R09

Code: 9A02705

B.Tech IV Year I Semester (R09) Supplementary Examinations, May 2013

HIGH VOLTAGE ENGINEERING

(Electrical and Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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1. (a) Classify different voltage levels and mention need for going high voltage generation.
   (b) Write short notes on electrostatic separation.

2. (a) State and explain Paschen's law and derive for $(V_b)_{min}$, $(Pd)_{min}$
   (b) Explain the breakdown procedure in pure liquids.

3. (a) Explain intrinsic breakdown in solids.
   (b) Explain thermal breakdown in solids.

4. (a) Explain Cockroft – Walton voltage multiplier circuit for generating high voltages.
   (b) A Cockroft-Walton type voltage multiplier has 8 stages with capacitances all equal to 0.05 μf. The supply Transformer secondary voltage is 125 KV at a frequency of 150 Hz. If the load current to be supplied is 5 mA.
   Calculate: (i) % of Ripple. (ii) Regulation. (iii) Optimum no of stages.

5. (a) Explain MARX circuit.
   (b) Write short notes on Impulse current generation.

6. How high D.C, A.C and impulse voltages are measured using sphere gap. Mention the factors effecting spark over voltage of sphere gaps.

7. (a) Define the terms:
   (i) Electrical discharge. (ii) Partial discharge.
   (iii) Discharge extinction voltage. (iv) Discharge inception voltage.
   (b) How the partial discharges are measured using straight detectors?

8. (a) Explain Impulse test on power transformers.
   (b) Explain various tests conducted on cables.

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