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Question Paper Code:49316

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2018

Elective

Electrical and Electronics Engineering

14UEE916- POWER QUALITY

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

(Answer all Questions)

1. Which one of the following cannot be possible with voltage surges CO1-R
 - (a) Damaging to insulation
 - (b) Damage to electronic components
 - (c) Tripping of Sensitive Equipment
 - (d) Flicker in Incandescent Lamps

2. In voltage sag, breaker will remain open for typically a minimum of CO1-R
 - (a) 10 cycles
 - (b) 15 cycles
 - (c) 12 cycles
 - (d) 5 cycles

3. Voltage dips cannot be caused by which of the following CO2-R
 - (a) Inductive Loading
 - (b) Switching on of Large Loads
 - (c) Capacitive Switching
 - (d) Local and Remote faults

4. Vacuum Breaker Technology uses CO2-R
 - (a) Static switches
 - (b) Compensator
 - (c) Automatic transfer switches
 - (d) Fast transfer switches

5. The surge impedance of under-ground cables is of the order of CO3-R
- (a) 20 to 60 ohms (b) 200 to 600 ohms (c) 2 k ohm to 5 k ohm (d) 20 k ohm to 60 k ohm
6. The current carrying capacity of cables in D.C. is more than that in A.C. CO3-R
mainly due to
- (a) Absence of harmonics (b) Non-existence of any stability limit
- (c) Smaller dielectric loss (d) Absence of ripples
7. The third harmonic currents are known as _____ CO4-R
- (a) Negative sequence harmonics (b) Positive sequence harmonics
- (c) Zero sequence harmonics (d) Both –ve sequence and + ve sequence harmonics
8. The crest factor of non-linear loads is between CO4-R
- (a) 1 and 1.414 (b) 1 and 2.5 (c) 2.5 and 1.414 (d) Below 1
9. Continuous and rapid variations in the load current magnitude which CO5-R
causes voltage variations
- (a) Harmonics (b) Flicker (c) Voltage sag (d) Voltage distortion
10. The frequency range of fluctuations identified by human eye varies from CO5-R
- (a) 1 to 30 Hz (b) 1 to 50 Hz (c) 1 to 100 Hz (d) 1 to 200 Hz

PART – B (5 x 2= 10Marks)

11. List any four standards that define power quality. CO1- R
12. What is the need of DSTATCOM? Give its main function. CO2- R
13. What are the problems associated with ferro resonance? CO3- R

14. Mention the commonly used indices used for measuring harmonic component of waveform. CO4- R
15. List the factors that should be considered for selecting the instrument. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain the various types of power quality disturbances and impacts of power quality. CO1- App (16)
- Or
- (b) Discuss about the computer BusinessEquipment Manufactures Associations(CBEMA). Explain about the events described in the curve. CO1- App (16)
17. (a) What are the different voltage sag mitigation techniques? Explain in detail. CO2- App (16)
- Or
- (b) Explain the system adapted to estimate the severity of the sag occurred due to various sources. CO2- Ana (16)
18. (a) (i) Explain in detail about the protection of lightning. CO3- Ana (8)
- (ii) Explain the phenomena of ferro resonance. CO3- Ana (8)
- Or
- (b) What are the advantages of computer analysis tools? Discuss about EMTP For transient studies. CO3- Ana (16)
19. (a) Explain in detail about the classification of linear loads and non linear loads used in harmonic studies. CO4- U (16)
- Or
- (b) What are the various devices for controlling harmonic distortion? Explain briefly about it. CO4- Ana (16)
20. (a) What are the various instruments used for power quality measurements? What are the factors to be considered when selecting the instruments? CO5- U (16)
- Or
- (b) (i) Explain the modern power quality monitors. CO5- U (8)
- (ii) Explain the applications of expert systems for power quality monitoring. CO5- U (8)

