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Question Paper Code : 86588

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Seventh Semester

Electrical and Electronics Engineering

EE 1003 A – HIGH VOLTAGE ENGINEERING

(Regulations 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are temporary over voltage?

2. What is the use of counter poise wire?

3. State Paschen's law.

4. State the electrical properties that are essential to determine the dielectric performance of a liquid dielectric.

5. Why is cockcroft-walton circuit preferred for voltage multiplier circuit?

6. How is the circuit inductance controlled and minimized in impulse current generation?

7. What is the difference between the operating conditions of the RLC circuits used for impulse voltage and current generator with respect to damping?

8. How is faraday's effect used for measurement?

9. What is meant by insulation coordination?

10. Define the term 'withstand voltage' as referred to high voltage testing.

PART B — (5 × 16 = 80 marks)

11. (a) With suitable illustrations, explain the causes of over voltage and its effect on power system.

Or

(b) With suitable diagram, explain methods used for protection against over voltages.

12. (a) Explain the primary and secondary ionization process of gaseous dielectrics. (16)

Or

(b) Explain in detail, the various solid dielectric breakdown mechanisms. (16)

13. (a) Explain the operation of Cockcroft-Walton multiplier circuit from simple voltage doubler concept and derive the expression for optimum number of stages in voltage multiplier. (16)

Or

(b) Explain the construction and operations of Marx impulse voltage generator and impulse current generator. (10+6)

14. (a) Construct and describe the principle of electrostatic voltmeter. (16)

Or

(b) (i) Mention and explain the various arrangements of sphere gap measurements with neat sketch. (10)

(ii) Describe the high DC current measurement using Hall generators. (6)

15. (a) Discuss in detail about the impulse testing of transformer with neat diagrams. (16)

Or

(b) Explain the different aspects of insulation design and insulation coordination adopted for EHV systems. (16)

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