Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 50514

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023

Seventh Semester

Electrical and Electronics Engineering

EE 8010 – POWER SYSTEMS TRANSIENTS

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give example for internal sources for transients.

2. Classify transients based on its frequency.

3. Define load switching.

4. Define RRRV.

5. List out any two causes of over voltages.

6. Define protective angle.

7. Give the specifications of a travelling wave.

8. Draw a neat sketch of standing waves.

9. Draw the EMTP model of transmission line.

10. What are the advantages of EMTP software packages?

PART B — (5 × 13 = 65 marks)

11. (a) Discuss the various types of power system transients.

Or

(b) Explain the Transients associated with switching an LC circuit with sine wave excitation.

12. (a) Explain load switching with equivalent circuit.

Or

(b) Discuss the control of transient over voltages in power system.

13. (a) Explain the mechanism of lightning discharge and concept of footing resistance.

Or

(b) With a neat diagram. explain the protection offered by ground wires.

14. (a) Evaluate the value of current in a transmission line considering its series and shunt lumped parameters.

Or

(b) A long transmission line is energized by a unit step voltage 1.0 V at the sending end and is open circuited at the receiving end. Develop the Bewley's Lattice diagram and obtain the value of the voltage at the receiving end after a long time. Take the attenuation factor $\alpha = 0.8$.

15. (a) Discuss the causes of transients on closing and reclosing of transmission lines.

Or

(b) Discuss in detail about EMTP for the applications of transient computation.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Explain the mathematical models for lightning discharges and explain them.

Or

(b) Explore the steps involved in Bewley's lattice diagram construction with an example.

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