Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 730701 **Date: 26-11-2013**

Subject Name: Power Quality Management

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)** Define and technically describe following terms: **7**
(1)Linear loads
(2)Voltage sag
(3)Power factor(displacement)
(4)Voltage swell
(5)Flicker

(b) Discuss the examples of poor power quality issues in brief. **7**

Q.2 **(a)** Discuss "switching of loads" and "interruption of fault currents" as causes of transients. **7**

(b) Prove that third harmonic is in phase and have zero displacement angles between them. **7**

OR

(b) Define, displacement power factor and true power factor .List the methods of power factor
improvement techniques and explain the static VAR Compensator also state the advantages
of power factor corrections. **7**

Q.3 **(a)** Explain various loads which are responsible for introduction of harmonics inthe system. **7**

(b) What is an arc furnace? Explain with suitable diagrams arc furnace canproduce large voltage sags in electrical network. Also explainstarting/stopping of capacitors banks in conjunction with an arc furnaceoperation. **7**

OR

Q.3 **(a)** What is distributed generation? Elaborate its effect on the power qualityissues. Briefly explain methods of distributed generation. **7**

(b) With a case study explain the fatal effect which may result due to loss of Grounding. **7**

Q.4 **(a)** Write a short note on static VAR compensators. **7**

(b) How neutral conductor is selected for the site where many computers are used? Discuss the
possible solution of neutral conductor overloading. **7**

OR

Q.4 **(a)** List various power quality measuring devices and discuss the main features of power
quality analyzer?Explain instrument setupprocedure to measure power quality events **7**

(b) What do you mean by harmonics? How harmonics are generated in power system network? Support your answer with suitable example. **7**

Q.5	**(a)**	Discuss significance of power factor correction with power quality point ofview.	**7**
	(b)	Write short note on true RMS meter.	**7**

OR

Q.5	**(a)**	What is the importance of the value of earth's resistance? Describe the fall of potential methods for measurement of earth's resistance.	**7**
	(b)	Explain the following with suitable diagrams (i) Off line UPS (ii) On line UPS (iii) Rotary UPS units.	**7**

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