

# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



## VII<sup>th</sup> SEMESTER B.TECH (CHEMICAL ENGINEERING)

### END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: ELECTIVE – II PETROCHEMICALS [CHE 435]

#### REVISED CREDIT SYSTEM

Time: 3 Hours

Max. Marks: 100

#### Instructions to Candidates:

- ❖ Answer all the questions.
- ❖ Each questions carry equal marks( 5 X 20 = 100 ).
- ❖ Write specific and precise answers, Usual notations shall apply.

1A.	(i) Describe in detail about the major cost associated with making up of a petrochemical plant.	[06]
	(ii) Compare and contrast between wet natural gas and dry natural gas.	[02]
1B.	Draw a neat flow sheet, explain the process description for the production of ethylene by hydrocarbon steam cracking process. List out any four uses of ethylene.	[12]
2A.	(i) Describe in detail about the suitable process for production of formaldehyde with a neat flow sheet.	[10]
	(ii) Write any four major engineering problems involved in the production of synthesis gas.	[02]
2B.	(i) Give the various reaction pathway for the synthesis of isopropyl alcohol.	[04]
	(ii) Give the reaction route for synthesis of 'Aspirin' and 'GR-I rubber'.	[04]
3A.	Explain the Wacker-Chemie process for the production of suitable compound with the help of neat flow sheet and necessary equation.	[10]
3B.	(i) List out the possible ways for the production of styrene with necessary reaction and operating condition.	[05]
	(ii) Write the reaction pathway for synthesis of 'Perspex'	[05]
4A.	List out the various methods for the production of propylene oxide with necessary equation. Choose a suitable method and explain the process description for the production of propylene oxide with a neat flow sheet.	[12]
4B.	How do you produce the following petrochemical compounds ? (i) Phenolphthalein (ii) Salicylaldehyde (iii) Borone (iv) Anisole	[08]
5A.	Explain the process description for production of phenol-formaldehyde resins with a neat flow sheet. Mention the 4 uses of phenol-formaldehyde resin.	[12]
5B.	Give the various reactions route for synthesis of Nylon 6.	[08]

<b>6.</b>	<p>Briefly explain the following</p> <p>(i) Difference between thermo plastics and thermosetting plastics (any 5 points)</p> <p>(ii) Production of polyester resin with its uses</p> <p>(iii) Production of epoxy resin with its uses.</p> <p>(iv) Explain the various modes of polymerization reaction.</p>	<p><b>[05]</b></p> <p><b>[05]</b></p> <p><b>[05]</b></p> <p><b>[05]</b></p>
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