

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov.-Dec. 2015

B. Tech in Chemical Engineering, Semester VII

Roll No.....

CHE 730: Petroleum Refinery and Petrochemicals

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark)

10

- i. Soaker visbreaking is:
 - (a) High temp., High residence time cracking
 - (b) High temp., Low residence time cracking
 - (c) Low temp., High residence time cracking
 - (d) Low temp., Low residence time cracking
- ii. Acetone is a chemical compound from _____ group of Petrochemicals.
 - (a) C2
 - (b) C3
 - (c) C1
 - (d) C4
- iii. Write the name of absorbent used in the process of "Amine Scrubbing".
- iv. List out two chemicals derived from C1 & C2 Hydrocarbons
- v. Name of byproducts obtained during manufacture of Acrylonitrile.
- vi. Purpose of addition of oxygenates in the gasoline are.....
- vii. High aniline point indicates
- viii. Differentiate between:
 - (a) Flash point and fire point
 - (b) cloud point and pour point
- ix. What is Petcoke?
- x. Write uses and applications of Natural Gas.

Q.2 Short answer type questions (4 questions @ 2.5 marks)

10

- (a) Why thermal cracking is most preferable for vacuum residue than catalytic cracking?
- (b) List out the name of any six countries producing crude oil. Which country is major producer of crude oil?
- (c) Write difference between hydrotreater and hydrocracker?
- (d) Differentiate between visbreaking and coking?

Q.3A Why hydrotreaters are used in industry? Explain the process of naphtha hydrotreating with neat diagram.

05

Q.3B What is delayed coking? Describe the delayed coking operation with diagram.

05

- Q.4A Define petrochemicals and list out important raw materials commonly used in manufacture of petrochemicals. Name important petrochemical plants in India. 05
- Q.4B Explain the manufacturing of Styrene with neat flow sheet. 05
- Q.5A What are the various routes for making propylene oxide? Describe with flow diagram the manufacture of propylene oxide. 05
- Q.5B Explain the terms: 05
 (i) Aniline Point
 (ii) Octane number
 (iii) API
 (iv) Smoke Point
- Q.6A Make a flowsheet of butadiene manufacture process. 05
- Q.7A What are the various uses of Phenol? Describe the cumene process for the manufacture of phenol? 05
- Q.7B Write short note on growth of petrochemical sector and challenges ahead. 05
- OR
- Q.7B What are the various derivatives obtained from Benzene? Explain the process of ethylbenzene production. 05
- Q.8A Why should we dehydrate gas? Explain the process of solid bed dehydration. 10
- Q.9A Write the importance of propylene in chemical industries. Also write the uses and manufacturing process of Acrylonitrile. 04+06 = 10
- Q.9B Write the effect of impurities found in natural gas. Explain the process of natural gas sweetening. 03+12 = 15
- OR
- Q.9B Explain the concept of cracking with their mechanism. Discuss Fluid catalytic cracking in detail with neat sketch. Write the factors that deactivate the catalyst of fluidized bed catalytic cracking? 05 + 08 + 02 = 15

-----GOOD LUCK-----