

B.Tech IV Year I Semester (R13) Supplementary Examinations June 2017

POWER QUALITY

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the most common power quality problem?
 - Why is power conditioning is needed.
 - Define impulsive transient. Give examples for impulsive transient over voltages.
 - What are the causes of voltage magnification on a network?
 - What are the important concepts to understand power system harmonics?
 - What is voltage and current distribution?
 - What are the monitoring objectives?
 - What is a protective monitoring?
 - Explain brief about the Solid State Transfer Switch (SSTS).
 - Write short notes on Dynamic Voltage Restorer (DVR).

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Define power quality. With neat sketches, explain the different types of power quality problems.
(b) Explain briefly about the international standards of power quality.

OR

- 3 Discuss in detail about the Computer Business Equipment Manufacturer's Association (CBEMA).

UNIT – II

- 4 (a) Explain the procedure for estimating the sag severity indices.
(b) Mention the standards associated with the voltage sag.

OR

- 5 Explain the following related to power quality:
(i) Voltage imbalance. (ii) Over voltage. (iii) Under voltage. (iv) Frequency variation. (v) Outage.

UNIT – III

- 6 Explain for the following:
(i) Harmonic Sources from the commercial loads.
(ii) Harmonic Sources from the industrial loads.
(iii) Harmonic Sources from the residential loads.

OR

- 7 (a) What are the various classifications of harmonic sources and explain briefly about it.
(b) Explain harmonic source identification procedure for two source systems.

UNIT – IV

- 8 Write short notes on power quality measurement systems. What are the characteristics of power quality measurement equipments?

OR

- 9 (a) Explain in detail about the Flicker meter.
(b) Explain the applications of expert system for power quality monitoring.

UNIT – V

- 10 Write short notes on the following: (i) Solid state current limiter. (ii) Solid state breaker.

OR

- 11 With neat sketch, explain the principle of DVR operation used for sag mitigation.