Reg. No. : | | | | | | | | | | |

Question Paper Code: 49316

B.E./B.Tech. DEGREE EXAMINATION, NOV 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 is not a power quality related term CO1-R

   (a) Transient (b) voltage sag (c) noise (d) string efficiency

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 Sag is also called as CO2-R

   (a) Voltage Dip (b) Voltage Drop (c) Voltage rise (d) Nominal voltage

4. _____ cause voltage sag CO2-R

   (a) Sudden load changes (b) excessive loads
   (c) both a and b (d) none of the above

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. mainly due to CO3-R

(a) Absence of harmonics (b) Non-existence of any stability limit

(c) Smaller dielectric loss (d) Absence of ripples

7. The sources of harmonics are CO4-R

(a) Converters (b) Large rectifier loads

(c) Computer power supply (d) All the above

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. Power quality measuring equipments CO5-R

(a) Oscilloscopes (b) Harmonic analyzers (c) Energy monitors (d) All the above

10. Which one is a flicker source CO5-R

(a) Arc furnaces (b) Welding machines (c) Wind turbines (d) All the above

PART – B (5 x 2= 10Marks)

11. List any four standards that define power quality. CO1- R

12. Compare short interruption and long interruption CO2- R

13. What are the problems associated with ferro resonance? CO3- R

14. List the harmonic indices. CO4- R

15. Which place is chosen for monitoring the power quality?. 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 Business Equipment 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)	Explain the use of PSCAD / EMTP in analyzing the power quality	CO3- Ana	(16)
19.	(a)	Describe the sources of harmonics in commercial and industrial loads and the impacts of harmonics?	CO4- U	(16)
		Or		
	(b)	What are the various devices for controlling harmonic distortion? Explain briefly about it.	CO4- Ana	(16)
20.	(a)	With a neat block diagram explain the power quality disturbance Analyzer	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)