Reg. No.												

Question Paper Code	13726

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

Industrial Safety Engineering

24PISPC201 – FIRE ENGINEERING AND EXPLOSION CONTROL

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Classify the different forms of fire.	2	K1	CO1
2.	Write down the difference between combustion and explosion.	2	K2	CO1
3.	What is the function of a foam generator in fire-fighting?	2	K1	CO2
4.	List the fire fighting agents.	2	K2	CO2
5.	What is a dry chemical powder (DCP) fire suppression system used for?	2	K1	CO3
6.	Explain the purpose of fire hydrants in firefighting operations.	2	K2	CO3
7.	Define "fire-resistant material" and give one example.	2	K2	CO4
8.	Explain Structural integrity.	2	K3	CO4
9.	List the purpose of explosion venting in a large enclosure.	2	K1	CO5
10.	Write down the principle and types of flame arrestors.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain the concept of auto-ignition. How does it differ from the usual ignition process, and what factors influence the temperature at which auto-ignition occurs?	13	K3	CO1
		OR			
	b)	Discuss the phenomenon of Boiling Liquid Expanding Vapor Explosion (BLEVE). What are the causes, effects and safety implications associated with BLEVE?	13	K3	CO1
12.	a)	Describe the different types of fire extinguishers and their applications. Include the types of fire they are effective against and explain the importance of having the right extinguisher in various settings.	13	K3	CO2
		OR			

	b)	Identify and explain the main components of fire alarms and siren systems. How do they function to alert people during an emergency, and what are the key features that ensure their effectiveness?	*13*	*K3*	*CO2*
13.	a)	Explain the working principles of a deluge fire suppression system and how it differs from a conventional sprinkler system. In what scenarios is a deluge system preferred?	*13*	*K3*	*CO3*
		OR			
	b)	Discuss in detail about indices of inflammability and how are they used in determining fire risks? Explain how fire-fighting systems are designed based on these indices.	*13*	*K3*	*CO3*
14.	a)	Explain the concept of "fire load" in building design. How does fire load influence the fire safety measures, and what factors are considered in calculating it?	*13*	*K3*	*CO4*
		OR			
	b)	Discuss the role of fire certificates in building design. What are the key criteria that need to be met to obtain a fire certificate, and how does this contribute to overall fire safety?	*13*	*K3*	*CO4*
15.	a)	Discuss the principles of explosion, including detonation, deflagration, and blast waves. How do these processes influence explosion protection strategies?	*13*	*K3*	*CO5*
		OR			
	b)	Demonstrate a case study on the suppression system for a building with gases.	*13*	*K3*	*CO5*

PART - C (1× 15 = 15 Marks)

16.	a)	Analyze the hazards posed by chemicals such as ammonia (NH_3), sulfur dioxide (SO_2), and chlorine (Cl_2) in industrial settings. How can explosion protection systems help mitigate these hazards?	*15*	*K4*	*CO6*
		OR			
	b)	Illustrate the challenges involved in designing explosion protection systems for large enclosures, and how do factors like ventilation, materials, and the type of explosion influence the system design?	*15*	*K4*	*CO6*