

(3 Hours)

[Total Marks: 80]

N.B.

1. Question No. 1 is Compulsory.
- 2 Attempt any **Three** Questions from remaining **Five** Questions
3. Assume Suitable Data if needed and Justify the Same
4. Figures to the right indicate full marks.

Q.1:Write short notes on:

- a. Manufacture of Biodiesel [05]
- b. Differentiate between Catalytic reforming and catalytic cracking based on objective, process conditions and product span [05]
- c. Hydrogenation of oil [05]
- d. Manufacture of soap [05]

Q.2:

- a. Describe manufacture of single superphosphate along with chemical reactions involved in it. What are the byproducts generated? [10]
- b. Explain the manufacture process of Nitric acid by oxidation of ammonia and also explain the process design modification. [10]

Q.3

- a. Explain the fermentation process to manufacture alcohol and also explain the inversion of sugar [10]
- b. Explain the manufacture of Hydrochloric Acid by combustion of chlorine and hydrogen. [10]

Q.4

- a. Discuss the manufacture process of styrene by dehydrogenation of ethylbenzene [10]
- b. Discuss the manufacture process of Phenol from cumene by peroxidation-hydrolysis process [10]

Q.5

- a. Explain the LDPE manufacturing by Ziegler Process. [10]
- b. Describe the manufacturing process used for synthesis of BTX. [10]

Q.6

- a. Describe major engineering problems in manufacture of caustic soda. [05]
- b. Describe major engineering problems in manufacture of urea. [05]
- c. What are the different by-products obtained during manufacture of sugar and explain its utilization? [05]
- d. Define the detergents and give the constituent of the commercial detergents [05]