

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

2S : INDUSTRIAL CHEMISTRY (R/V)

Time : Three Hours]

[Maximum Marks : 80

- Note :-**
- (1) Question No. 1 is compulsory.
 - (2) Attempt **ONE** question from each Unit.
 - (3) Draw diagrams wherever necessary.
 - (4) Use of scientific calculator is allowed.

1. (a) Fill in the blanks :

- (i) In distillation operation _____ energy is used to separate two or more miscible liquids from each other.
- (ii) For making the liquid thick or concentrated, _____ operation is used.
- (iii) Mixer settler is an equipment, used for _____ operation.
- (iv) Double cone mixer is a type of _____. 2

(b) Choose the correct alternative :

- (i) Drying of liquid is done by using _____.
 - (a) tray dryer (b) rotary dryer (c) spray dryer
 - (d) fluid bed dryer

(ii) Percolation tank is an equipment used for ____ operation.

- (a) leaching (b) drying (c) evaporation
(d) crystallization

(iii) Trommels are used for ____.

- (a) size reduction (b) screening (c) mixing
(d) filtration

(iv) Ball mill works on the principle of ____.

- (a) impact (b) impression (c) mixing
(d) none of these

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(c) Answer in **ONE** sentence :

(i) What is evaporators economy ?

(ii) Define moisture content on wet basis.

(iii) What is capacity of screens ?

(iv) State Kick's law.

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UNIT-I

2. (a) Describe plate column for distillation operation. 4

(b) Give an account of long tube evaporator. 4

(c) Describe agitated film evaporator with diagram. 4

OR

3. (p) Describe differential distillation with diagram. 4

(q) Describe distillation with rectification and stripping. 4

(r) Describe forced circulation evaporator with diagram. 4

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UNIT-VI

12. (a) Discuss the various factors affecting adsorption. 6

(b) What is enzyme catalysis ? Discuss the characteristics of enzyme catalysis. 6

OR

13. (p) Discuss Langmuir adsorption isotherm. 6

(q) Explain the phenomenon of catalysis on the basis of adsorption theory with suitable example. 6

UNIT-II

4. (a) Explain single and multistage extraction. 4
(b) Describe counter current multiple contact, Shank's system for leaching with diagram. 4
(c) Discuss rotocel extractor for leaching. 4

OR

5. (p) Explain mixer settler for extraction operation. 4
(q) Describe rotating disc contactor for extraction. 4
(r) Discuss continuous counter current decantation for leaching operation with diagram. 4

UNIT-III

6. (a) Explain tank crystallizer with diagram. 4
(b) Describe tray dryer with diagram. 4
(c) Give an account of nucleation and crystal growth. 4

OR

7. (p) Explain spray dryer with diagram. 4
(q) Discuss drum dryer with diagram. 4
(r) Describe vacuum crystallizer with diagram. 4

UNIT-IV

8. (a) Describe principle, construction and working of Ball mill with diagram. 6

- (b) Discuss the construction and working of Grizzly's screens and Trommel's screens with diagrams. 6

OR

9. (p) Describe principle, construction and working of Jaw crusher with diagram. 6
- (q) Give an account of rotary drum filter with diagram. 6

UNIT-V

10. (a) Discuss mixing of liquid with liquid. 4
- (b) What are Paddles ? Give the various types of paddles. 4
- (c) Describe construction and working of tumbling mixer with diagram. 4

OR

11. (p) Describe the construction and working of ribbon blender with diagram. 4
- (q) Discuss mixing of gases with liquids. 4
- (r) Explain construction and working of double arm kneader with diagram. 4