manometer is a device used in measurement of :

(a) Temperature (b) Pressure

(c) Level (d) Liquid flow

(c) Answer in **one** sentence each :—

(i) Name any two sulphonating agents. 1

(ii) What is Hydrolysis ? 1

(iii) What is basic difference between paint and varnishes ? 1

(iv) What is radioactive waste ? 1

UNIT—I

2. (a) Describe the manufacturing process of o-nitrochlorobenzene with flow sheet diagram. 6

(b) Explain Cathodic reduction method for amination. 4

(c) Discuss two alkylating agents. 2

OR

3. (p) Describe batch nitration with diagram. 4

(q) Give an account of factors affecting amination. 4

(r) Explain manufacturing process of Ethylbenzene with flow sheet diagram. 4

UNIT—II

4. (a) Discuss the factors that affect sulphonation. 4

(b) Explain manufacturing of Chloral. 4

(c) Explain any two hydrolysing agents. 4

OR

5. (p) Comment on any two sulphonating agents. 4

(q) Discuss nuclear and side chain aromatic halogenation. 4

(r) Discuss BAC^2 mechanism of hydrolysis. 4

UNIT—III

6. (a) Explain manufacturing process of acetic acid with flow sheet diagram. 6

(b) Discuss esterification of organic acid using unsaturated compounds. 6

OR

7. (p) Explain liquid and vapour phase oxidation. 6

(q) Define hydrogenation. Explain any two types of hydrogenation Catalyst. 6

UNIT—IV

8. (a) Discuss construction and working of glass thermometer with diagram. 6

(b) Explain construction and working of bell type liquid level gauge and its use. 6

OR

9. (p) Explain with diagram construction and working of Manometer. 6

(q) Explain construction and working of Radiation Pyrometer. 6

UNIT—V

10. (a) Explain underground corrosion. 4

(b) Write in short :—

(1) Electroplating with one example. 2

(2) Corrosion inhibitor. 2

(c) Discuss manufacturing process of varnish and how it prevents corrosion. 4

OR

11. (p) Discuss various factors that affect corrosion. 4

(q) Explain oxide film passivity. 4

(r) Discuss manufacturing process of oil paints. 4

UNIT—VI

12. (a) Explain composting method as solid waste disposal method and its advantage (any one). 4

(b) Discuss how radioactive waste in generated and its hazardous effect on environment. 4

(c) Write in brief with one example :—

(1) Recycling and

(2) Reuse. 4

OR

13. (p) Explain thermal process for disposal of solid waste. 4

(q) Discuss non-radioactive hazardous waste and its effects. 4

(r) Explain solid waste treatment as Sanitary landfill. 4