

***B.Tech. Degree VIII Semester (Supplementary)
Examination, September 2008***

**SE 804 (B) SAFETY IN PETROLEUM AND PETROCHEMICAL INDUSTRIES
(1999 Scheme)**

Time: 3 Hours

Maximum Marks: 100

- I With the help of a neat diagram, discuss the important features of the fluidized bed catalytic cracking process. What are the advantages of catalytic cracking over thermal cracking? (20)
- OR**
- II a) What are the major objectives of hydro processing technologies? Discuss the industrial applications of hydro treatment. (10)
- b) Give an account of the different steps involved in the manufacture of Butadiene-Styrene copolymer. (10)
- III a) What are the major fire hazards associated with petroleum and petroleum products? (10)
- b) Discuss briefly the basic design criteria for the selection of fire water network in a refinery. (10)
- OR**
- IV Write brief notes on:
- i) Characterization factor of crude petroleum
- ii) Aniline point of diesel
- iii) Cetane number
- iv) Performance number of a liquid fuel (4 x 5 = 20)
- V Explain the purpose of providing the following items on a fixed roof atmospheric storage tank for petroleum products:
- i) Atmospheric vents
- ii) Breather valves
- iii) Flame arrestors
- iv) Fire relief (20)
- OR**
- VI What are the major effects of fire on an atmospheric storage tank for petroleum products? Discuss the methods of fire protection employed in atmospheric storage tanks. (20)
- VII a) What are the hazards associated with offshore drilling? How can we eliminate them? (10)
- b) What do you mean by shallow gas? How is it formed? Discuss the various hazards associated with shallow gas. (10)
- OR**
- VIII a) Estimate the total fire water requirement for the protection of a diesel rail wagon loading gantry as per the given data:
- | | | |
|-------------------------------|---|------|
| No. of loading points | : | 60 |
| Centre to centre rail spacing | : | 7m |
| Length of rail gantry | : | 300m |
| Width of coding | : | 12m |
- (10)
- b) Discuss the safety considerations in the transportation of petroleum and petroleum products. (10)
- IX a) Explain the concept of safe filling and loading of petroleum products. How will you ensure the safe maintenance of refinery equipments? (10)
- b) What are the major pollutants from a petrochemical industry? Suggest a suitable method for the treatment of petrochemical waste water. (10)
- OR**
- X a) Discuss the environmental aspects of petrochemical fire fighting. (8)
- b) How will you estimate the ground level concentration of a toxic gas release from a petrochemical industry? Explain. (12)

