Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(EE) (2012 Onwards E-III) (Sem.–7)

POWER QUALITY MONITORING AND CONDITIONING

Subject Code : BTEE-805A

M.Code : 71942

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. What are the different sources of pollution in power system?
2. Write short note on : SMPS.
3. What are odd and even harmonics?
4. What is difference between rms and average value?
5. Write short notes on: CT and PT.
6. What is difference between THD and individual harmonic distortion?
7. Explain the term Voltage Sag with an example. How magnitude of voltage sag can be determined?
8. Define the terms blackout and outage.
9. Assume that the RMS value of the third harmonic current in a nonlinear load is 20 A, the RMS value of the fifth harmonic current is 15 A, and the RMS value of the fundamental is 60 A. Calculate what is the individual third harmonic distortion.
10. What is Fourier analysis?

SECTION-B

11. Explain these terms (**any two**) with suitable examples :

    a. Rectifier

    b. Transients

    c. Interruptions

12. Explain the voltage swell, voltage sag energy index, rms and average value, for a sinusoidal waveform.

13. What is total harmonic distortion? Find the total harmonic distortion of a voltage waveform with the following harmonic frequency make up :

    Fundamental = V_1 = 114 V

    3rd harmonic = V_3 = 4 V

    5th harmonic = V_5 = 2 V

    7th harmonic = V_7 = 1.5 V

    9th harmonic = V_9 = 1 V

14. What are the effects of harmonics on these devices? Explain in brief.

    a. Transformer

    b. AC motors

    c. Capacitor banks

    d. Telecommunication lines

15. What are the different techniques for controlling harmonics? What is difference between active and passive filter?

SECTION-C

16. What is the need of power quality standards? What are different standards associated with harmonics. Explain power acceptability curve with example.

17. What is power quality monitoring? What are the differences between analog and digital current loop measurements? Describe briefly the various monitoring equipment's used m power system.

18. Explain block diagram of active filter? Explain working of each block in brief.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.