

**Question Paper Code : 71487**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth Semester

Electrical and Electronics Engineering

EE 2027/EE 604/10133 EEE 16 — POWER SYSTEM TRANSIENTS

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the causes of transients?
2. Write the basic transform of RLC circuit transient.
3. What is current suppression?
4. Define ferro resonance.
5. What are the types of protection afforded by ground wires?
6. Define tower footing resistance.
7. What is the importance of Bewley's Lattice Diagram?
8. Draw the equivalent circuit for an infinitesimal element of a line.
9. Distinguish between line dropping and load rejection.
10. Define kilo metric fault.

PART B — (5 × 16 = 80 marks)

11. (a) What are the various types of power system transients? With neat diagrams, describe any two types of power system transients in detail. (16)
- Or
- (b) (i) Discuss about the effects of transients on power systems. (8)
  - (ii) Briefly explain the importance of study of transients in planning. (8)

Or

- (b) What is capacitance switching? Explain in briefly about capacitance switching with one and multiple restrikes. (16)
13. (a) (i) Explain in detail how the charges are formed in the clouds. (8)  
(ii) With a neat sketch, explain the characteristics of lightning strokes. (8)

Or

- (b) (i) Derive the mathematical model for lightning. (8)  
(ii) Describe the interaction between lightning and power system. (8)
14. (a) Explain the steps involved in Bewley's Lattice diagram construction with an example. (16)

Or

- (b) (i) Discuss transient response of systems with series and shunt lumped parameters and distributed lines. (8)  
(ii) Derive the refraction coefficients of a traveling wave. (8)
15. (a) (i) Describe how the voltage is distributed in a power system. (8)  
(ii) Derive the voltage transients on reclosing lines. (8)

Or

- (b) Explain in detail how EMTP is used for the computation of transients in power system. (16)
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