A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59318

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Elective

Electrical and Electronics Engineering

15UEE918 – POWER QUALITY

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. An overvoltage is an increase in the rms ac voltage greater than CO1- R

   (a) 110 %at the power frequency (b) 100 % at the power frequency

   (c) 200 % at the power frequency (d) 50 % at the power frequency

2. The long-duration voltage variation is considered a sustained interruption, when the supply voltage has been zero for a period of time in excess of CO1- U

   (a) 2 minute (b) 1 minute (c) 3 minute (d) 10 minute

3. What is the transfer rate of fast transfer switch? CO2-R

   (a) 1 electrical cycles (b) 2 electrical cycles

   (c) 3 electrical cycles (d) 4 electrical cycles

4. Which type of switch is used for both low level and medium voltage protection CO2- U

   (a) static switches (b) compensator .

   (c) automatic transfer switches . (d) fast transfer switches

5. Common indicators of ferroresonance are CO3- U

   (a) Audible noise (b) Overheating (c) Flicker (d) All of the above

6. Ferro resonance is a special case of CO3- U

(a) series LC resonance (b) Parallel LC resonance

(c) series and parallel LC resonance (d) series capacitance

7. Harmonic distortion is produced by CO4- U

(a) linear device (b) non linear device

(c) Bilateral device (d) protection device

8. Which standard governs harmonic limits? CO4- R

(a) IEEE 519-1992 (b) IEEE 819-1998 (c) IEEE 519-1998 (d) IEEE 819-1992

9. Which equipment is used to measure power quality? CO5- U

(a) Disturbance analyzers (b) Flicker meters

(c) Energy monitors (d) All of the above

10. An instrument used for the analysis and measurement of signals throughout the electromagnetic spectrum is CO5- U

(a) Power analyzer (b) Current analyzer

(c) Voltage analyzer (d) Spectrum analyzer

PART – B (5 x 2= 10 Marks)

11. How can power quality problems be detected?. CO1- U

12. Mention the various factors affecting the sag magnitude due to faults at a certain point in the system. CO2- R

13. Give the various causes of over voltages. CO3 -U

14. Differentiate between linear loads and non-linear loads. CO4 -U

15. State the importance of power quality monitoring. CO5 -U

PART – C (5 x 16= 80Marks)

16. (a) Explain in detail about CO1- U (8)
(i) Long-Duration Voltage Variations.
(ii) Short-Duration Voltage Variations. CO1- U (8)

Or

(b) With a waveform sketch, explain the following terms. CO1- U (16)
(i) Voltage unbalance
(ii) Voltage Fluctuation.

17.	(a)	With a neat sketch ,Explain the principle of DVR operation used for sag mitigation	CO2- Ana	(16)
		Or		
	(b)	Explain in detail about a device that can boost the voltage by injecting a voltage in series with the remaining voltage during a voltage sag condition.	CO2- Ana	(16)
18.	(a)	Illustrate in detail about different methods used to mitigate voltage swells with neat diagram.	CO3- U	(16)
		Or		
	(b)	Explain in detail about the computer tools used for transient analysis.	CO3- U	(16)
19.	(a)	Describe the sources of harmonics and the impacts of harmonics for industrial loads.	CO4- U	(16)
		Or		
	(b)	Explain in detail about the devices used for controlling harmonic distortion.	CO4- U	(16)
20.	(a)	Analyze the role of expert system for power quality monitoring with neat block diagram.	CO5- Ana	(16)
		Or		
	(b)	Explain the working of flicker meter with necessary diagrams.	CO5- Ana	(16)