

**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

- (i) Define adsorption. 4
- (ii) What is screening ? 4
- (iii) Define drying. 4
- (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

7. (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

