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B.TECH
(SEM VI) THEORY EXAMINATION 2017-18
POWER QUALITY

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

- 1. Attempt all questions in brief.** **2 x 10 = 20**
- a) With reference to power quality explain dropout and flicker.
 - b) What do you mean by transient?
 - c) What do you mean by line arresters and its applications?
 - d) Explain fault indicators.
 - e) What do you mean by overheating?
 - f) What do you mean by ferroresonance?
 - g) Explain active power, reactive power and apparent power.
 - h) What do you mean by harmonic distortion?
 - i) Explain oscilloscope for power quality measurement.
 - j) What do you mean by DVR?

SECTION B

- 2. Attempt any three of the following:** **10 x 3 = 30**
- a) Classify the long duration voltage variations and explain them.
 - b) What are the sources of voltage sag ? Explain in detail.
 - c) Explain capacitor switching and lightning as the source of transient overvoltage on systems.
 - d) Explain harmonics phase sequence and triple harmonics.
 - e) Explain the working of Harmonic analyzer and Flicker meter.

SECTION C

- 3. Attempt any one part of the following:** **10 x 1 = 10**
- (a) Explain short duration voltage variations and with reference to them explain interruption, sags and swells in detail.
 - (b) Explain interharmonics, Notching and fluctuations
- 4. Attempt any one part of the following:** **10 x 1 = 10**
- (a) Explain (i) Ferroresonant transformer (ii) Active series compensators used for the improvement of the performance of a process.
 - (b) Explain the fundamental principle of protection to reduce the voltage sag in detail.
- 5. Attempt any one part of the following:** **10 x 1 = 10**
- (a) Explain and demonstrate the principle of overvoltage protection.
 - (b) What are the devices used for the overvoltage protection? Explain in detail
- 6. Attempt any one part of the following:** **10 x 1 = 10**
- (a) What are the cause of harmonics distortion and the methods of harmonic measurements?
 - (b) Explain the effect of harmonic distortion on transformers and motors.
- 7. Attempt any one part of the following:** **10 x 1 = 10**
- (a) Explain load compensation and voltage regulation using DSTATCOM.
 - (b) Explain the working of wiring and grounding tester and UPQC