Seat No.:	Enrolment No
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

M. E. - SEMESTER – IV • EXAMINATION – SUMMER • 2013

Sul Tir	oject ne: 1	code: 742901 Date: 14-05-2013 Name: Harmonics and Filtration Methods 0.30 am – 01.00 pm Total Marks: 70	
Ins	1. 2.	tions: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) (b)	Explain Linear and nonlinear type load with illustration.  Define and explain following terms,  (1) Power Factor  (2) Displacement Power Factor  (3) Total Harmonics Distortion  (4) Telephone Influence Factor	07 07
Q.2	(a) (b)	Explain Power Quality Factor and discuss its significance.  Discuss the characteristics of measuring equipment for measurement of harmonics.  OR	07 07
	(b)	Write a brief note on harmonics sources.	07
Q.3	(a) (b)	Write a brief note on Transient quality aspects. Discuss its significance. Explain Voltage events in brief and discuss about the monitoring the voltage events.	07 07
Q.3	(a) (b)	OR Discuss the effects of voltage event on electrical equipment. Explain Band pass filter as a passive filter for harmonics filtration.	07 07
Q.4	(a) (b)	Explain the working of Series active filter with neat diagram.  Write a brief note on Standardization of harmonics levels.  OR	07 07
Q.4	(a) (b)	Discuss Hybrid active Power filter with neat diagram.  Explain the effect of harmonics on power capacitors.	07 07
Q.5	(a) (b)	Discuss the effects of harmonics on rotating machines and transformers.  Write a detail note on harmonics propagation facts.  OR	07 07
Q.5	(a) (b)	Explain working of Unified Power Flow Controller with functional block diagram.  Discuss interrelation between AC system and load parameters.	07 07

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