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B.E. DEGREE END SEMESTER EXAMINATIONS, Apr./May 2011
Electrical and Electronics Engineering
Seventh Semester (Regulation 2005)
EE381 High Voltage Engineering

Time : 3.00 Hours

Max. Marks : 100

Answer ALL Questions

PART-A (10x2=20 marks)

1. Mention the methods of protecting transmission lines from over voltages.
2. What is the significance of volt-time characteristics in power system design ?
3. Explain Paschen's law ?
4. Explain tracking on a solid insulation surface.
5. Draw the schematic diagram of a cascaded transformer with three stages.
6. What is the need for controlled triggering in impulse voltage generators?
7. What are the correction factors used in high voltage measurement?
8. Mention the design criterion for high voltage resistors used for generation and measurement?
9. Explain type and routine test with suitable examples
10. Differentiate impulse flashover and withstand test on high voltage insulator.

PART -B (5x16=80 marks)

11. What are the causes of over voltages and classify them based on frequency and voltage magnitude.

Explain why high voltage power apparatus are tested with AC, DC , lightning and switching voltages.

12. (a) Explain the process of conduction and breakdown in commercial liquids.

(OR)

12. (b) Explain breakdown process in vacuum and SF₆

13. (a) Explain the DC voltage generation using multiplier circuit. Derive expression for ripple and regulation.

(OR)

13. (b) Explain the principle of operation of TESLA coil for generating high frequency AC voltage. Derive the output equation.
14. (a) Explain and compare capacitive dividers and capacitive voltage transformers for measuring high voltages.

(OR)

14. (b) Explain the construction and principle of operation of electrostatic voltmeter for high voltages. What are its merits and demerits for HV AC measurement?
15. (a) Explain the general test procedures for high voltage AC, DC and impulse testing along with the test voltage specifications as per IS :2026.

(OR)

15. (b) Explain in detail the lightning impulse voltage withstand test on a 15MVA, 66kV/11kV, Delta/Star power transformer.