Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER III (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2730707 **Date:03/05/2016**

Subject Name: Power Quality Issues and Their Mitigation Techniques in Power System

Time:10:30 am to 01:00 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)**	What do you understand about power quality issues? Discuss all the power quality issues in brief.	**07**
	(b)	Explain with neat diagrams how multi-pulse converters can mitigate the harmonics in the power system.	**07**
Q.2	**(a)**	Define and describe following terms: (1)Linear loads (2) Inrush current (3) Total Harmonics Distortion. (4) Total Demand Distortion	**07**
	(b)	Explain causes of voltage and current harmonics.	**07**
		OR	
	(b)	Explain working and design aspects of Band pass passive filters. Also discuss its quality factor.	**07**
Q.3	**(a)**	What is distributed generation? Elaborate its effect on the power quality issues.	**07**
	(b)	Explain the effects of Harmonics on AC Motors performance.	**07**
		OR	
Q.3	**(a)**	What is harmonics in power system? Explain how Fourier series analysis is used to analyze power system harmonics?	**07**
	(b)	Explain the effects of Harmonics on Transformers and Capacitors.	**07**
Q.4	**(a)**	Explain with neat diagrams the operation and control of Dynamic Voltage Restorer (DVR).	**07**
	(b)	Discuss various aspects to be considered in the design of passive filters.	**07**
		OR	
Q.4	**(a)**	Explain with neat diagrams the working of Distribution Static Synchronous Compensator (DSTACOM).	**07**
	(b)	Give comparison between Hybrid and pure active power filters.	**07**
Q.5	**(a)**	Compare Active power filter with Passive power filters.	**07**
	(b)	Explain instantaneous power theory applicable to active power filters.	**07**
		OR	
Q.5	**(a)**	Explain use of synchronous condenser.	**07**
	(b)	Explain impulsive and oscillatory transient.	**07**

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