

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 120852

Roll No.

--	--	--	--	--	--	--	--	--	--

B.TECH.

Theory Examination (Semester-VIII) 2015-16

POWER QUALITY

Time : 3 Hours

Max. Marks : 100

Section-A

Q1. Attempt all parts of the following: (2×10=20)

- (a) Explain the term 'good power quality.'
- (b) Define the term 'voltage sag' and 'voltage swell'.
- (c) How are electrical transients generated?
- (d) Discuss the causes of poor load power factor.
- (e) What do you mean by Power Quality Monitoring?
- (f) Define the terms 'harmonics' and 'sub-harmonics'.

- (g) Explain the different causes and effects of the power frequency variations.
- (h) Define Interruption. What are its causes?
- (i) Explain the causes and effects of voltage fluctuations in power system.
- (j) Explain the term 'phase angle imbalance'.

Section-B

Q2. Attempt any five questions from this section. (10×5=50)

- (a) Explain the various types of power system disturbances and their impacts on power quality.
- (b) How ferroresonant transformer can be used to handle voltage sag conditions? Explain in detail.
- (c) Discuss the effect of harmonics on transformers and AC motors in detail. How can this be mitigated?
- (d) Explain the following types of waveform distortions :
 - a) DC offset
 - b) Inter harmonic

- c) Noise
- d) Notching
- (e) What do you mean by spectrum analyser? Discuss its working in detail.
- (f) What types of instruments are used for monitoring power quality? Enlist their specific applications.
- (g) What are the causes of voltage and current harmonics? Discuss the harmonics measurement techniques.
- (h) Explain the working of different types of emergency and standby power used to enhance power quality. What are their limitations?

Section-C

Note: Attempt any two questions from this section.

(15×2=30)

- Q3. What are passive filters? Explain the factors to be considered for designing a passive filters. Also discuss their limitations.
- Q4. Define Custom Power Devices. Discuss the load compensation using DSTATCOM.

Q5. Write technical notes on any three of the following:

- a) Area of Vulnerability
- b) CBEMA Curves
- c) IEEE 519 standard
- d) Disturbances at customer side
- e) Objectives of power quality monitoring

