Reg. No. :

Question Paper Code: 49316

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

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. Power quality generally used to express   CO1-R

    (a) quality of service   (b) computer equipment

    (c) quality of the voltage   (d) lightning equipment

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. Transmission faults cause voltage sags that last about   CO2-R

    (a) 40 sec   (b) 10 sec   (c) 20 millisec   (d) 60 millisec

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. Lighting is an electrical discharge in the air   CO3-R

    (a) between clouds   (b) between different charge centre within the same cloud

    (c) between cloud and earth   (d) All the above

7. The sources of harmonics are   CO4-R

   (a) Converters   (b) Large rectifier loads

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

8. What are the harmonic effects on devices and loads   CO4-R

   (a) insulation stress   (b) thermal stress   (c) load ruptures   (d) all the above

9. Power quality measuring equipments   CO5-R

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

10. A spectrum analyzer can be used for   CO5-R

   (a) trace of high frequency harmonics   (b) measure harmonics

   (c) measure noise   (d) measure RMS voltage

PART – B (5 x 2= 10Marks)

11. List the major electric power quality issues.   CO1- R

12. What are the causes of voltage sag?   CO2- R

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

14. Write the sources of current harmonics   CO4- R

15. Which place is chosen for monitoring the power quality?.   CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Discuss with a necessary diagrams,   CO1- App   (16)
         (i) Voltage Sag
         (ii) Voltage swells

                              Or

    (b) Discuss about the computer Business Equipment   CO1- App   (16)
         Manufactures Associations(CBEMA). Explain about the events
         described in the curve.

17. (a) Explain in detail the thevenin's equivalent source analysis   CO2- App   (16)
                              Or
    (b) Explain the system adapted to estimate the severity of the sag CO2- Ana   (16)
         occurred due to various sources.

18. (a) Describe computer analyzing tool PSCAD and EMTP for   CO3- Ana   (16)
         transient analysis
                              Or

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(b) Discuss the sources of overvoltage due to following phenomena.   CO3- Ana   (16)
     (i) Capacitor switching.
     (ii) Lightning

19. (a) Discuss the characteristics of harmonics generated under different   CO4- U   (16)
load condition

<div align="center">Or</div>

(b) What are the various devices for controlling harmonic distortion?   CO4- Ana   (16)
Explain briefly about it.

20. (a) With a neat block diagram explain the power quality disturbance   CO5- U   (16)
Analyzer

<div align="center">Or</div>

(b) Briefly explain the common objectives of power quality   CO5- U   (16)
monitoring

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