Name: **Enrolment No:**	

UPES

End Semester Examination, December 2023

Course: B. Tech FSE **Semester: 7th**

Program: Electrical System Safety and Design **Time : 03 hrs.**

Course Code: HSFS 4018 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	List the types of circuit breaker and brief why SF6 circuit breaker is used for high voltage protection.	**4**	**CO1**
Q 2	Explain working principle of MCB along with its components and substantiate the use of arc chute in MCB.	**4**	**CO1**
Q 3	Enumerate the different substation equipment in sequential order along with their purpose.	**4**	**CO1**
Q 4	What are the limitations of DC motors and substantiate why induction motor is widely accepted by industries.	**4**	**CO2**
Q 5	Explain why Induction Motor is widely used by industries.	**4**	**CO2**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Explore the design and implementation of an electrical safety system for a rural agriculture land, illustrating its objectives, challenges, and outcomes.	**10**	**CO2**
Q 7	Examine the key provisions of the Electricity Act 2003, its implementation, and its impact on the Indian electricity industry.	**10**	**CO3**
Q 8	Differentiate the working principle and their use of distance relay and differential relay.	**10**	**CO3**
Q 9	Why is grounding required for electrical safety? Brief the difference between grounding and earthing. Or, Explain the role of relay and circuit breaker in high voltage system.	**10**	**CO3**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Examine the design and implementation of an electrical safety system in a newly constructed residential building, outlining the objectives, challenges, and outcomes.	**20**	**CO4**

Q 11	Describe the use of a transformer in industry along with its working principle. Also substantiates that why transformer coils are submerged in mineral oil with high dielectric strength and the purpose of silica gel for transformer? Or, Classify the different types of DC motors based on their internal windings. Also presents the application of each type of motor in industry with respect to load requirement.	**20**	**CO4**