

- (b) Draw the typical schematic diagram of modern lube oil complex. 4
8. Write short notes on any *four* (very briefly) : 2.5×4
- (a) Selection of crude for asphalt production
 - (b) Evaluation of crude oils for lube oil base stocks manufacture
 - (c) Solvents and their specific characteristic used for solvent extraction.
 - (d) Doctor treating process
 - (e) Catalytic alkylation process
 - (f) Virtual graph between conversion Vs yield % for FCC unit for various products.
 - (g) Decoking mechanism of catalyst in FCC unit.
 - (h) Techniques employed to recover the remaining oil.

Total number of printed pages – 4

B. Tech
PECH 7304

Sixth Semester Examination – 2010
PETROLEUM REFINERY ENGINEERING

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right-hand margin indicate marks.

1. Straight forward answer the following questions : 2×10
- (a) What is the elemental composition of crude oil ?
 - (b) Explain conditioning of crude oil.
 - (c) What are the types of hydrocarbon presents in rude oil ?

P.T.O.

- (d) Classification of crude oil based on API gravity.
- (e) What are the main products obtained from vacuum distillation column?
- (f) Write down the name of the processes involve in kerosene processing.
- (g) Characteristic of heavy crude.
- (h) Write the name of the few catalyst popularly used in FCC unit.
- (i) Write the causes of deactivation.
- (j) Draw the curve between viscosities versus viscosity index.
2. (a) What are the techniques employed to recover the remaining oil ? 4
- (b) Hydrogen production by steam reforming process. Discuss with suitable diagram. 6
3. (a) Draw the flow scheme of a modern refinery. Do not explain. 4

- (b) Discuss briefly different type of desalting process involve in crude oil processing. 6
4. (a) Name the different types of catalytic conversion process. Discuss the fluid catalytic cracking (FCC) process briefly with suitable diagram. 6
- (b) What are the problems associated with FCC ? 4
5. (a) Discuss the vacuum distillation of crude oil in petroleum refinery. 5
- (b) Discuss the different visbreaking process in petroleum refinery. 5
6. (a) What are the major contaminants of petroleum distillates and their effects on quality of the products ? 5
- (b) Write down the name of different finishing process employed in a petroleum refining industry. Discuss the mercox extraction process with suitable diagram. 5
7. (a) What are the methods of manufacture of bitumen's (asphalt) ? Discuss the continuous type air blowing process for bitumen's (asphalt). 6