Code No: **R41022** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March - 2017

HIGH VOLTAGE ENGINEERING

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) Explain how the Boundary Element Method is different from Charge Simulation Method. [8]
b) Explain the necessity of control of transient or impulse voltages in power apparatus. [7]

2 a) Explain about the experimental method to measure Townsend's ionization coefficients α and γ. [8]
b) Explain the effect of moisture content on breakdown strength of liquid dielectrics. [7]

3 a) How does the short-term breakdown differ from long-term breakdown in composite dielectrics? [8]
b) What are the insulation requirements for circuit breakers? [7]

4 a) Explain the principle of operation of an electrostatic generator. [8]
b) A 12 stage impulse generator has 0.12 μF condensers rated for 200 kV. The wave front and wave tail resistances connected are 1.25 kΩ and 4 kΩ respectively. If the load condenser is 1000 pF, find the wave front and wave tail times of the impulse wave produced. [7]

5 a) Explain how a sphere gap can be used to measure the peak value of voltages. [8]
b) What are the requirements of an oscillograph for impulse and high frequency measurements? [7]

6 a) With neat sketches, explain the three electrode arrangements used in dielectric measurements for solid and liquid specimen. [8]
b) Briefly explain the terminology used in partial discharge phenomenon. [7]

7 a) Explain the method of detection and location of fault during impulse testing of transformers. [8]
b) Explain high current impulse test on surge arrestors. [7]

8 a) Explain the working principle of Electrostatic precipitator. [8]
b) Explain how the Electrostatic copying is done using high voltages. [7]