

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

PAPER ID : 2902 Roll No.

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B.Tech.

(SEM. VIII) THEORY EXAMINATION 2011-12

POWER QUALITY

Time : 3 Hours

Total Marks : 100

Note :—Attempt all questions.

1. Attempt any **two** of the following :— (10×2=20)
 - (a) Define the following terminologies :
 - (i) Voltage sag,
 - (ii) Waveform distortion
 - (b) What causes voltage imbalance in a system ? What are its consequences ? How is it different from voltage fluctuation ?
 - (c) What are the causes of interruptions ? How do short duration interruptions differ from sustained interruptions ? What is the importance of interruptions ?
2. Attempt any **two** of the following :— (10×2=20)
 - (a) What are the various reasons of voltage sag in a system ? Describe one of them in detail.

(b) What are the adverse effects of voltage sag ? How can this be prevented ?

(c) Differentiate between the Static UPS and the Rotary UPS.

3. Attempt any **two** of the following : **(10×2=20)**

(a) Discuss briefly about the switching transients caused by motor starting. What can be done to prevent the same ?

(b) What is the significance of neutral voltage ? Under which conditions it suffers swings ? What can be done to prevent the same ?

(c) Discuss about the overvoltage protection of power system against lightning.

4. Attempt any **two** of the following :— **(10×2=20)**

(a) How do the harmonics get injected into the power system ? What are the current and voltage harmonics ?

(b) What adverse effect of harmonics is seen in Transformers and in AC motors ?

(c) How does the performance of communication line get affected due to harmonics in power system ? How are the harmonics mitigated ?

5. Attempt any **two** of the following :— (10×2=20)

- (a) Enumerate the devices used to check the voltage related power quality in power system. Discuss any one of them in detail.
- (b) Why is grounding necessary in Power system ? What is the technique used to test adequacy of wiring and grounding ?
- (c) Write a detailed note on Unified Power Quality Conditions.