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AT–378

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 equations and draw diagrams wherever necessary.

(4) Use of calculator is allowed.

1. (A) Fill in the blanks :

(i) Molecular formula of carborundum _____.

(ii) Camphor essential oil is extracted by _____ distillation.

(iii) Carbon dioxide frozen in the solid state as cooling agent is called _____.

(iv) In economics, the time unit for simple interest is taken as _____ year. 2

(B) Choose correct alternative :

(i) Molecular formula of calcium carbide is :

(a) CaC (b) CaC_2

(c) $CaCO_3$ (d) CaO

(ii) In production of urea, undesired side reaction give undesired product as :

(a) Ammonium carbamate (b) Monouret

(c) Biuret (d) Ammonium Carbonate

(iii) Hydrogenation of vegetable oil is used to remove _____ bonds.

(a) Single (b) Double

(c) Triple (d) All of these

(iv) The compensation paid for the use of borrowed capital is called as :

(a) Depreciation (b) Discount

(c) Investment (d) Interest 2

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

(i) Define saponification value for oil.

(ii) Give uses of camphor essential oil.

(iii) Give the uses of Acetylene.

(iv) Define Depreciation. 4

UNIT—I

2. (a) Describe the manufacture process of ammonia w.r.t. :

(i) Consumption pattern

(ii) Raw material

(iii) Major engineering problems. 6

(b) Draw and explain manufacture process of superphosphate. 6

OR

3. (p) Draw and explain manufacture process of ammonium sulphate. 6

(q) Explain the manufacture process of nitric acid w.r.t. :

(i) Consumption pattern

(ii) Raw material

(iii) Major engineering problems. 6

UNIT—II

4. (a) Draw and explain manufacture process of Lime. 6

(b) Discuss manufacture process of silicon carbide with flowchart. 6

OR

5. (p) Draw and explain manufacture process of Fluorine. 6

(q) Draw and explain the manufacture process of Sulfuric Acid. 6

UNIT—III

6. (a) Discuss the following extraction method of essential oils :

(i) Steam distillation

(ii) Solvent extraction. 4

(b) Describe the manufacture process of soyabean by solvent extraction. 4

(c) Give the uses of following essential oils :

(i) Menthol

(ii) Citral

(iii) Camphor

(iv) Turpentine. 4

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7. (p) Draw and explain manufacture process of soap. 4

(q) Discuss the recovery of glycerine from soap manufacture process. 4

(r) Describe hydrogenation of vegetable oil. 4

UNIT—IV

8. (a) Draw and explain the manufacture process of Acetylene with raw material and uses. 6

(b) Draw and explain the chlorination of methane with major engineering problems. 6

OR

9. (p) Discuss Fischer-Tropsch Synthesis with examples and draw it. 6

(q) Draw and explain the manufacture of vinyl chloride. 6

UNIT—V

10. (a) Describe safety concern hazards and their control in petrochemical industry. 6

(b) Explain the manufacture process of carbon dioxide from coke. 6

OR

11. (p) Draw and explain manufacture of Oxygen and Nitrogen by Linde's method with its uses. 6

(q) Describe any six steps involved in risk management. 6

UNIT—VI

12. (a) Explain the straight line method for depreciation. 4

(b) Describe nominal and effective interest rates. 4

(c) Explain the factors affecting investment and production cost. 4

OR

13. (p) Discuss cumulative cash position. 4

(q) Describe sum of the years digits method of profitability evaluation. 4

(r) Explain the criteria for profitability evaluation. 4

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