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Question Paper Code : 52599

B.E/B.Tech. DEGREE EXAMINATION, APRIL 2016

Eighth Semester

Electrical and Electronics Engineering

EE 2028/EE801/10133EEE31 – POWER QUALITY

(Regulations 2008/2010)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define Power Quality as per IEEE.

2. What are the main objectives of power quality standards ?

3. What are the causes of short interruptions ?

4. How voltage swell differs from transient ?

5. What is transient overvoltage ?

6. Define Ferro resonance.

7. What is the difference between harmonics and transients ?

8. Define point of common coupling.

9. What is the need for power quality monitoring ?

10. What are merits of modelling and simulation ?

PART – B (5 × 16 = 80 Marks)

11. (a) Discuss the sources and effects of different categories of long duration voltage variations. **(16)**

OR

(b) Explain the following electrical power quality issues with examples :

(i) Voltage swell **(8)**

(ii) Voltage interruption **(8)**

12. (a) (i) What is the need for estimating sag performance ? Explain the different methods of estimating voltage sag performance. **(8)**

(ii) Explain the voltage sag caused by the motor due to starting. **(8)**

OR

(b) (i) What are the different voltage sag mitigation techniques ? Explain the principle of operation of DVR used for sag mitigation. **(10)**

(ii) Discuss about estimating the cost of voltage sag events. **(6)**

13. (a) Analyze the sources of transient over voltages in power systems. **(16)**

OR

(b) Write short notes on the following :

(i) Lightning arrestor **(8)**

(ii) Power conditioner **(8)**

14. (a) (i) Explain briefly how the phenomena of current distortion affects the voltage distortion under the presence of harmonics. **(8)**

(ii) Explain briefly about various harmonic characterizations in power systems. **(8)**

OR

(b) (i) Explain the power system response characteristics under the presence of harmonics. **(8)**

(ii) What is the need of IEEE standards used in harmonics studies ? Give their philosophy and objectives of these standards. **(8)**

15. (a) Explain in detail with necessary diagram the working principle and functioning of power quality analyzers. **(16)**

OR

(b) Briefly discuss the common objectives of power quality monitoring.