| Reg. No. | | | | | | | | | | |
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# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

## VII SEMESTER B.TECH (CHEMICAL ENGINEERING)

## END SEMESTER MAKEUP EXAMINATIONS, DEC 2015/JAN 2016

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.

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| **1A.** | Explain the production of hydrogen by steam reforming with a neat flow sheet. | **08** |
| **1B.** | Explain the production of chlorine and sodium hydroxide by electrolysis of salt with a neat flow sheet. | **08** |
| **1C.** | Discuss about Girbotol Amine process for the recovery of $CO_2$. | **04** |
| **2A.** | Explain the production of yellow phosphorous with a neat flow sheet. | **08** |
| **2B.** | Explain the production of Urea from ammonia and $CO_2$ with a neat flow sheet. Also discuss any three major engineering problems associated with the production of urea. | **12** |
| **3A.** | Explain the hydrogenation of oil with a neat flow sheet. | **08** |
| **3B.** | Discuss about the different types of detergents. | **04** |
| **3C.** | Explain the production of soap with a neat flow sheet. | **08** |
| **4A.** | Explain the production of sugar from sugarcane with a neat flow diagram. Also discuss about the inversion of sugar. | **12** |
| **4B.** | What is fermentation process? What are the reactions involved in the production of ethanol from sucrose? List out the steps involved in the manufacturing of industrial alcohol by fermentation. | **08** |

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| **5A.** | Discuss about the classification of polymers based on their physical properties with suitable examples. | **04** |
| **5B.** | Explain the production of Nylon 6,6 with a neat flow sheet. Also mention its uses. | **12** |
| **5C.** | Discuss briefly about emulsion polymerization and suspension polymerization. | **04** |
| **6A.** | What are the two types of refinery coking processes? Explain them with neat flow sheets. | **08** |
| **6B.** | What is alkylation? Discuss the reaction mechanisms involved in alkylation. | **04** |
| **6C.** | Explain about fluidized catalytic cracking reactor and moving bed reactor with neat sketches. | **08** |