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**Question Paper Code: 31387**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Electrical and Electronics Engineering

01UEE914 - POWER QUALITY

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the reasons for voltage imbalances?
2. What is the need for power quality standards?
3. What is the importance of voltage sag estimation?
4. What is the voltage interruption threshold?
5. Define Ferro resonance.
6. List the sources of over voltages.
7. List the harmonic indices.
8. Name the devices for controlling harmonic distortion.
9. What is the use of Flicker meter?
10. List the disturbances that can be analyzed by power line disturbance analyzer.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) What are the impacts of transient on power quality? Classify the transients that occur in a power system. (8)

- (ii) Discuss about the Computer Business Equipment Manufacturer Associations (CBEMA). Curve stating the events described in the curve. (8)

Or

- (b) Explain the following power quality issues in detail with examples:

(i) Power Frequency Variation. (8)

(ii) Voltage Swell. (8)

12. (a) (i) Explain active series compensators for suppression of voltage sag. (8)

(ii) Explain the solid state transfer switch with the transfer operation. (8)

Or

- (b) (i) Describe the procedure for estimating voltage sag caused by induction motor starting. (8)

(ii) Explain briefly any one voltage sag mitigation technique with necessary circuit diagram and waveform. (8)

13. (a) Discuss different methods of protection of transformers and cables against voltage transients. (16)

Or

- (b) Describe the computer analyzing tool EMTP for transient analysis. (16)

14. (a) Discuss the characteristics of harmonics generated by different types of industrial loads. (16)

Or

- (b) Discuss in detail about IEC Standards on Harmonics. (16)

15. (a) Explain the features and operation of spectrum analyzer and flicker meter in detail. (16)

Or

- (b) Explain different monitoring and diagnostic techniques for various power quality problems. (16)