



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

Reg. No.

VII SEMESTER B.TECH. (CHEMICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: ELECTIVE – II PETROCHEMICALS [CHE 435]

REVISED CREDIT SYSTEM

(02/12/2016 AN)

Time: 3 Hours

MAX. MARKS: 100

Instructions to Candidates:

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

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| 1A. | Describe in detail about the major cost associated with making up of a petrochemical plant. | [06] |
| 1B. | Write any four major engineering problems involved in the production of synthesis gas. | [02] |
| 1C. | 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. | Describe in detail about the production of formaldehyde with a neat flow sheet. | [10] |
| 2B. | Compare and contrast between wet and dry natural gas. | [02] |
| 2C. | Give the various reaction route for synthesis of Acetic anhydride. | [08] |
| 3A. | List out the names of various route involved for production of acetone. Describe in detail about suitable pathway for production of acetone with the help of neat flow sheet. | [12] |
| 3B. | How do you produce the following petrochemical compounds? (i) Antifreezing agent (ii) Aspirin (iii) Bisphenol (iv) Carbon tetrachloride | [08] |
| 4A. | Explain the production of ethanol by catalytic hydration of ethylene with a neat flowsheet. Also discuss about the kinetics and thermodynamics of the process. | [12] |
| 4B. | Explain the production of polyvinyl chloride monomer from ethylene dichloride with a neat flowsheet. | [08] |
| 5A. | Explain the production of phenol-formaldehyde resins with a neat flowsheet. Also mention its uses. | [10] |
| 5B. | Explain the production of ethyl benzene from benzene with a neat flowsheet. | [10] |

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| 6A. | Discuss about the various methods of polymerization with pictorial representation. | [10] |
| 6B. | Discuss about the manufacture of sulfated fatty acids. | [05] |
| 6C. | Write a short note on any five pertinent properties of rubber. | [05] |

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