Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1724505 Date: 05-12-2014

Subject Name: Power Quality

Time: 02:30 pm - 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.**

Q.1	**(a)**	Explain influence of Fault location and Fault level on Characterizing Voltage Sag.	**07**
	(b)	List and explain most common Power Quality problems. Support the answer with necessary diagrams and examples.	**07**
Q.2	**(a)**	Explain the term Voltage Regulation with respect to Power System. Support the answer with necessary diagram.	**07**
	(b)	List various causes for Voltage Flicker. Explain effect of the same on Performance of System in terms of Power Quality.	**07**
		OR	
	(b)	Define Surge Impedance. Explain effect of the same on operation of the Power System.	**07**
Q.3	**(a)**	List only causes of Voltage Sag. Compare contribution/ role of End user and Utility for the Phenomenon of the Voltage Sag.	**07**
	(b)	Explain Voltage Sag mitigation based on Dynamic Voltage Restorer Technology.	**07**
		OR	
Q.3	**(a)**	List importance of Voltage Swell with respect to Power Quality of the system. List mitigation techniques for the same.	**07**
	(b)	Explain Voltage Sag Immunity Standard SEMI F 42.	**07**
Q.4	**(a)**	(i) Explain K-rated Transformer.	**04**
		(ii) Draw only neat Waveforms to define Harmonics, Inter- Harmonics and Sub-Harmonics	**03**
	(b)	List importance of Harmonic Filtering. Explain any one Filter in detail.	**07**
		OR	
Q.4	**(a)**	(i) Define Characteristics and Non-Characteristics Harmonics.	**04**
		(ii) Discuss significance of IEEE Harmonic Standard 512-1992.	**03**
	(b)	Compare Harmonic Series and Parallel Resonance in all possible manners.	**07**
Q.5	**(a)**	With respect to Power Quality monitoring, explain selection of Transducers.	**07**
	(b)	Explain Structure of Modern Monitoring System for Harmonic Assessment. Draw necessary diagram to support the answer.	**07**
		OR	
Q.5	**(a)**	Explain Objectives and Requirements of Power Quality monitoring with suitable example.	**07**
	(b)	Classify Harmonics based on requirement for measuring Instruments with respect to IEC 61000 4-7.	**07**

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