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Question Paper Code : 51224

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Seventh Semester

Electrical and Electronics Engineering

080280064 — POWER QUALITY ENGINEERING

(Common to B.E. (Part-Time) Sixth Semester, Electrical and Electronics Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the most common power quality Problem?
2. Name any two IEEE standards that define power quality.
3. Define voltage sags due to motor starting?
4. When sag leads interruption? What are the causes of sag?
5. Define transient over voltages
6. Define lighting phenomena.
7. What is voltage and current distortion?
8. List the advantages of Active Harmonic Filter?
9. What are the monitoring objectives?
10. What is the use of spectrum analyzer?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the various types of power quality disturbances and impacts of power quality. (16)

Or

- (b) Explain the following steady state disturbances.
(i) Magnitude.
(ii) Unbalance.
(iii) Harmonics.
(iv) Flicker. (16)

12. (a) Explain the following causes of sags.
(i) Voltage sag due to motor sag
(ii) Voltage sag due to single line to ground fault.
(iii) Voltage sag due to transformer energizing.
(iv) What is the need of estimating sag performance? (16)

Or

- (b) What are the different voltage sag mitigation techniques? Explain in details. (16)

13. (a) (i) What are the different sources of transient over voltages? Discuss the capacitor switching transient. (8)
(ii) What are the important concerns for capacitor bank switching? Discuss. (8)

Or

- (b) Draw the standardized waveform of the lightning induced voltage. Discuss about the wave shape of the lightning current. (16)

14. (a) What are the various devices for controlling harmonic distortion? Explain briefly about it. (16)

Or

- (b) (i) Explain in detail about classification of linear loads and non linear loads used in harmonic studies. (8)
(ii) Explain the concept of harmonic phenomena under the presence of harmonic producing loads. (8)

15. (a) (i) Bring out the important characteristics of power quality variations. (8)
(ii) Explain the steps involved in power quality monitoring. What are the information from monitoring site surveys. (8)

Or

- (b) Write short notes on power quality measurement system. What are the characteristics of power quality measurement equipments? (16)