B.Sc. (Part—I) Semester—II Examination

INDUSTRIAL CHEMISTRY (R/V)

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) Use of scientific calculator is allowed.

(4) Draw diagram wherever necessary.

1. (A) Fill in the blanks :

(i) Adsorption phenomenon occurs at _____ solid only.

(ii) The differences in _____ pressures of different components of a liquid mixture forms the basis of distillation.

(iii) Percolation of a liquid through a fixed bed of solid is called as _____ .

(iv) Vacuum crystallisation is used for _____ sensitive materials. 2

(B) Choose the correct alternatives :

(i) Kick's law is associated with this unit operation :

(a) Screening (b) Mixing

(c) Size Reduction (d) Filtration

(ii) Axial flow and radial flow are the types of :

(a) Impellers (b) Turbines

(c) Paddles (d) Propellers

(iii) The dryer commonly used for getting material in the continuous sheet form such as paper and cloth is :

(a) Tray dryer (b) Spray dryer

(c) Rotary dryer (d) Drum dryer

(iv) Which of the following statements is not true in case of chemical adsorption ?

(a) Caused by Chemical bond formation

(b) It is reversible

(c) Increases with increase in temperature

(d) Forms unimolecular layer 2

For each sentence :

(i) Define adsorption.

(ii) What is screening ?

(iii) Define drying.

(iv) What is evaporator economy ? 4

UNIT—I

2. (A) Explain short tube evaporator. 4

(B) Give an account of forced circulation evaporator. 4

(C) Describe packed column for distillation. 4

OR

3. (P) Discuss bubble cap tray in plate column distillation. 4

(Q) Explain continuous distillation with rectification and stripping. 4

(R) Give an account of climbing film evaporator. 4

UNIT—II

4. (A) Describe spray column extractor. 4

(B) Discuss the properties of a solvent used in liquid-liquid extraction. 4

(C) Give an account of rotocel. 4

OR

5. (P) Explain Kennedy extractor. 4

(Q) Discuss countercurrent multiple contact (Shank's system). 4

(R) Describe mixer and settler as extracting equipment. 4

UNIT—III

6. (A) Discuss the construction and working of vacuum crystalliser. 6

(B) Give an account of spray dryer with respect to its construction and working. 6

OR

7. (P) Give the construction and working of tray dryer. 6

(Q) Explain construction and working of Oslo cooler crystalliser. 6

UNIT—IV

8. (A) Give an account of jaw crusher. 4

(B) Describe Trommel screens. 4

(C) Discuss the characteristics of filter medium. 4

OR

9. (P) Give the construction and working of Grizzly screens. 4

(Q) Discuss ball mill. 4

(R) Explain the principle of cake filtration. 4

UNIT—V

10. (A) Give an account of mixing of liquids with liquids. 6

(B) Explain tumbling mixers. 6

OR

11. (P) Discuss ribbon blender. 6

(Q) Explain :

(i) Banbury mixer. 3

(ii) Pug mills. 3

UNIT—VI

12. (A) Explain any four applications of adsorption. 4

(B) Give an account of mechanism of adsorption. 4

(C) Discuss any four properties of a catalyst. 4

OR

13. (P) Give an account of Langmuir adsorption isotherm. 4

(Q) Explain :

(i) Autocatalysis.

(ii) Catalyst deactivation. 4

(R) Discuss the mechanism of catalysis through intermediate compound formation. 4