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# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



## VII SEMESTER B.TECH (CHEMICAL ENGINEERING)

### END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: CHEMICAL PROCESS INDUSTRIES [CHE 405]

#### REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 100

#### Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** the questions.
- ❖ Missing data may be suitable assumed.

1A.	Explain about the production of CO <sub>2</sub> from coke with a neat flow sheet.	06
1B.	Explain the production of soda ash by Solvay's process with a neat flow sheet.	10
1C.	Discuss about the liquefaction of air by Joule-Thomson effect.	04
2A.	Explain the production of H <sub>2</sub> SO <sub>4</sub> by Contact process with a neat flow sheet.	09
2B.	Discuss about any 5 engineering aspects involved in the production of phosphoric acid from phosphorous rocks by sulfuric acid leaching.	05
2C.	Explain the production of Ammonia by Haber-Bosch process with a neat flow sheet.	06
3A.	Explain the extraction of vegetable oil with a neat flow sheet.	08
3B.	Discuss about the different types of detergents.	04
3C.	Explain the production of pulp by Kraft process with a neat flow sheet.	08
4A.	Explain the production of industrial alcohol by fermentation process with a neat flow diagram.	12
4B.	What are the two different types of starch molecules? Explain the production of starch from maize with a neat flow sheet.	08

<b>5A.</b>	Discuss about any four polymerization methods.	<b>04</b>
<b>5B.</b>	Explain the production of viscose rayon with a neat flow sheet. Also mention its uses.	<b>12</b>
<b>5C.</b>	Name any four examples of synthetic rubbers. Also list out any four pertinent properties of rubber polymers.	<b>04</b>
<b>6A.</b>	What is cracking? Discuss about its operating conditions and catalysts used. Explain about the process technologies involved in Fluid Catalytic Cracking Reactor and Moving Bed Reactor with neat flow diagrams.	<b>12</b>
<b>6B.</b>	What is the difference between hydrotreating and hydrocracking?	<b>02</b>
<b>6C.</b>	Discuss about sulfuric acid based alkylation with a neat flow diagram.	<b>06</b>