

Roll No: -----



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B Tech (Fire & Safety Engineering)

Semester: VII

Subject (Course): Safety in Process Industry

Max. Marks : 100

Course Code : FSEG 413

Duration : 3 Hrs

No. of page/s:2

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### Section A

2x10= 20 Marks

Attempt all questions

1. Define the following:
  - i. Tank Farm
  - ii. Presbycusis
  - iii. CAAA
  - iv. Threshold shift
  - v. Hydroforming
  - vi. PSI
  - vii. Frostbite
  - viii. Pre start up training
  - ix. Gasoline
  - x. Static Electricity

### Section B

10x4= 40 Marks

Attempt all questions

2. Petroleum is backbone of Indian economy. List out various types of petroleum products and their importance. [10 Marks]
3. Discuss various environmental aspect and impacts of petroleum refinery and their control measures. [10 Marks]

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4. Liquefied Petroleum gas is one the major petroleum product. Discuss health effects and first aid & emergency measures of liquefied petroleum gas. [10 Marks]
5. Fire hazards are very common at petroleum depot & terminals. Discuss fire protection facilities in petroleum depot and terminal. [10 Marks]

**Section C**

**20x2=40 Marks**

**Attempt any two questions**

6. Safety at in and around tank farm is very important and therefore, various considerations are recommended. Explain in detail of various safety measures for tank farms along with various fire protection facilities available. [20 Marks]
7. Foam water system is important aspects in connection to oil storage tank. Discuss in detail about foam water system requirements, its types and various design consideration for oil storage tanks. [20 Marks]
8. Explain in detail about chemical hazards, its different forms and health effects in petroleum and petrochemical industry. [20 Marks]

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**Section A**  
**2x10= 20 Marks**  
**Attempt all questions**

1. Define the following:
  - i. Physical hazard
  - ii. Induced hearing loss
  - iii. Explosion
  - iv. PSM
  - v. Blasts waves
  - vi. What if analysis
  - vii. PHA
  - viii. Confined space
  - ix. Gasoline
  - x. Hydrocracking

**Section B**  
**10x4= 40 Marks**  
**Attempt all questions**

2. Petroleum is foundation of industrial civilization. Briefly discuss about theories of characteristics of petroleum and contribution of petroleum products in Indian economy. [10 Marks]
3. Discus various types of hazardous chemical available in petroleum and petrochemical industry and their health effects. [10 Marks]

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4. Brief of fire & explosion hazard in crude oil & distillate storage tanks. [10 Marks]
5. Name different types of petroleum products. Discuss crude oil and diesel in details. [10 Marks]

**Section C**  
**20x2=40 Marks**

**Attempt any two questions**

6. Emergency preparedness planning is essential requirements for any process or refinery unit. Explain in detail of emergency preparedness plan, its types. Also, highlight the importance of ERP at workplace. [20 Marks]
7. Briefly discuss about characteristics of liquefied petroleum gas (LPG) and its control measures during its storage and handling. [20 Marks]
8. Effectiveness of process safety management depends on various elements. Explain in detail of –
  - (i) Operating procedure and its benefits. [6 Marks]
  - (ii) PHA [8 Marks]
  - (iii) Process Safety Information [6 Marks]