Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Occupational Health & Safety Engineering — **Semester: IV**

Program: B.Tech Fire and Safety — **Time : 03 hrs.**

Course Code: HSFS2027 — **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define *Pneumoconiosis*. Mention any two of its types.	**4**	**CO1**
Q 2	Explain the effects of excessive vibration exposure on human health.	**4**	**CO1**
Q 3	Describe how thermal stress can be monitored and mitigated in industrial settings.	**4**	**CO2**
Q 4	Explain *Carpal Tunnel Syndrome (CTS)* and mention one preventive measure.	**4**	**CO1**
Q 5	You notice your workshop floor doesn't have a first aid box and you have an internal audit scheduled in an hour. You have to quickly put together a first aid box, what all would you include in it?	**4**	**CO3**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Analyze the health effects of exposure to lead, chromium, and Nickel.	**10**	**CO3**
Q 7	A worker is exposed to varying noise levels during an 8-hour shift as detailed below: **Duration (hrs) Noise Level (dB(A))** 2 90 3 95 3 85 Calculate the 8-hour Time-Weighted Average (TWA) noise exposure in dB(A) and check whether the levels are within the safe limits. Refer to the permissible exposure time table: **Noise Level (dB(A)) Permissible Time (Tn in hours)** 90 8 95 4	**10**	**CO3**

	85 16		
Q 8	Apply ergonomic principles to design a computer workstation for an IT company office. Also give recommendations for an office worker who attends office for 9 hours a day and spends most of his/her time at the workstation.	**10**	**CO4**
Q 9	Discuss various physical hazards and methods to minimize the consequences of exposure to such hazards. OR Discuss various biological hazards and methods to minimize the consequences of exposure to such hazards.	**10**	**CO2**
SECTION-C (2Qx20M=40 Marks)			
Q 10	Develop a detailed radiation exposure preparedness and response plan for a nuclear power plant disaster using the concept of ALARA.	**20**	**CO4**
Q 11	A man of 60 years of age entered a hospital complaining of severe difficulty in breathing. The man was a laborer who had spent most of his life working in the construction industry. Assuming you are a medical practitioner, analyze what could be wrong with him and discuss the pathogenesis of his possible disease. OR Workers in a factory complain of eye irritation and headaches after extended exposure. As a safety engineer, how would you apply the hierarchy of controls to minimize or eliminate worker exposure to this solvent? Explain each level of control you would consider.	**20**	**CO3**