IV B.Tech I Semester Supplementary Examinations, November - 2016
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 the Finite Element Method for solving the electric field problems.   [8]

   b) Briefly explain the Charge Simulation Method for electric field computation in multi-dielectrics.   [7]

2 a) Explain the Streamer theory of breakdown in gases.   [8]

   b) Differentiate pure and commercial liquid dielectrics.   [7]

3 a) Explain the phenomena of Internal discharge in solid dielectrics.   [8]

   b) Indicate the insulation applications in power cables and bushings.   [7]

4 a) With neat sketch, explain the working of a Van de Graaff generator.   [8]

   b) Calculate the peak current and wave shape of the output current of the generator having the total capacitance of 53 µF. The charging voltage is 200 kV, circuit inductance 1.47 mH and the dynamic resistance of the test object is 0.05 ohms.   [7]

5 a) Explain the construction and principle of an electrostatic voltmeter for high AC voltage measurements.   [8]

   b) Explain how a mixed potential divider can be used for impulse voltage measurements.   [7]

6 a) Explain the high voltage Schering bridge for capacitance measurement of an insulator.   [8]

   b) Discus the method of balanced detection for locating partial discharges in electrical equipment.   [7]

7 a) Briefly explain the power frequency and impulse tests on insulators.   [8]

   b) Explain the method of impulse testing on high voltage transformers.   [7]

8 a) Briefly explain various industrial applications to high voltage engineering.   [8]

   b) Explain the working of an electrostatic photo copier.   [7]