

**III B.Tech II Semester Supplementary Examinations,
November/December 2005
PETRO CHEMICAL ENGINEERING
(Chemical Engineering)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. What is the composition of petroleum? Explain briefly about physical properties of petroleum? [16]
2. Write short notes on
 - (a) ASTM distillation
 - (b) Flash and Fire point. [8+8]
3.
 - (a) List out the products produced from naphtha cracking process.
 - (b) Give the applications of some important petrochemicals. [8+8]
4. Explain briefly
 - (a) Hydro Alkylation
 - (b) Isomerisation. [8+8]
5. How do you produce nitro compounds of higher paraffins? [16]
6. How is isopropyl alcohol produced from propylene? Describe the process. [16]
7. Describe how isobutyl alcohol can be produced. [16]
8. What is the importance of high molecular fractions for petrochemical industry? [16]

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1. What is the composition of petroleum? Explain briefly about physical properties of petroleum? [16]
2. Write short notes on
 - (a) ASTM distillation
 - (b) Flash and Fire point. [8+8]
3.
 - (a) Besides naphtha and Natural gas, can you name other fractions suitable for manufacturing petrochemicals?
 - (b) What are the general purification methods before utilising the feed stocks in a petrochemical complex? [8+8]
4. Explain briefly
 - (a) Polymerization
 - (b) Alkylation. [8+8]
5. Write short notes on:
 - (a) Alkylation catalysts.
 - (b) Isomerisation catalysts. [8+8]
6.
 - (a) What are the uses of acrylic acid?
 - (b) How is acrylic acid produced in the industry? [8+8]
7. Describe how isobutyl alcohol can be produced. [16]
8. What is the importance of high molecular fractions for petrochemical industry? [16]

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1. (a) Describe the progress of oil industry in India.
(b) Describe the progress of petrochemical industry in India. [8+8]
2. Write short notes on any two:
(a) Specifications of gasoline
(b) Specifications of diesel oils
(c) Composition of kerosene. [5+5+6]
3. Write short notes on:
(a) Cracking
(b) Types of cracking
(c) Knocking [5+5+6]
4. (a) What is polymerization?
(b) Give an example of polymerization for a finished product.
(c) How does it improve the quality of gasoline. [5+5+6]
5. (a) Explain the action of anhydrous aluminum chloride on higher paraffin's.
(b) What will happen if hexane reacted with ethylene in presence of aluminum chloride? [8+8]
6. (a) What are the uses of acrylic acid?
(b) How is acrylic acid produced in the industry? [8+8]
7. (a) How do you produce isooctane?
(b) Give a process for conversion of i-octene to i-octane. [8+8]
8. Explain the manufacturing process for the Styrene from Benzene, with the help of neat flow chart. [16]

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1. Explain Refining of Crude petroleum in detail with a neat diagram? [16]
2. Write a short note on:
 - (a) Adsorption
 - (b) Extraction. [8+8]
3. (a) What is the significance of a naphtha cracker in a petro chemical complex?
(b) What is the boiling range of naphtha suitable for thermal cracking.
(c) What are the products of a naphtha cracker? [5+5+6]
4. Write a short notes on
 - (a) Hydrogenation
 - (b) Sulfur removal. [8+8]
5. (a) Give a typical cracking reaction of C_{16} paraffin.
(b) How can the carbon formation during cracking be eliminated? [8+8]
6. (a) What is wax.
(b) How is wax produced in petroleum industry? [8+8]
7. Describe how butadiene is separated from the cracked products of naphtha. [16]
8. Describe the isomerisation process of xylenes to p-xylene. [16]
