A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U9971

B.E./B.Tech. DEGREE EXAMINATION, APRIL/ MAY 2025

Open Elective

Chemical Engineering

21UCH971- FIRE SAFETY ENGINEERING

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Workplaces with a minimum of ____ employees need to have a written fire prevention program in place. CO1- U

   (a) 5 (b) 11 (c) 20 (d) 25

2. When should employees be informed of the fire hazards to which they are exposed at work? CO1- U

   (a) Upon the initial assignment

   (b) Within two days of the initial assignment

   (c) Within 30 days of the initial assignment

   (d) Within 90 days of the initial assignment

3. Dry Chemical such as BC or ABC extinguishers should not be used on fires involving CO1- U

   (a) Inflammable Gas (b) Inflammable Liquid

   (c) Combustible Solid (d) Combustible Metal

4. The _____ is the number of square feet of floor area required per occupant CO1- U

   (a) Exit capacity (b) Exit Discharge

   (c) Occupant Load (d) Travel distance

5. The _____ gases are flammable gases that spontaneously ignite in air. CO1- U

(a) Cryogenic (b) Oxidizing

(c) Pyrophoric (d) Unstable reactive

6. The _____ are sensitive explosives that nearly always detonate by simple means such as spark, flame, impact, friction, or other primary heat sources of appropriate magnitude. CO1- U

(a) Primary Explosives (b) Secondary Explosives

(c) Pyrotechnic (d) All of the above

7. What is the main toxic gas, the fire fighter has to bear in mind while rescuing a trapped person from sewer? CO1- U

(a) Hydrogen chloride (b) Carbon monoxide

(c) Hydrogen sulphide (d) Methane

8. A continuous membrane with a fire protection rating constructed to limit the spread of fire is known as _____ CO1- U

(a) Smoke Partition (b) Fire Compartment

(c) Fire Barrier (d) Proscenium Wall

9. Most arson fires are started with CO1- U

(a) Lead-based paints (b) Petroleum-based accelerants

(c) An oxidizing agent (d) Highly unsaturated oils

10. A _____ will detect hydrocarbons only in the vapour form and may not detect the presence of oils with flash points substantially above ambient temperatures. CO1- U

(a) Combustible Gas Detector (b) Oxygen Meter

(c) Toxic Gas Detector (d) All of the Above

PART – B (5 x 2= 10 Marks)

11. How does temperature affect material properties? CO1- U

12. What is a post-flashover fire? CO3- Ana

13. How do I protect my roof from damage? CO3- Ana

14. Is vermiculite explosive? CO4- App

15. What precautions must be taken when working on a fragile roof? CO5- Ana

PART – C (5 x 16= 80 Marks)

16.	(a)	Describe the compartment fire factors that controlling fire severity.	CO1-U	(16)
		Or		
	(b)	Explain how fire can spread around buildings and inside of rooms.	CO1-U	(16)
17.	(a)	Describe equivalence of fire severity of compartment fire and furnace fire?	CO2- App	(16)
		Or		
	(b)	Elaborate about Fire resistance test.	CO2- App	(16)
18.	(a)	Explain briefly about fire stopping methods and products	CO3- Ana	(16)
		Or		
	(b)	Discuss in detail about ANSI UL 263 test standards	CO3- Ana	(16)
19.	(a)	Elaborate reparability of fire damaged structures i) assessment of damage to concrete (8) ii) assessment of damage to timber structures (8)	CO4-App	(16)
		Or		
	(b)	Discuss in detail about fire protection of structural elements - Steel and Reinforced cement concrete.	CO4-App	(16)
20.	(a)	How do you write a case study fire accident report? Which incident happens in our country?	CO5- Ana	(16)
		Or		
	(b)	Analyze the principle and procedure for working safely on stairs stairwell platform.	CO5- Ana	(16)