



USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

10EE73

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
High Voltage Engineering

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Explain the need for generation of very high voltages in the laboratory. (06 Marks)
b. What are the industrial applications of high voltages? (08 Marks)
c. Explain Townsend's theory of gas breakdown. Derive equation of current growth. (06 Marks)
- 2 a. Explain the streamer theory of breakdown in air and obtain the expression for smallest value of α . (10 Marks)
b. Explain the various theories that explain breakdown in commercial liquid dielectrics. (10 Marks)
- 3 a. Write short notes on:
(i) Electromechanical breakdown (ii) Thermal breakdown (14 Marks)
b. Explain time lags for breakdown of gas. (06 Marks)
- 4 Write short notes on:
(i) Cascaded transformer
(ii) Resonant transformer
(iii) Tesla coil. (20 Marks)

PART – B

- 5 a. Explain how impulse voltages are generated in laboratory using MARX circuit. (10 Marks)
b. What is a trigatron gap? Explain its functions and operation. (10 Marks)
- 6 a. With a neat sketch, explain the construction and working principle of electrostatic voltmeter. Bring out their advantages and disadvantages. (10 Marks)
b. Explain in detail about the sphere gap measurements and mention the factors affecting the measurements. (10 Marks)
- 7 a. Explain the simple and accurate method of measuring peak values of ac voltages as suggested by Chuff and Fortescue method. (10 Marks)
b. With the help of a neat sketch, explain the construction and principle of high voltage Schering bridge used for dielectric loss angle measurements. Derive the expression used. (10 Marks)
- 8 a. Explain with a neat diagram, the procedure for impulse testing of power transformer. (08 Marks)
b. Write short notes on:
(i) Testing of insulators
(ii) Testing of cables. (12 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.