B. Tech.

(SEM. VIII) EXAMINATION, 2006-07
POWER QUALITY

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions

1 Attempt any two of the following : 10×2=20
(a) Categorise the major power quality problems and list the typical causes of the problems in each category.
(b) Discuss and compare the conventional and graphic based analysers for power quality monitoring.
(c) Distinguish between voltage sag and undervoltages. Briefly discuss the techniques used for sag or dip reduction.

2 Attempt any four of the following : 5×4=20
(a) Distinguish between voltage flicker and voltage fluctuations. What are the main reasons of these problems ?
(b) Distinguish between voltage swell and overvoltages. Explain the main reasons of these problems.

VB-2040] 1 [Contd...
(c) What is long duration voltage variation? Explain the main reasons of long duration
temperature variations.
(d) What are the reasons and effects of waveform distortion on power quality.
(e) Discuss the measures adopted to minimise the
frequency and duration of outages in
distribution systems.
(f) Briefly discuss voltage regulation methods in
distribution systems.

3 Attempt any two of the following: 10 × 2 = 20
(a) What are series and shunt compensators? Compare their role for power quality
improvement.
(b) What are static uninterruptible power supplies? Discuss the classification and types of UPS.
(c) What are active power filters? Compare active and passive power filters.

4 Attempt any two of the following: 10 × 2 = 20
(a) Describe power conditioner, its specifications
and applications in electric utilities.
(b) Discuss the principle of phase angle
compensation. What is a phase shifter?
(c) Discuss power quality standards, standard test
waveforms and their role.
Write short notes on any four of the following: $5 \times 4 = 20$

(a) Harmonic reduction and standards.
(b) Cost of power quality
(c) Voltage and phase angle imbalance.
(d) Mitigation of power quality impacts from voltage sags.
(e) Power quality monitoring
(f) Unified power quality conditioner UPQC.

________________________