

## Chemical Technology

25

Q.P. Code : 573602

(3 hours)

Marks : 80

- Note :** 1) Question No. 1 is **compulsory**.  
 2) Solve **any three** questions from remaining five questions.  
 3) Draw flow sheets and diagrams wherever necessary.

1. a) Which products we get after hydrogenation and hydrolysis of vegetable oils? Explain with help of chemical reaction. What are uses of the products obtained? 4
- b) List all unit operations and unit processes in manufacture of Nylon 66. 4
- c) Is Dual Solvay process use for manufacturing of soda ash superior to Solvay process? Explain. 4
- d) What is catalytic reforming? How it is different than catalytic cracking? 4
- e) What are constituents of commercial detergents? 4
2. a) Describe manufacturing of phosphoric acid by IMI-Hydrochloric acid leaching process with help of neat flow sheet. Is this process more economical to strong sulfuric acid leaching process? Discuss the major engineering problems. 10
- b) Discuss advantages and disadvantages of different processes used for manufacture of acetic acid. 10
3. a) What is fermentation? Discuss manufacture of ethanol from molasses by fermentation. Mention uses of byproducts obtained. How to get 100% pure ethanol? 10
- b) Discuss manufacturing of hydrogen by Steam-Hydrocarbon Reforming Process. 10
4. a) Which isomer of xylene have most industrial uses? Describe the process used for isomerization of xylenes. 10
- b) Explain in detail properties and applications of HDPE, LDPE and LLDPE. Why LLDPE is replacing LDPE in most applications? 10
5. a) Explain the advantages and disadvantages of manufacturing of phenol by different methods. 10
- b) Describe manufacture of soap by continuous hydrolysis and saponification. 10
6. a) Explain in details about mercury, diaphragm and membrane cells used in manufacture of caustic soda by electrolysis of brine. What are their advantages and disadvantages? Why were mercury cells discontinued? 10
- b) Write short note on (any two) 10
  - i) Dye stuff industry in India.
  - ii) Impact of imports from China and south east asia on Indian chemical industry
  - iii) What are basic, fine and specialty chemical industries? What is current status of these industries in India?