


<b>Name:</b>			
<b>Enrolment No:</b>			
<b>USES</b>			
<b>End Semester Examination, December 2024</b>			
<b>Course:</b> Fire Risk & Control		<b>Semester : I</b>	
<b>Program:</b> M Tech- HSE		<b>Time : 03 hrs.</b>	
<b>Course Code:</b> HSFS7024		<b>Max. Marks: 100</b>	
<b>Instructions:</b> Attempt all questions			
<b>SECTION A (5Qx4M=20Marks)</b>			
Sr. No.	Questions	Marks	CO
Q 1	Explain how vapour cloud explosions occur in industrial plants.	4	CO1
Q 2	Illustrate the use of explosion venting in industrial setups.	4	CO1
Q 3	Identify the key components of a fire plan for an industrial premises.	4	CO1
Q 4	Calculate the number of sprinklers required for a 500 m <sup>2</sup> office space, given that each sprinkler covers an area of 12 m <sup>2</sup>	4	CO2
Q 5	Evaluate the advantages of using water-based extinguishers for Class A fires.	4	CO4
<b>SECTION B (4Qx10M= 40 Marks)</b>			
Q 6	Compare the design and materials used in fire stoppers with other passive systems.	10	CO3
Q 7	Compare the hazards posed by unconfined vapour cloud explosions and boiling liquid expanding vapour explosions.	10	CO3
Q 8	Evaluate how building materials and design can impact the rate of fire spread in any premises.	10	CO4
	<b>OR</b> Evaluate the role of sprinkler systems in reducing the response time for fire control in industrial setups.		
Q 9	Explain the principle of detonation and its relevance to safety planning.	10	CO1
<b>SECTION-C(2Qx20M=40 Marks)</b>			
Q 10	A manufacturing company ABC is a medium-sized facility specializing in the production of industrial components. The plant's operations involve various machinery, flammable materials, and a complex layout. Concerns about fire safety prompted the implementation of a fire prevention plan. Over the past year, the facility experienced a minor fire incident due to sparks from welding activities. While the incident was swiftly controlled, it raised awareness about the need for a comprehensive fire prevention plan. Evaluate the effectiveness of a fire prevention plan in this given scenario and suggest suitable controls for avoiding reoccurrences.	20	CO5
	<b>OR</b> Design a holistic explosion protection plan for a chemical processing plant, incorporating a multi-faceted approach (explosion vents, suppression systems, and isolation measures) to mitigate potential risks effectively.		
Q 11	Assess the impact of water pressure fluctuations on the effectiveness of a sprinkler system. Also, suggest a few aspects by which the effectiveness of sprinkler systems may be achieved.	20	CO3