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MEPS-203

M. E./M. Tech. (Power Systems) (Second Semester)
EXAMINATION, June, 2011

(Grading/Non-Grading)

POWER QUALITY AND CONDITIONING

(MEPS-203)

Time : Three Hours

Maximum Marks : $\begin{cases} GS : 70 \\ NGS : 100 \end{cases}$

Note : Attempt any five questions. All questions carry equal marks.

1. (a) What do you understand by Power Quality ? Explain in detail.
(b) Define the following with respect to power quality :
 - (i) Transients
 - (ii) Long duration voltage variation
2. (a) Explain in detail the causes and effects of power quality disturbances.
(b) Explain harmonic distortion in detail.
3. Discuss the effects of Harmonic distortion on the following :
 - (i) Capacitor Bank
 - (ii) Transformers
 - (iii) Motors **RGPVONLINE.COM**
 - (iv) Telecommunications

4. (a) Discuss the role of the following as source of harmonics :
 - (i) Single phase power supplies
 - (ii) Adjustable speed drives
(b) Explain in detail the role of passive input filters for harmonic elimination.
5. (a) Discuss in detail the different types of passive filter configuration.
(b) What are active filters ? Explain in detail their role in harmonic elimination.
6. (a) Explain in detail improved power quality converter topologies with their relatives merits and demerits.
(b) Discuss the method of harmonic elimination using transformer.
7. (a) What do you understand by active wave shaping of input line current ?
(b) Explain constant frequency control technique for active wave shaping of input line current.
8. Write short notes on any two of the following :
 - (i) Current Source Active Filter
 - (ii) Total Harmonic Distortion (THD)
 - (iii) Electromagnetic Interference (EMI)
 - (iv) Types of Power Quality