

End Semester Examinations - 2015-16 Even Semester - May 2016

14EE3038 Power Quality

Set A

Time : 3 hrs
Total Marks: 100

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1. (a) Classify and illustrate the typical power quality phenomena defined in IEEE 1159. (10)
(b) Draw the CBEMA & ITI curve and explain about events described in the curves. (10)
- OR**
2. (a) Discriminate between linear and non linear load. (4)
(b) Give outlines on IEEE and IEC power quality standards. (10)
(c) The wave form contains 50Hz fundamental, plus 3rd, 5th, 7th, 9th, 11th, 13th harmonics With their magnitudes being reciprocal of their harmonic numbers.
Calculate (i) THD (ii) DF (6)
3. (a) Investigate the source and effects of different categories of short duration voltage Variations. (10)
(b) Name the mitigation techniques of voltage sag and explain any two techniques with necessary circuit diagram and waveforms. (10)
- OR**
4. (a) Discuss the fundamental principle of over voltage protection of load equipments. (10)
(b) Investigate the source and effects of different categories of long duration voltage Variations. (10)
5. (a) Give outlines on sources of over voltage due to the following phenomenon (14)
i. Capacitor switching
ii. Lightning
(b) In a 3-phase AC main, there is a voltage sag at PCC of 10, 20 and 30% of 3-phase for 5, 10 and 20 cycles.
Calculate
i. Detroit Edison Sag Score (SS)
ii. Voltage sag Energy
iii. Voltage sag lost energy index (VSLEI) (6)
- OR**
6. Explain the following:
(i) Low pass filters.
(ii) Power conditioners.
(iii) Surge filters.
7. (a) Give outlines on harmonic effects on power system equipments briefly. (10)
(b) What are the various devices for controlling harmonic distortion? Explain briefly about it. (10)
- OR**
8. (a) Explain in detail about general procedure for harmonic distortion evaluation at the point of coupling, utility systems, customer facility and industrial facility. (10)
(b) Illustrate the steps involved in power quality monitoring. What are the information from monitoring site

surveys?

(10)

9. (a) Briefly explain Planning, Conducting and Analyzing power quality survey with suitable example. (10)
- (b) What are the various instruments used for power quality measurements? What are the factors to be considered when selecting the instruments? (10)

Wishing you All the Best
