

B. Tech Degree VIII Semester Examination, April 2009

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

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) Discuss the major steps involved in the manufacture of butadiene-styrene rubber. What are the uses of SBR copolymer?

OR

- II. (a) With the help of a neat flow sheet, explain the high pressure platinum catalyst reforming process.
(b) How will you recover sulphur from the sour gas by-product from catalytic desulphurisation?

- III. (a) What are the major fire hazards associated with petroleum and petroleum products?
(b) Discuss briefly the basic design criteria for the selection of fire water network in a refinery.

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.

- 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

OR

- VI. (a) Discuss the methods of fire protection provided for atmospheric storage tanks.
(b) What are the methods available for the lightning protection of petroleum storage tanks?

- VII. (a) What are the fire protection measures adopted in an off-shore drilling platform?
(b) Discuss the methods of rescue and fire fighting employed in off-shore drilling platforms.

OR

- VIII. Calculate the total water requirement for the protection of a tank wagon loading gantry based on the data given below:

| | | |
|----------------------------|---|-------|
| Number of loading points | - | 60 |
| Length of rail gantry | - | 700 m |
| Width of tank wagon gantry | - | 12 m |

Assume any missing data.

- IX. What are the major sources of waste water in a petroleum refinery? Discuss the different steps involved in the treatment of refinery waste water.

OR

- X. (a) What are the commonly employed methods for filling petroleum products in road and rail tanks? Discuss.
(b) Prepare a list of the factors to be considered for making the layout of a refinery safe.

