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Question Paper Code : 33413

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Eighth Semester

Electrical and Electronics Engineering

EE 1003/EE 1005 — POWER SYSTEMS TRANSIENTS

(Common to B.E. (Part-Time) Seventh Semester, Regulation 2005)

(Regulation 2004/2007)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define power system transient.
2. What is meant by arcing ground?
3. Draw the equivalent circuit of Resistance Switching.
4. Define ferro resonance.
5. What are the causes of over voltages?
6. Define lightning phenomenon.
7. Step wave is dangerous to apparatus-Justify.
8. What are the specifications of a traveling wave?
9. Give the concept of traveling wave in brief.
10. What are the applications of EMTP?

PART B — (5 × 16 = 80 marks)

11. (a) Describe in detail various types of power system transients. (16)

Or

- (b) (i) What are the effects of transients on power system? Explain. (8)
- (ii) Describe importance of study of transients in Planning. (8)

12. (a) Explain the concept of capacitance switching including the effect of source regulation. Also discuss the effects of re-strike and multiple re-strikes. Give an illustration for multiple re-striking transients. (16)

Or

- (b) Draw an equivalent circuit for the resistance switching and explain the equivalent circuit for interrupting resistor current. Also explain RL circuit with sine drive. (16)
13. (a) Define lightning phenomenon. Explain the mechanism of lightning strokes and its characteristics. (16)

Or

- (b) (i) What are the factors that contribute to good line design? Discuss. (8)
- (ii) How are ground wires protected from lightning transients? Explain. (8)
14. (a) Derive the expressions for the voltage and current waves on long transmission line. (16)

Or

- (b) (i) Explain the behavior of travelling waves at open circuited line. (8)
- (ii) Derive an expression for standing wave equation. (8)
15. (a) (i) Explain short line and kilometric fault. (8)
- (ii) What is line dropping and load rejection? (8)

Or

- (b) (i) Explain switching surges on integrated system. (8)
- (ii) Explain EMTP for transient computation (8)