

**B. Tech Degree VIII Semester Examination, April 2008****SE 804 (B) SAFETY IN PETROLEUM AND PETROCHEMICAL INDUSTRIES***(1999 – 2001 Scheme)*

Time : 3 Hours

Maximum Marks : 100

- I. (a) Draw the simplified flow diagram of a petroleum refinery? (6)  
 (b) What do you mean by fractional distillation. List the various products and its temperature range that you obtain during the fractional distillation. (8)  
 (c) What do you understand by sulphur recovery? (6)
- OR**
- II. (a) List the various petrochemicals. Explain with neat sketch, the manufacturing of any petrochemical product of your choice. (10)  
 (b) What is cracking? Differentiate catalytic cracking and thermal cracking. (10)
- III. Write notes on the following:  
 (i) Characterization factor of crude oil  
 (ii) Octane number  
 (iii) Aniline point of an oil  
 (iv) Cetane number  
 (v) Performance number of a liquid fuel. (20)
- OR**
- IV. Bring the fire hazards, health hazards and dangerous properties of the following  
 (i) Xylene (ii) Naptha (iii) Ammonia  
 (iv) Benzene (v) Acetyline (20)
- V. (a) What are the common causes of fire in a refinery? Explain. (10)  
 (b) Explain the lighting protection system for a refinery. (10)
- OR**
- VI. Explain briefly the types of petroleum storage tanks with sketches. Explain the fire protection arrangement for a floating roof tank. (20)
- VII. (a) Calculate the total water requirements for the protection of tank wagon loading gantry based on the data given below:  
 Number of loading points - 60  
 Length of rail gantry - 700m  
 Width of tank wagon gantry - 12M  
 Assume any missing data. (12)  
 (b) With neat sketch explain rotary drilling for oil. (8)
- OR**
- VIII. (a) Calculate foam compound requirement for a tank foam consists of cone roof tanks based on the following data.  
 Capacity in one dyke - 50,000m<sup>3</sup>  
 Number of tanks - 4  
 Diameter of each tank - 37.5m  
 Height of each tank - 12m  
 Assume any missing data. (10)  
 (b) Explain the functions of mud in drilling. (10)
- IX. (a) What are the commonly employed methods for filling petroleum products in road and rail tankers? Enumerate the advantages and disadvantages of the filling methods. (10)  
 (b) Prepare a list of the factors to be considered for making the layout of refinery safe. (10)
- OR**
- X. (a) Which are the major water pollutants from a petrochemical industry? (10)  
 (b) What are the environmental aspects of petrochemical fire fighting? (10)

