

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

(C) Answer in **one** 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

