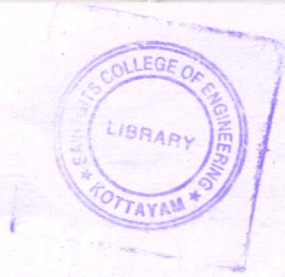


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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Seventh Semester

Branch : Electrical and Electronics Engineering

EE 010 706 L03 – POWER QUALITY (Elective II) [EE]

(New Scheme – 2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Differentiate between undervoltage and voltage sag.
2. Define Power Quality.
3. What is CBEMA curve for assessing PQ?
4. Capacitor switching causes PQ problems. Explain.
5. What is flicker?

(5 × 3 = 15 marks)

Part B

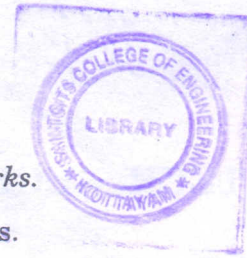
Answer all questions.

Each question carries 5 marks.

6. PQ has gained prominence in the last decade. Discuss reasons for it.
7. How is power factor defined when system has pure sinusoidal signals and when it is non-sinusoidal? Distinguish power factor and displacement factor.
8. Discuss the effect of sag on equipment.
9. Discuss the effect of harmonics on transformers and rotating machines.
10. What are the objectives of PQ monitoring?

(5 × 5 = 25 marks)

Turn over

Part C*Answer all questions.**Each question carries 12 marks.*

11. (a) Explain the various short-duration voltage variations.
 (b) Briefly discuss the common non-linear loads which cause voltage distortion.
 (6 + 6 = 12 marks)

Or

12. (a) What are the three main reasons for standardization?
 (b) Discuss the standards for voltage sag and harmonics.
 (6 + 6 = 12 marks)

13. What are active series compensators? Explain the various UPS schemes available for voltage ride-through.
 (12 marks)

Or

14. (a) What is ferro-resonance? What are the events which cause ferro-resonance?
 (b) What are the effects of ferro-resonance? Describe a few symptoms of ferro-resonance phenomenon.
 (6 + 6 = 12 marks)

15. Explain the function of surge arresters and transient voltage suppressors in protecting the system. How do these devices operate?
 (12 marks)

Or

16. (a) Discuss the role of low pass filters in suppression of transients.
 (b) Discuss the fundamental principles of overvoltage protection.
 (6 + 6 = 12 marks)

17. Define active power, reactive power, apparent power, distortion power, true power factor and displacement factor in the presence of harmonics.
 (12 marks)

Or

18. (a) What are the indices of harmonics commonly used? Discuss the standard for these.
 (b) Discuss the harmonic effect of industrial loads.
 (6 + 6 = 12 marks)

19. What are harmonic analyzers? What are the basic instruments available for harmonic analysis?
 (12 marks)

Or

20. What are the commonly used transducers in PQ monitoring? What are their requirements?
 (12 marks)

[5 × 12 = 60 marks]