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Total number of printed pages - 02

B.TECH
PCCH4202

3rd Semester Regular / Back Examination 2015-16

CHEMICAL PROCESS TECHNOLOGY

BRANCH : Chemical Engineering

Time : 3 Hours

Max Marks : 70

Question Code : T687

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 x 10)**
 - (a) What is aqua-regia ? Mention its use in steel industries.
 - (b) State the raw materials used in dual process for the manufacture of soda ash.
 - (c) State the different sources of SO₂.
 - (d) State the byproducts formed during soap preparation and write its applications.
 - (e) Mention the temperature range under which mercury electrolytic cells are operated.
 - (f) What are semi-synthetic polymers and state their applications.
 - (g) What is the use of antioxidants in oil industries ?
 - (h) Differentiate between LDPE and HDPE.
 - (i) Write the properties of starch.
 - (j) What are natural dyes ? Mention some their applications.

2. 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. **(7+3)**

3. Explain the DCDA process of H₂SO₄ manufacturing with a neat flow sheet. Also discuss the major engineering problems. **(6+4)**

4. Discuss in detail with a neat flow sheet the production of ethyl alcohol by fermentation process giving emphasis on major engineering problems. **(3+3+4)**

5. Discuss in detail with a neat flow sheet the Kraft process of pulp production giving emphasis on major engineering problems. **(3+3+4)**

6. State the structural formula of sucrose. With a neat flow diagram, describe the extraction of sucrose from sugar cane giving emphasis on the major engineering problems. **(1+9)**
7. Discuss in detail the manufacture of phenol-formaldehyde. Also mention its applications **(10)**
8. Write short notes on any **TWO**: **(5 x 2)**
- (a)** HCl
 - (b)** Synthetic detergent
 - (c)** Hydrogenation of oil
 - (d)** Polyvinyl acetate
