Total No. of Questions : 5] *[Total No. of Printed Pages : 2*

Roll No .....

EE-7001 (CBGS)

B.E. VII Semester

Examination, November 2018

Choice Based Grading System (CBGS)

High Voltage Engineering

Time : Three Hours

Maximum Marks : 70

Note: Solve any two from each question, of equal marks.

1. a) Explain mechanism of breakdown in solid dielectric due to internal discharge compare this with treeing and tracking phenomenon. 7
   b) What are different theories which describe the Breakdown in liquid dielectric? Explain any one. 7
   c) A steady current of 600 μ.A. flows through the plane electrode separated by a distance of 0.5 cm; when a voltage of 10 kV is applied. Determine the Townsend's first ionization coefficient it a current of 60 μ.A. flows when the distance of separation is reduced to 0.1 cm. 7

2. a) Describe various of insulations used in power transformer. Explain the effect of oxidation on transformer oil. 7
   b) Explain HV DC - voltage doubler circuit and Cockcroft-Walton type high voltage DC set. 7
   c) Give important application of high voltage and what is need of EHV transmission. 7

3. a) Explain working of multistage Marx impulse generator. 7
   b) Describe working principle of electrostatic voltmeter and define impulse voltage. 7

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   c) A ten stage Cockroft Walton circuit has all capacitors of 0.06 μF. The secondary voltage of supply transformer is 100KV frequency of 150Hz. If the load current is 1MA, determine 7
      i) Voltage regulation, ripple
      ii) Optimum no. of stages for maximum output voltage and maximum output voltage.

4. a) Explain operation of nonlinear element surge director with its characteristics. 7
   b) What is origin of switching surges? Describe characteristics of switching surges with their waveshapes. 7
   c) Explain standard sphere gap measurements of HV AC, HV DC and impulse voltages. 7

5. a) Explain various tests conducted on Bushing. 7
   b) Explain impulse testing of transformer. 7
   c) Explain high voltage tests on circuit breakers. 7

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