Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3170920 Date:27-05-2025

Subject Name:Industrial Electrical Systems

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	What is a role of single line diagram (SLD) in electrical circuits?	**03**
	(b)	Discuss the role of MCB & ELCB in residential wiring systems and explain their importance.	**04**
	(c)	What are the general rules of residential wiring.	**07**
Q.2	**(a)**	What are the different types of tariff structures used for residential connections?	**03**
	(b)	What are the key considerations in the selection process of an ELCB's rating for industrial applications?	**04**
	(c)	Discuss the factor that effects the sizing of the wire.	**07**
		OR	
	(c)	Explain the electrical earthing system for residential building	**07**
Q.3	**(a)**	Define the following term: (i) Illumination (ii) Luminous intensity (iii) specific consumption	**03**
	(b)	Discuss the operation of fluorescent lamp	**04**
	(c)	The illumination at a point on a working plane directly below the lamp is to be 60 lumens/m2. The lamp gives 130 CP uniformly below the horizontal plane. Determine: (i)The height at which lamp is suspended (h) (ii) The illumination at a point on the working plane 2.8 m away from the vertical axis of the lamp.	**07**
		OR	
Q.3	**(a)**	Define the following terms (i) Glare (ii) Candle Power and (iii) Space Hight Ratio.	**03**
	(b)	A 200 V lamp takes a current 1.2 A. it produces a total flux of 2860 lumens. Calculate the (i) MSCP of lamp (ii) efficiency of lamp.	**04**
	(c)	Explain the various lighting schemes.	**07**
Q.4	**(a)**	What are the effects of poor power factor on distribution system?	**03**
	(b)	What are the characteristics that set low-tension (LT) motors apart from high-tension (HT) motors?	**04**
	(c)	Discuss the essential protective components of industrial substations.	**07**
		OR	
Q.4	**(a)**	Summarize the different types of UPS and their specific applications.	**03**
	(b)	What are the essential factors in transformer selections?	**04**
	(c)	Explain significant of the continuous power, prime power and standby power related with standby generator in power system distributions	**07**
Q.5	**(a)**	Draw the block diagram of PLC.	**03**
	(b)	Make list of the factors included in substation designing.	**04**
	(c)	Essentialness of Diesel Generator (DG) system.	**07**

OR

Q.5	**(a)**	What are the advantages of process automations?	**03**
	(b)	Explain the PLC based speed control system of electrical motor.	**04**
	(c)	Explain the SCADA system for distribution automations.	**07**

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