

Code :R5320206

R5

III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011
HIGH VOLTAGE ENGINEERING
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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- Discuss briefly the "Charge Simulation Method" for solving the field problems and estimation of potential distribution.
- The following observations were made in an experiment for determination of dielectric strength of transformer oil. Determine the power law equation.

Gap Spacing (mm)	4	6	8	10
Breakdown voltage (kV)	88	135	165	212

- What are treeing and tracking? Explain clearly the two processes in solid dielectrics.
- Derive an expression for ripple voltage of a multi-stage Cockroft-Walton Circuit.
 - A 10-stage Cockroft -Walton circuit has all capacitors of $0.06 \mu\text{F}$. The secondary voltage of the supply transformer is 100 kV at a frequency of 150 Hz. If the load current is 1mA, find
 - The optimum number of stages for maximum output voltage.
 - The maximum out put voltage.
- Explain the principle and construction of an electro static voltmeter for very high voltages. What are its merits and demerits for high voltage AC measurements?
- Define surge impedance of a line. Obtain the expressions for voltage and current waves at a junction or transition point?
- What are partial discharges? Differentiate between internal and external discharges?
 - Develop and draw equivalent circuit of insulating material during partial discharge?
- Explain the terms
 - with stand voltage
 - flash over voltage
 - 50% flash over voltage
 - wet and dry power frequency tests as referred to high voltage testing

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