

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – IV • EXAMINATION – SUMMER • 2013****Subject code: 742901****Date: 14-05-2013****Subject Name: Harmonics and Filtration Methods****Time: 10.30 am – 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) Explain Linear and nonlinear type load with illustration. **07**
(b) Define and explain following terms, **07**
(1) Power Factor
(2) Displacement Power Factor
(3) Total Harmonics Distortion
(4) Telephone Influence Factor
- Q.2** (a) Explain Power Quality Factor and discuss its significance. **07**
(b) Discuss the characteristics of measuring equipment for measurement of harmonics. **07**
- OR**
- (b) Write a brief note on harmonics sources. **07**
- Q.3** (a) Write a brief note on Transient quality aspects. Discuss its significance. **07**
(b) Explain Voltage events in brief and discuss about the monitoring the voltage events. **07**
- OR**
- Q.3** (a) Discuss the effects of voltage event on electrical equipment. **07**
(b) Explain Band pass filter as a passive filter for harmonics filtration. **07**
- Q.4** (a) Explain the working of Series active filter with neat diagram. **07**
(b) Write a brief note on Standardization of harmonics levels. **07**
- OR**
- Q.4** (a) Discuss Hybrid active Power filter with neat diagram. **07**
(b) Explain the effect of harmonics on power capacitors. **07**
- Q.5** (a) Discuss the effects of harmonics on rotating machines and transformers. **07**
(b) Write a detail note on harmonics propagation facts. **07**
- OR**
- Q.5** (a) Explain working of Unified Power Flow Controller with functional block diagram. **07**
(b) Discuss interrelation between AC system and load parameters. **07**
