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<b>Question Paper Code : 86590</b>
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B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Eighth Semester

Electrical and Electronics Engineering

EE 1005 – POWER QUALITY

(Regulations 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define power Quality and THD.
2. What are the causes of sags?
3. Distinguish between static transfer switches and fast transfer switches.
4. What are the sources of voltage sag?
5. What are the causes for voltage transients?
6. Write the working principle of surge arrester.
7. How harmonics can be eliminated?
8. Distinguish between passive filter and active filter.
9. What is tracking generator?
10. Mention the three elements of power quality measurement.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the following electrical power quality issues in detail with examples.
- (i) Voltage swell (8)
  - (ii) Voltage imbalance (8)

Or

- (b) Discuss the following electrical power quality issues exist in a power system.
- (i) Flicker (8)
  - (ii) Voltage sag (8)
12. (a) What is the need of estimating sag performance? Explain the different methods of estimating voltage sag performance. (16)

Or

- (b) Explain the following sag mitigation techniques.
- (i) Static UPS with minimal energy storage
  - (ii) Backup storage energy supply
  - (iii) Flywheel with UPS system.
13. (a) Discuss in detail the behaviour of capacitor switching transients and lighting transients. (16)

Or

- (b) Explain how shield wires and line arresters are used to protect the lines against lightning. (16)
14. (a) Discuss any three types of nonlinear loads which create harmonic distortion. (16)

Or

- (b) Explain the construction and working principle of active filter for harmonic mitigation. (16)

15. (a) Bring out the significance of Power quality monitoring. Write the important power quality monitoring objectives. (16)

Or

- (b) Discuss in detail about the instruments used for analyzing non sinusoidal voltage and currents. (16)
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