Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electrical & Electronics Engg. / Electronics & Electrical Engg.)
(Sem.–6)

HIGH VOLTAGE ENGINEERING

Subject Code : BTEE-604A-18
M.Code : 79950
Date of Examination : 14-07-22

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) What is intrinsic breakdown?

b) What is non-destructive testing of insulating materials?

c) What modifications do you suggest in the basic Schering bridge while measuring large capacitances?

d) What is surge diverter?

e) List out various tests to be carried out on insulator?

f) What is suspended particle mechanism of liquid breakdown?

g) What are 'Treeing' and 'Tracking'?

h) What is shunt compensation?

i) What do you mean by 'Intrinsic strength' of a solid dielectric?

j) What is corona discharge?

SECTION-B

2. Explain the mechanism of development of anode and cathode streamers and explain how these lead to breakdown.

3. Derive an expression for maximum thermal voltage and show that the voltage is independent of thickness of specimen. State clearly the assumptions made.

4. What is a cascaded transformer? Explain why cascading is done? Describe with neat diagram a three-stage cascaded transformer.

5. Describe the construction of a uniform field spark gap and discuss its advantages and disadvantages for high voltage measurements.

6. Discuss in detail about the breakdown of vaccum medium.

SECTION-C

7. Explain '*Thermal breakdown in solid dielectrics*.' How this mechanism is more significant than the other mechanisms?

8. a) Explain the process of breakdown in electronegative gases.

   b) Draw a neat exact equivalent circuit of an Impulse Generator and indicate the significance of each parameter being used.

9. A ten stage Cockraft-Walton circuit has all capacitors of 0.06 μF. The secondary voltage of the supply transformer is 100 kV at a frequency of 150 Hz. If the load current is 1 mA, determine (a) voltage regulation (b) the ripple (c) the optimum number of stages for maximum output voltage (d) the maximum output voltage.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.