

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2018

Programme: M. Tech. (Rotating Equipment)**Course Name: Safety and environmental issues in industry****Course Code: HSFS 7012****No. of page/s: 02****Semester – II****Max. Marks : 100****Duration : 3 Hrs****Section A (all the questions are mandatory)****(7.5*4 = 30)**

1. Discuss all kinds of safety measures for compressor.
2. Write conceptual comments:
 - a. “Safety engineers are enough to prevent industrial accident”
 - b. “Installation of Inherent Safe strategy during industrial operation is expansive”
3. What is the importance of pipework layout? Discuss all safety strategies while making pipework layout
4. Describe the causes of injuries due to moving machinery. Write Do’s and Don’ts of machinery safety for workers. What are the things need to be check before starting of any rotating equipment?

Section B**(15*3 = 45)**

5. Distinguish between product and process layout with suitable examples and diagram. Which layout is safer and how? Discuss the advantages and disadvantages of that particular layout. Write the characteristics of Fixed-position layout. Describe advantages and limitations of fixed-position layout?
6. A gas cylinder was stored at ambient temperature (95°F). Chlorine vapor was releasing through a leakage. Find out the CEI and HD for this particular situation.
Data: molecular wt. = 35. Absolute pressure = 750 kPa; Diameter of hole = 15 mm; RPG 1 = 3 mg/m³; ERPG 2 = 9 mg/m³; ERPG 3 = 58 mg/m³.
7. How workplace environment is important for safe industrial works? What are the factors associated with industrial accidents? Discuss various types of industrial accidents.

Section C (Q. no. 8 is having internal choice)**(25*1 = 25)**

8. Describe any two hazard survey techniques with advantages and Disadvantages. How F&EI related to degree of hazard?

Estimate the degree of hazard for given data regarding hazard factor and material factor:

General process hazard factor = 15.9, Special process hazard factor = 0

MF₁= 15.2 (15%), MF₂= 7.9 (35%), MF₃= 10.25 (25%) and MF₄= 13.6 (remain)**OR**

Which Inherent safe strategy is most useful for newly designed process industry and how? Compare it with other strategies using suitable examples. How inherent safety index is related to Industrial safety? During calculation, why maximum score of individual factor need to consider? Discuss all issues during installation of inherent safe strategy with suitable diagram.

Roll No: -----



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