Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

USES

End Semester Examination, December 2024

Course: Fire Engineering III (Structural Fire Protection Design) **Semester : V**

Program: B Tech- Fire & Safety Engineering **Time : 03 hrs.**

Course Code: HSFS3027 **Max. Marks: 100**

Instructions: Attempt all questions

SECTION A (5Qx4M=20Marks)

Sr. No.	Questions	Marks	CO
Q 1	Discuss the "fire resistance" to be used for a structural members	**4**	**CO1**
Q 2	Define the concept of “compartments” in building design.	**4**	**CO1**
Q 3	Differentiate between combustibility and fire resistance in building materials.	**4**	**CO3**
Q 4	Evaluate the role of fire resistance limits in structural elements.	**4**	**CO4**
Q 5	Explain the term “Insulation capacity” for structural elements.	**4**	**CO1**
SECTION B (4Qx10M= 40 Marks)			
Q 6	Propose modifications to enhance the fire resistance of wooden structures. **OR** Propose a design for a fire-resistant partition in an industrial facility considering various fire safety challenges. .	**10**	**CO5**
Q 7	Explain the fire tube test in a laboratory setting and the challenges while performing the test.	**10**	**CO2**
Q 8	Enlist the characteristics of the Gypsum and Vermiculite board to be used in the structural elements.	**10**	**CO1**
Q 9	A building has a square plan with a floor area of 400 m^2 and has windows on opposite walls. If the fire load of the building is 75 kg/m^2 with a window opening of 25% and the floor to ceiling height as 3.0m, calculate the fire resistance period required for the building if the window opening is (i) 25% (ii) 50% and (iii) 100%	**10**	**CO4**
SECTION-C(2Qx20M=40 Marks)			
Q 10	Propose a methodology for combining fire resistance and reparability studies in a single framework. **OR** Design a fire mitigation plan for a workplace using the concept of fire resistance.	**20**	**CO5**
Q 11	Critique the effectiveness of current repair methods for fire-damaged masonry with factors considered when repairing structures.	**20**	**CO4**