

[Time: 3 Hours]

Please check whether you have got the right question paper.

N.B:

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

- Q.1
- a) Describe separation of xylene isomers. 8
 - b) Differentiate between Catalytic reforming and catalytic cracking based on objective, process conditions and product span. 6
 - c) Engineering problems involved in manufacture of HCl. 4
 - d) What are the advantages of Stamicarbon process on other conventional processes for manufacture of Urea? 2
- Q.2
- a) Describe manufacture of ammonia by steam reforming of naphtha. Why and how CO and CO₂ are reduced to less than 10 ppm? Also discuss the effect of thermodynamic and kinetic parameters on ammonia synthesis. 14
 - b) Describe manufacture of single superphosphate along with chemical reactions involved in it. What are the byproducts generated? How are they made harmless? 6
- Q.3
- a) Describe the manufacturing process of nitric acid from ammonia by single pressure process. What is dual pressure process? Differentiate between single and dual pressure process? 10
 - b) Describe manufacture of soda ash along with detail constructional and operational features of carbonating tower. Also discuss engineering problems involved in it. 10
- Q.4
- a) Describe the manufacturing process of acetic acid by methanol carbonylation. 5
 - b) Why LLDPE is replacing LDPE in most applications? Explain with process flow diagram the manufacturing process of LLDPE. 10
- Q.5
- a) Give two examples of alkylation. Describe manufacturing process of any one of them. 10
 - b) Describe the manufacture of Phenol by cumene process with process flow diagram. 10
- Q.6 Write short note on 20
- a) Manufacture of biodiesel.
 - b) Agrochemical industry in India
 - c) Effect of Raw material and role of steam in manufacture of ethylene
 - d) Hydrogenation of oil
