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RM-7645

B. E. IV (Sem. VIII) (Chemical) Examination

April / May – 2010

Petroleum Refining & Petrochemicals

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 4 (Sem. 8) (Chemical)**

Name of the Subject :

☛ **Petroleum Refining & Petrochemicals**

☛ Subject Code No. : **7 6 4 5** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Answers to each section must be written in **separate** answer book.
(3) Figures to the **right** indicate full marks.
(4) Draw neat figures, sketches or flow sheets wherever required.

SECTION - I

1 Attempt the following : **20**

(a) Answer the following : **10**

(i) What is sweetening of Petroleum?

(ii) In India, marketable kerosene should possess a smoke point _____ mm.

(iii) Define Flash Point.

(iv) What do you mean by stabilization of gasoline?

(v) Catalytic cracking is distinguished from thermal cracking in the reaction mechanism which is called _____.

(vi) Aniline point of a diesel is measure of its _____ content.

(vii) Define catalytic reforming.

(viii) General formula for paraffins is _____.

(ix) Diesel oils are the fractions in the boiling range of _____^{o}C.

(x) What is main constituent of natural gas?

(b) Lead doctoring gasoline. **5**

(c) Discuss about different types of diesel additives. **5**

2 Attempt any **two** of the following : **14**

(a) Explain the phenol extraction of lubes with a neat flow diagram.

(b) Explain Naphtha cracking with a neat flow diagram.
(c) ASTM Distillation for gasoline.

3 Answer any **four** of the following : **16**
(a) Carbon residue test for lube oils.
(b) Briefly discuss about specific heat and spontaneous ignition temperature.
(c) Discuss Electric desalting method.
(d) Octane number and pour point (define and explain their significance).
(e) Pipe still heater.

SECTION - II

4 (a) Answer the following :
(i) List processes for phenol production. **2**
(ii) What is the major use of butadiene? **1**
(iii) Which process is used for commercial production of styrene from ethyl benzene? **1**
(iv) Maleic anhydride is produced by catalytic oxidation of : **1**
(a) Toluene (b) Ethyl Alcohol
(c) Naphthalene (d) Benzene.
(v) List processes for production of acetylene. **2**
(vi) Vinyl chloride is produced by thermal pyrolysis of ethylene dichloride at pressure _____ and temperature _____. **1**
(vii) What are the raw materials for manufacturing of propyl alcohol? **1**
(viii) Cumene is starting material for production of **1**
(a) Benzoic acid (b) Phenol and acetone
(c) Isoprene (d) Styrene.
(b) Describe production of ethylene oxide by air oxidation of ethylene with major engineering problems. **8**

5 Answer any **two** : **2×8=16**
(a) Discuss Wacker's process for vinyl acetate production.
(b) Explain production of cumene with its major engineering problems.
(c) List processes for production of methanol. Also discuss major engineering problems and uses of methanol.

6 Attempt any **four** : **4×4=16**
(a) Butanol production
(b) Manufacturing of acrylonitrile
(c) Separation of aromatics by crystallization
(d) MEPs of ethanolamines from ethylene
(e) Acetaldehyde production from acetylene
(f) Classification of petrochemicals.