

Time - 3 hrs

Marks - 80

**N.B -** Question no 1 is compulsory.  
Solve any three questions from remaining five questions.  
Draw flow sheets and diagrams wherever necessary.

- Q.1 Write short note on (any four) 20
- Differentiate between Soaps and detergents.
  - Differentiate between HDPE and LDPE
  - Describe Mercury cell for Caustic soda.
  - What is starch? What are its sources? Enumerate its applications.
  - Differentiate between refining and cracking.
- Q.2 a) Describe DCDA process for sulfuric acid manufacture from elemental sulphur with reference to :- 20
- Why multistage reactor used?
  - Why interpass absorption done?
  - How energy conservation achieved?
  - What are typical process conditions?
  - What is the typical SO<sub>2</sub> conservation achieved and composition of tail gas?
- Q.3 a) Explain manufacture of phenol using Toluene as a raw material in brief. 10
- b) Describe manufacture of sugar from sugar cane. And explain inversion of sugar. 10
- Q.4 a) Describe the manufacturing process used for synthesis of ethylene by naphtha cracking. 10
- b) Explain the manufacture of Soda ash by Solvay process. 10
- Q.5 a) Describe manufacturing process of styrene starting from ethyl benzene. What are the major engineering problems associated with the process? How will you produced 99.9% pure styrene. 12
- b) Describe the manufacture of PTA with simple sketch. 8
- Q.6 a) Describe manufacture of Polyethylene in details. 10
- b) Write short note on (any two) 10
- Hydrogenation of oil.
  - Dyes and intermediates.
  - Energy picture of India.