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Total number of printed pages – 2

B. Tech
PCCH 4202

Third Semester Examination – 2013
CHEMICAL PROCESS TECHNOLOGY

BRANCH : CHEM

QUESTION CODE : C - 480

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

Answer all parts of a question at a place.

1. Answer the following questions : 2×10
- (a) Write the grades and purity range of caustic soda.
- (b) Classify the processes used for the production of caustic soda.
- (c) Write the pertinent properties of soda ash. Also write the chemical formula of washing soda.
- (d) Write the properties and grades of sulfuric acid.
- (e) Write the chemical composition and physical properties of vegetable oils.
- (f) With a neat diagram explain the cleansing action by soaps/detergents.
- (g) Write the chemical reactions for Sulfate pulp process.
- (h) Name any four pigments used.
- (i) Write the properties and chemical structure of starch.
- (j) Differentiate between low-density and high-density polyethylene.
2. (a) Discuss in detail the major engineering problems during the manufacture of soda ash by Solvay process. 5

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- (b) Discuss, in detail, the manufacture of soda ash by Modified Solvay process giving emphasis on chemical reactions and major engineering problems. 5
3. (a) Discuss the characteristics of catalysts used by Contact process for the manufacture of sulfuric acid. Mention their advantages and disadvantages. 5
- (b) With a neat flow diagram, describe the process of manufacturing hydrochloric acid. 5
4. (a) Discuss the methods of extracting vegetable oils and its purification with a neat flow diagram. 4
- (b) What do you understand by hydrogenation of oils ? With a neat flow diagram describe the process of hydrogenation of oils giving emphasis on the major engineering problems. 1+5
5. (a) Classify cleansing compounds. 4
- (b) With a neat flow diagram, explain the process of manufacturing soap. 6
6. With a neat flow diagram, describe the extraction of sucrose from sugar cane giving emphasis on the major engineering problems. 10
7. Discuss, in detail, with a neat flow diagram, the method of production of polyvinyl chloride. Also mention its properties and consumption pattern. 10
8. Write short notes on any **two** of the following : 5×2
- (a) Dextrin
- (b) Ethyl alcohol
- (c) Raw materials for paper industries
- (d) Phenol formaldehyde.
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