

B.Tech Degree VIII Semester Examination May 2003

SE 804(B) SAFETY IN PETROLEUM AND PETROCHEMICAL INDUSTRIES

(1999 Admissions)

Time: 3 Hours

Maximum Marks: 100

(All questions carry Equal marks)

- I. (a) What is the principal purpose of cracking? With the help of a neat sketch, explain the working principle of a fluidized bed catalytic cracking unit.
 (b) Name the fractions obtained by the fractional distillation of crude petroleum with the percentage yield of each product.

OR

- II. Write brief notes on :
- (i) Characterization factor of crude petroleum.
 - (ii) Octane number.
 - (iii) Aniline point of Diesel.
 - (iv) Performance number of a liquid fuel.

- III. Explain the design criteria for the selection of fire water network in a refinery.

OR

- IV. Write short notes on the properties and hazards of the following :
- (i) Hydrogen
 - (ii) Acetylene
 - (iii) Naphtha
 - (iv) Benzene.

- V. Explain briefly the types of petroleum storage tanks. Discuss with the help of neat sketches, the fire protection arrangements for conical roof tanks and floating roof tanks.

OR

- VI. Explain the design concepts of foam-water system for a large tank farm. Calculate the fire water requirement for a floating roof tank farm based on the following data :
- (i) Total storage capacity in one dyke area : 1,20,000 Cu.Mtr.
 - (ii) No. of Tanks : 02
 - (iii) Capacity of each Tank : 60,000 Cu. Mtr.
 - (iv) Diameter of each Tank : 79 Mtr.
 - (v) Height of each Tank : 14.4 Mtr.
 - (vi) The second tank is located within the tank dyke and at a distance more than 30 Mtr from the tank shell.

- VII. Write short notes on the following :
- (i) Properties and Hazards of LPG.
 - (ii) UVCE
 - (iii) BLEVE
 - (iv) Hazards of Static Electricity in oil refinery.

OR

- VIII. Write short notes on :
- (i) Blow-out of oil wells.
 - (ii) Fire protection systems at off-shore process platform.

Describe briefly the factors to be considered for improving safety in the transportation of petroleum products.

OR

Which are the major water pollutants from a petrochemical industry? Comment on its tolerance limit.

