Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2170910 **Date:19/01/2021**

Subject Name:Power Quality and Management

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Justify – "Power quality is the cause, and the ability of the electrical equipment to function in the power quality environment is the effect".	**03**
	(b)	Define: (1) Bonding (2) Coupling (3) Distortion Factor (4) Flicker	**04**
	(c)	What are the causes for the transients? Explain any one in detail.	**07**
Q.2	**(a)**	What is shock? Explain in detail.	**03**
	(b)	Explain the terms individual harmonic distortion and total harmonic distortion with example	**04**
	(c)	How isolation transformer cures the low frequency disturbances?	**07**
Q.3	**(a)**	Differentiate single point grounding system and multi point grounding system.	**03**
	(b)	What are the causes of current and voltage harmonics?	**04**
	(c)	Discuss in detail about the harmonics phase rotation and phase angle relationship.	**07**
Q.4	**(a)**	Define displacement power factor and true power factor in	**03**
	(b)	What are the essential elements of grounding system?	**04**
	(c)	Explain earth resistance test in detail.	**07**
Q.5	**(a)**	Define: (1) Radiated emission (2) Attenuation (3) Transverse mode noise	**03**
	(b)	Justify the statement "Shielding is required to mitigate the radiated emission".	**04**
	(c)	What are the effects of harmonics on AC motors?	**07**
Q.6	**(a)**	What are the advantages of power factor correction?	**03**
	(b)	Explain the use of true RMS meter.	**04**
	(c)	Draw and explain the application of synchronous condenser for power factor correction.	**07**
Q.7	**(a)**	What are the instruments are available to measure the power quality?	**03**
	(b)	Explain in detail about the triboelectricity.	**04**
	(c)	Explain cable shielding grounding method to minimize the electromagnetic interference.	**07**
Q.8	**(a)**	Explain the main steps to monitor the power quality problems at site.	**03**
	(b)	How multiple test locations determine the nature of power quality?	**04**
	(c)	Discuss the use of harmonic analyzers for measuring and recording harmonic distortion data.	**07**

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