AR – 513

Second Semester B. Sc. (Part – I) Examination

2S INDUSTRIAL CHEMISTRY

(Regular / Vocational)

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (1) Question No.**1** is compulsory and carries **8** marks.
(2) Remaining all questions carry **12** marks.
(3) Give chemical equations and draw diagrams wherever necessary.
(4) Use of scientific calculator is allowed.

1. (A) Fill in the blanks.

(i) In distillation, constituents of liquid mixture (solution) are separated by using ——— energy.

(ii) The generation of new solid phase either on an inert material in solution or in the solution itself is called as ———

(iii) In homogeneous catalysis, the reactants and catalysts are in ——— phase.

(iv) Separation of petroleum products that have about same boiling range is made by ———. 2

(B) Choose the correct alternative.

(i) Which of the following factors does not affect adsorption phenomenon ?

(a) Nature of gas

(b) Temperature

(c) Volume

(d) Pressure

(ii) The example of indirect type of dryer is

(a) Drum dryer

(b) Tray dryer

(c) Fluid bed dryer

(d) Rotary dryer

(iii) The method of separating the particles of solids according to size alone is known as

(a) Filtration

(b) Sedimentation

(c) Screening

(d) Leaching

(C) Explain homogeneous and heterogeneous catalysis with example. 4

OR

13. (P) Give a brief account of activation energy and catalysis. 4

(Q) What is enzyme catalysis ? Explain. 4

(R) Discuss any four factors affecting adsorption. 4

(Q) What do you mean by capacity and effectiveness of screens. 4

(R) Explain rotary drum filter. 4

UNIT V

10. (A) Draw the diagram of agitated vessel and explain it with respect to mixing of liquids with liquids. 6

(B) Give an account of tumbling mixture. 6

OR

11. (P) Draw the sketch of ribbon blender and explain it. 6

(Q) Give the general introduction of mixing and describe mixing of gases with liquids with suitable diagram. 6

UNIT VI

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

(B) Diffferentiate between physical and chemical adsorption. 4

(iv) The unit operation which involves the use of equipments like pug mill and ribbon blender is

(a) Size reduction

(b) Crystallisation

(c) Drying

(d) Mixing 2

(C) Answer in **One** sentence :—

(i) How does evaporation differ from drying?

(ii) What is adsorption ?

(iii) Define free moisture content.

(iv) State Rittinger's law. 4

UNIT I

2. (A) Draw the sketch for differential distillation and explain it. 4

(B) Explain short tube evaporator. 4

(C) Give an account of packed column for distillation. 4

OR

3. (P) Discuss long tube evaporator. 4

(Q) Describe forced circulation evaporator. 4

(R) What do you mean by steam distillation ? Explain. 4

UNIT II

4. (A) Describe selection criteria for a solvent used in extraction. 4

(B) Draw a neat sketch of spray column extractor and explain its working. 4

(C) Explain Shank's system. 4

OR

5. (P) Give an account of rotocel. 4

(Q) What is leaching ? Explain Kennedy extractor. 4

(R) Explain construction and working of rotating disc column. 4

UNIT III

6. (A) Discuss vacuum crystalliser with neat lebelled diagram. 6

(B) Describe construction and working of rotary dryer. 6

OR

7. (P) Explain tray dryer with suitable diagram. 6

(Q) Draw the sketch of agitated tank crystalliser and explain it. 6

UNIT IV

8. (A) Explain hammer mill with a neat lebelled diagram. 4

(B) Give an account of Trommel's screen. 4

(C) Discuss the characteristics of filter medium. 4

OR

9. (P) Describe construction and working of ball mill. 4