Maximum Marks: 75

Duration: Three Hours

1. (a) Discuss the Indian Refining Industry with reference to historical perspective and future trends. 08
(b) Discuss the important distillation fractions and their quality control. 07

2. Explain the visbreaking process with the help of a process flow sheet. Also describe the important equipment employed in the process. 15

3. (a) Describe the important properties that are considered for the selection of feed for Delayed Coking Process. 05
(b) Describe the operating variables of the Delayed Coking process. 05
(c) Discuss, in brief, the various steps involved in the decoking operation. 05

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

5. Discuss, in detail, the process of catalytic reforming with special emphasis on reactions involved, catalysts and reactor design. 15

6. (a) Differentiate between different hydrogen processes employed in a petroleum refinery such as hydrotreating, hyrocracking, hydroprocessing, etc. Discuss hydrotreating, in brief with the help of process description. 06
(b) With special reference to feed preparation and modes of operation, discuss the hydrocracking process.

Write a short note on the following residue upgradation processes:

(a) Solvent deasphalting.

(b) Gasification.