

B.Sc. (Part—III) Semester—V Examination
INDUSTRIAL CHEMISTRY (R/V)
(Chemical Process Economics, Heavy and Fine Chemicals)

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) Give chemical equation and draw diagram wherever necessary.
(4) Use of calculator is allowed.

1. (A) Fill in the blanks :

- (i) Maximum part of manufactured ammonia is consumed in _____ industry.
- (ii) _____ is molecular formula of hydrated lime.
- (iii) _____ is important by-product in soap industries.
- (iv) Ethylene oxide and ammonia are the raw materials used in production of _____ .

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(B) Choose correct alternative :

- (i) Ammonium phosphate is prepared by using :
 - (a) Phosphoric acid
 - (b) Sulphuric acid
 - (c) Acetic acid
 - (d) Citric acid
- (ii) Liquification of CO₂ is carried out by :
 - (a) Condensation
 - (b) Compression
 - (c) Evaporation
 - (d) None of these
- (iii) Which of the following is used as explosive ?
 - (a) Acetic acid
 - (b) Ammonia
 - (c) Ammonium nitrate
 - (d) All of these
- (iv) Soaps are salts of :
 - (a) Phosphoric acid
 - (b) Fatty acid
 - (c) Fumaric acid
 - (d) Nitric acid

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(C) Answer in **one** sentence each :

- (i) Define compound interest.
- (ii) Name the ore used to manufacture fluorine.
- (iii) What are essential oils ?
- (iv) What is Ester Value ?

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UNIT—I

2. (A) How is ammonium sulphate manufactured industrially ? Explain with flow diagram. 4
(B) Explain manufacturing process of nitric acid with flow diagram. 4
(C) Discuss consumption pattern of triple superphosphate. Explain manufacturing process of triple super phosphate.

OR

3. (P) Describe consumption pattern reaction involved and flow diagram of ammonium nitrate. 4
(Q) Explain manufacturing process of chlorine with flow diagram. 4
(R) How is ammonia manufactured in industries ? Discuss the process with flow diagram. 4

UNIT—II

4. (A) Explain manufacturing process of fluorine with flow diagram. 4
(B) Discuss manufacturing process of urea. 4
(C) How is lime manufactured industrially ? Explain with raw material consumption pattern. 4

OR

5. (P) Explain manufacturing process of silicon carbide. 4
(Q) How is sulphuric acid manufactured in industry ? Discuss with reference to raw material, consumption pattern and process details. 4
(R) Explain manufacture process of soda ash by solvay process. 4

UNIT—III

6. (A) How is glycerine recovered in manufacture of soap ? Explain the process with flow diagram. 4
(B) Give uses of following :
(i) Menthol
(ii) Camphor. 4
(C) Explain manufacturing process of Soyabean oil with flow diagram. 4

OR

7. (P) Explain manufacturing process of soap with flow diagram. 4
(Q) Describe in brief method of extraction of essential oil. 4
(R) Explain process of hydrogenation of vegetable oil with diagram. 4

UNIT—IV

8. (A) Explain manufacturing process of vinyl acetate with flow diagram and its uses. 6
(B) Explain in detail manufacturing process of mono, di and tri ethanolamine and its use. 6

OR

9. (P) Explain manufacturing process of ethylene with flow diagram and its uses. 6
(Q) Discuss chlorination of methane with reference to consumption pattern, major engineering problems. 6

UNIT—V

10. (A) Discuss steps involved in risk management. 4
(B) Describe manufacturing process of nitrogen. 4
(C) What is dry ice ? Describe its manufacturing process. 4

OR

11. (P) Describe manufacturing process of oxygen. 4
(Q) Give an account of following hazards :
(i) Explosion
(ii) Toxicity. 4
(R) Explain manufacturing process of CO₂. 4

UNIT—VI

12. (A) Describe factors affecting investment and production cost. 4
(B) What is depreciation ? Discuss sum of the years digit method of determination of depreciation. 4
(C) What is profitability ? Discuss return of return on investment method of profitability evaluation. 4

OR

13. (P) Give an account of simple and compound interest. 4
(Q) Discuss straight-line method for determination of depreciation. 4
(R) Discuss cash flow for industrial operation. 4

