B. Tech Degree VIII Semester Examination in Safety and Fire Engineering, November 2002

SE 804 (B) - SAFETY IN PETROLEUM AND PETROCHEMICAL INDUSTRIES

(1998 Admissions)

Time : 3 Hours Max.Marks: 100

(All questions carry ***equal*** marks)

I. Discuss the following aspects of a catalytic cracking process:
- (i) Selection of catalyst.
- (ii) Process variables.
- (iii) Process characteristics.
- (iv) Equipment design.

OR

II. What are the objectives of hydro processing technologies ? Discuss the industrial applications of hydrotreatment.

III. Give an account of petroleum refinery product classification with the help of suitable examples.

OR

IV. Discuss the design criteria for the selection of fire water network in a refinery.

V. Discuss the layout criteria for petroleum storage tanks within the storage tank farm with respect to the following:
- (i) Segregation and separation of materials.
- (ii) Bunds.
- (iii) Separation distances.

OR

VI. How does static electricity lead to hazards in a petroleum refinery? Discuss the methods employed to minimise the effects of static electricity.

VII. Calculate the total foam compound requirement for the protection of a floating roof tank of 79m diameter and 14.4m height. Two such tanks are located in a dyke. The capacity of each tank is 60,000 cubic meter. Assume any missing data.

OR

VIII. Explain the significance of the following in the transportation of LPG by road.
- (i) TREM card.
- (ii) Emergency Information Panel.
- (iii) Class Labels.

IX. (a) What are the characteristics of waste water from a petrochemical complex ? How does it affect the ecological balance of a river or stream ?

(b) Discuss the salient features of waste water treatment in a petrochemical industry.

OR

X. Suppose ammonia leaks out from a storage facility and forms a vapour cloud. How will you estimate the ground level concentration of ammonia at a distance 'H' from the source of leak. State the various assumptions made.

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