

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
PETRO CHEMICAL ENGINEERING
(Chemical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Write notes on present scenario of petrochemical industry in India and world? [16]
2. (a) What is a stabilizer?
(b) How do you separate butane from Refinery gases.
(c) What are the uses of butane. [5+5+6]
3. Describe with a neat flow sheet a naphtha cracker and its working. [16]
4. Explain briefly:
(a) Hydro Alkylation
(b) Isomerisation. [8+8]
5. (a) Butane is available in plenty in the refinery operations. How do you separate it?
(b) Describe the process of dehydrogenation of butane. [8+8]
6. How is glycerine produced from propylene. [16]
7. (a) How isoprene differs from butadiene?
(b) What are the uses of isoprene and butadiene? [8+8]
8. Explain with a neat chart the manufacturing process of Phenol by using Chloro-benzene as a reactant? [16]

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1. (a) List the important commercial products obtained from petroleum.
(b) Give the approximate boiling ranges of these commercial products. [8+8]
2. (a) What do you understand by cracking? How is gasoline obtained by catalytic cracking process?
(b) What do you understand by knocking and octane number? [8+8]
3. (a) Explain Alkylation with suitable reactions.
(b) Describe the process of Hydrofluoric acid alkylation with a neat flow diagram. [8+8]
4. (a) Compare the hot and cold sulfuric acid polymerization process.
(b) Explain the liquid phosphoric acid polymerization process with neat flow diagram. [8+8]
5. (a) What are the derivatives of C_5 and C_6 saturated hydro carbons?
(b) Describe the process of chlorination of paraffins? [8+8]
6. (a) How is propylene obtained in a large scale?
(b) Name important derivatives of propylene. [8+8]
7. Explain the gas phase oxidation of olefins with oxygen. [16]
8. What is the impact of petrochemical industry and down stream processes on Indian economy? [16]

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1. (a) Crude oil as a fuel is treated as non ecofriendly fuel. Why? Discuss?
(b) Enlist important fractions from crude oil. [8+8]
2. (a) Describe two stage distillation of petrochemical.
(b) Indicate the draw temperatures of different fractions. [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. Write a short notes on:
(a) Hydrogenation
(b) Sulfur removal. [8+8]
5. (a) Dehydrogenation of butane is better to get butylenes and butadiene rather than cracking. Explain
(b) Explain the process of dehydrogenation and cracking. [8+8]
6. Discuss how allyl alcohol can be produced? [16]
7. Discuss in detail the production of butadiene form butane. [16]
8. Draw the flow chart and explain the manufacturing process for the Maleic acid from benzene by Air Oxidation method. [16]

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1. Describe various theories of origin of petroleum? [16]
2. What are Refinery gases ?explain? And what are their applications in petrochemical industry? [8+8]
3. (a) Give a picture of naphtha cracking reactions.
(b) What are the products of a gas cracker? [8+8]
4. Discuss in detail the isomerization process and give its advantages and disadvantages. [16]
5. (a) What are the derivatives of C_5 and C_6 saturated hydro carbons?
(b) Describe the process of chlorination of paraffins? [8+8]
6. Discuss how propylene oxide can be converted into glycerin. [16]
7. Explain the method of separating isoprene from cyclopentadiene and piperylene in the pyrolysis of gasoline. [16]
8. (a) What do you mean by BTX?
(b) Explain the manufacturing process of BTX by Catalytic reforming method with a neat flow chart. [4+12]
