Name: **Enrolment No:**	

UPES

End Semester Examination, December 2023

Course: Electrical Safety **Semester: I**

Program: M.Tech. – HSE **Time : 03 hrs.**

Course Code: HSFS7014 **Max. Marks: 100**

Instructions: All questions are to be answered

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Justify the need of using high voltage transmission, while it is more hazardous.	**4**	**CO1**
Q 2	List three examples of personal protective equipment (PPE) used by workers to enhance electrical safety.	**4**	**CO1**
Q 3	Differentiate the Neutral and Earthing connection in a medium voltage substation.	**4**	**CO1**
Q 4	Identify three common electrical hazards in the workplace and describe how they can be mitigated.	**4**	**CO2**
Q 5	Justify the need of a proper earthing of an electrical system.	**4**	**CO2**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Evaluate the various key characteristic desired from a good protection relay.	**10**	**CO2**
Q 7	Analyze and suggest an appropriate protection system for protecting the Electrical network (Grid) from various faults created because of rising Distributed Energy Resources.	**10**	**CO3**
Q 8	Evaluate the role of training and simulation exercises in preparing personnel to respond to electrical incidents. Discuss how proactive planning can mitigate the impact of electrical emergencies.	**5+5**	**CO3**
Q 9	Outline the components of an effective emergency response plan for electrical incidents. Provide a case study to illustrate the implementation of an emergency response plan. **OR** As an Electrical Safety officer of a petrochemical plant, what should be your approach on the **Electrical Safety Design enhancement of manufacturing plant.**	**10**	**CO4**

SECTION-C (2Qx20M=40 Marks)			
Q 10	Develop an appropriate lightening protection and earthing system for a power distribution substation. Also justify the type of system chosen for this as compared to other types.	**20**	**CO3**
Q 11	Design an Electrical Safety system for a typical University campus considering appropriate protection devices, relay coordination, Grounding & Earthing and Code Compliance. **OR** Evaluate the top 10 changes in NFPA 70 E 2015 version with respect to NFPA 70.	**20**	**CO4**