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Affiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur

DTE Institute Code: EN6293 / MB6293

Accredited by National Assessment and Accreditation Council, Bangalore (NAAC)

Electrical Engineering Department



UNITWISE QUESTION BANK

CLASS: B.TECH

SHARAD APPA

A.Y: 2022-2023

SUB: POWER QUALITY AND FACTS

SEM-II

SECTION-I

UNIT 1: Introduction to Power Quality

- 1) Explain the following:
 - a) under voltage
 - b) Over voltage.
 - c) Concepts of transients
 - d) short duration variations
 - e) Long duration variation.
- 2) Explain the concept of Sags and swells
- 3) Write notes on:
 - a) voltage imbalance
 - b) voltage fluctuation
 - c) power frequency variations
- 4) What are the International standards of power quality?
- 5) What is Computer Business Equipment, Manufacturers Associations (CBEMA) curve?

Unit- 2 Harmonics

- 1) Which are the Harmonic sources from commercial loads?
- 2) Which are the Harmonic sources from industrial loads?
- 3) What is the location of harmonic sources?
- 4) Explain Power system response characteristics?
- 5) Write notes on:
 - a) Harmonics Vs transients
 - b) harmonic distortion
 - c) voltage and current distortion
- 6) Explain the concept of harmonic indices?
- 7) Explain inter harmonics?
- 8) Explain the principle of resonance?
- 9) What are the various Harmonic distortion evaluation methods?
- 10) What are the various devices for controlling harmonic distortion?
- 11) Explain in detail what are filters? Explain passive and active filters.
- 12) What are the various IEEE and IEC standards for harmonics.



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Unit- 3 Power Quality Monitoring

- 1) What are the different Monitoring considerations?
- 2) Explain monitoring and diagnostic techniques for various power quality problems.
- 3) What are the different Power quality Measurement Equipments?
- 4) Explain harmonic analyzer.
- 5) Explain disturbance analyzer.
- 6) Explain flicker meter.

SECTION-II

Unit-4 FACTS Concepts and Static Shunt Compensator

- 1) What is facts? What its importance in transmission Network?
- 2) Explain Basic types of FACTS controller.
- 3) What are the different Objectives of the shunt compensation?
- 4) Explain mid-point voltage regulation of line segmentation for shunt compensators.
- 5) Explain the method of controller VAR generation.
- 6) Explain the different shunt compensator devices
 - a) TCR, TSC
 - b) FC-TCR
 - c) TSC-TCR
- 7) Explain static VAR compensators: SVC and STATCOM.
- 8) Give Comparison between V-I and V- Q Characteristics of STATCOM and SVC.



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SEM-II

Unit-5 Static Series Compensator

- 1) What are the Objectives of the series compensation?
- 2) Explain variable Impedance type series compensation
 - a) GCSC
 - b) TSSC
 - c) TCSC
 - d) SSSC
- 3) What are switching converter type series compensators?
- 4) Explain characteristics of series compensator.

Unit-6: TCVR, TCPAR and Combined Compensators (UPFC and IPFC)

- 1) What are the Objective of voltage and phase angle regulators?
- 2) Explain switching converter based Voltage and Phase angle Regulators.
- 3) Explain Basic operating principles of UPFC.
- 4) Explain control structure of UPFC.
- 5) Explain Basic operating principles and characteristics of IPFC.
- 6) Explain Control structure and applications of IPFC.