Q. P. Code : 24264

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	a)	Why and how xylene isomerization is carried out	**8**
	b)	Differentiate between Catalytic reforming and catalytic cracking based on objective process conditions and product span.	**6**
	c)	Describe briefly how the processing conditions of ammonia synthesis have changed and the role of catalyst development in this change.	**4**
	d)	What are the advantages of Stamicarbon process on other conventional processes for manufacture of Urea?	**2**
Q.2	a)	Describe DCDA process for sulfuric acid manufacture from elemental Sulphur along with flow sheet with reference to :- i) Why multistage reactor used? ii) Why interpass absorption done? iii) How energy conservation achieved? iv) What are typical process conditions? v) Why SO_3 is absorbed in 98% H_2SO_4 and not in water?	**14**
Q.2	b)	Describe operational and constructional features of membrane cell used for caustic soda manufacture. Why mercury cell is discontinued?	**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)	Explain base catalyzed trans-esterification reaction with manufacturing process of biodiesel.	**10**
Q.4	a)	Describe the manufacturing process of BTX from naphtha reformate. What are the solvents used in Udex process? Which solvent is preferred? Why?	**10**
	b)	Why LLDPE is replacing LDPE in most applications? Explain with process flow diagram the manufacturing process of LLDPE.	**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 produce 99.8% pure styrene.	**10**
	b)	Describe the manufacture of Phenol by cumene process with process flow diagram.	**10**
Q.6		Write short notes on : a) Manufacture of Ethanol from molasses. b) Agrochemical industry in India. c) Xylene separation along with flow sheet d) Effect of Raw material and role of steam in manufacture of ethylene.	**20**
