

Total Pages : 5

B.Tech-3rd(Chem Engg)
Chemical Process Technology

Full Marks : 50

Time : 2.5 hours

Answer all questions.

*The figures in the right-hand margin
indicate marks.*

Symbols carry usual meaning.

Any supplementary materials to be provided.

1. Answer all questions:

2 × 5

- (a) What are the different chemicals recovered from Kraft pulp process ?
- (b) What do you mean by hydrogenation of oil ?
- (c) List the various chemical reactions taking place in lead chamber process for the manufacture of sulfuric acid.

(Turn Over)

(2)

- (d) What are the products from crude petroleum after distillation ?
- (e) What is Vulcanization of rubber and what is the importance of this process ?
2. (a) What is inversion of sugar ? Explain manufacturing of sugar with process flow diagram. 4
- (b) What are the different products and by-products recovered from black liquor ? What is the function of Causticizing tank also write down the reaction occurred in it ? 4
- Or*
- (a) What are the different units engaged for the recovery of chemicals from the black liquor ? Describe briefly about the functional role of boiler. 4
- (b) What are the products and by-products of sugar industry ? Also write down the differences between White liquor, Black liquor and green liquor. 4

B.Tech-3rd(ChemEngg)/Chem.Proce.Tech.

(Continued)

(3)

3. (a) Write down the Fat Splitting reaction and Saponification reaction. Also write down the role of Hydrolyzer unit in the manufacturing process of Soap. 4
- (b) What is the difference between soft soap and hard soap ? Why Ion exchanger unit is used in the manufacturing process of glycerin ? 4
- Or*
- (a) Describe briefly about the various role of Digestor, Expeller, Extractor and Flash film evaporator in the Vegetable oil extraction process. 4
- (b) What do you mean by hydrogenation of oil ? Also write down several chemical reactions for the preparation of the catalyst. 4
4. (a) Discuss in detail the electrolytic process for chlorine-caustic soda production with a neat flow sheet. Also discuss the major engineering problems associated with their production. 4

B.Tech-3rd(ChemEngg)/Chem.Proce.Tech.

(Turn Over)

(4)

- (b) Discuss in detail the production of hydrochloric acid with a neat flow sheet. Also discuss the major engineering problems associated with their production. 4

Or

- (a) Discuss the production of sulfuric acid by Lead Chamber Process with a neat flow sheet. Also discuss the major engineering problems. 4
- (b) Discuss the production of sulfuric acid by DCDA process with a neat flow sheet. Also discuss the major engineering problems. 4
5. (a) Write down the manufacturing process of phenol formaldehyde with a neat flow sheet. 4
- (b) Write down about the differences between Thermoplastic and Thermosetting polymer. 4

(5)

Or

- (a) Write down the classification of polymers on the basis of physical structure, origin of source, molecular forces and mode of polymerization. 4

- (b) Write down the various steps involved in the vulcanization process and also describe it. Why vulcanization of rubber is performed ? 4

6. (a) What is the need of a fertilizer also discuss about the fertilizer ratio ? 4

- (b) Write down the manufacturing process of urea. 4

Or

- (a) What are the major engineering problems associated with the manufacturing process of ammonia and how to solve those issues ? 4

- (b) What are the differences between Straight and mixed fertilizer ? What are the benefits of utilization of a fertilizer ? 4