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Total number of printed pages – 2

B. Tech.  
PCCH 4202

### Third Semester Examination – 2012-13

### CHEMICAL PROCESS TECHNOLOGY

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.*

1. Answer the following questions : 2×10
- (a) Mention the properties and uses of chlorine.
  - (b) Name the catalyst used for DCDA process for sulphuric acid manufacture and mention its characteristics.
  - (c) With a rough diagram, write the mechanism of cleaning of grease from a surface by the use of soaps and detergents.
  - (d) Write the raw materials for pulp production and write the types of paper products.
  - (e) Mention the temperature range under which mercury electrolytic cells are operated.
  - (f) What is dextrin ? Write its chemical formula.
  - (g) What are mash and slops ?
  - (h) What is the use of antioxidants in oil industries ?
  - (i) Mention the quantitative requirements for one ton of 100% alcohol.
  - (j) Write the properties and uses of polyvinyl acetate.

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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. 4+3+3
3. (a) Discuss briefly about hydrogenation of oil. 5  
(b) Discuss the methods for detergent manufacture. 5
4. Discuss in detail the Kraft pulp process with a neat flow sheet giving emphasis on digestion, bleaching, and recovery of chemicals. Also discuss the major engineering problems. 4+3+3
5. Discuss in detail with a neat flow sheet the extraction of sucrose from sugar cane for crystalline sugar production giving emphasis on major engineering problems. 3+3+4
6. Discuss in detail with a neat flow sheet the production of polyethylene by low pressure Ziegler process. Mention its properties and uses. 4+4+2
7. (a) Write the properties and uses of PVC. 2  
(b) Discuss the production of PVC with a neat flow sheet. Also mention the engineering problems. 4+4
8. Write short notes on any *two*: 5×2
  - (a) Chemical reactions for Solvay process
  - (b) Pigments and dyes
  - (c) Industrial alcohol
  - (d) Phenol formaldehyde.