2013-14
M.TECH. (AUTUMN SEMESTER) EXAMINATION
PETROLEUM PROCESSING & PETROCHEMICAL ENGINEERING
PETROLEUM REFINERY ENGINEERING
PK 731 (ELECTIVE III)

Maximum Marks: 60  Credits: 04  Duration: Three Hours

Answer any FOUR questions.
Assume suitable data if missing.
II questions, and parts thereof, be started on a fresh page of the answer book(s).

Q.No.  Question  M.M.
1(a) Discuss the Indian Refining Industry with reference to historical perspective and 08
      future trends.
1(b) Discuss the important distillation fractions and their quality control. 07

2. Discuss Visbreaking with emphasis on:
   (i) Modes of operation, with flowsheet, process description & salient features. 15
   (ii) Operating variables.
   (iii) Major engineering aspects.
   (iv) Economics.

3(a) Describe the important properties that are considered for the selection of feed for 04
      Delayed Coking Process.
3(b) Describe the operating variables of the Delayed Coking process. 04
3(c) Discuss the various types of petroleum cokes with emphasis on their use and feed 07
      required.

4(a) Discuss the significance of FCC process in a modern petroleum refinery. 03
4(b) Describe the catalytic cracking reactions for different homologous series of 04
      hydrocarbons encountered in FCC process.
4(c) Describe the FCC process with reference to feed pretreating, process variable and 08
      flowsheet.

5(a) Discuss the process of catalytic reforming with special reference to reactions 08
      involved and modes of operation.
5(b) Differentiate between different hydrogen processes employed in a petroleum 07
      refinery such as hydrotreating, hyrocracking, hydroprocessing, etc. Discuss
      hydrotreating, in brief with the help of process description.

6. Write a short note on the following residue upgradation processes: 15
   (a) Solvent deasphalting.
   (b) Gasification.