Total No. of Questions : 6]

SEAT No. :

P-305

[Total No. of Pages : 2

APR.-16/BE/Insem.-36

B.E. (Electrical)

HIGH VOLTAGE ENGINEERING (Elective - III (a))

(2012 Pattern)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q4. Q.5 or Q.6.***
2) ***Figures to the right indicate full marks.***

Unit - I

Q1) a) Derive Townsend's current growth equation in presence of primary and secondary ionization coefficients. **[4]**

b) Explain paschens' law and its limitations. **[6]**

OR

Q2) a) In an experiment in a certain gas, it was found that the steady state current is 4.5×10^{-8} a at 8kV at a distance of 0.4 cm between the plane electrodes keeping the field constant and reducing the distance to 0.1cm results in a current of 4.5×10^{-9} A. Calculate townsend's primary ionization coefficient. If the breakdown occurred when gap distance was increased to 0.9 cm what is the value of secondary ionization coefficient. **[4]**

b) Compare townsend's theory and streamer's theory of breakdown of gaseous dielectrics. **[6]**

Unit - II

Q3) a) Explain thermal breakdown in solid dielectric material. **[4]**

b) Explain any one breakdown theory of commercial liquids. **[6]**

OR

Q4) a) A solid of dielectric constant 4, has an internal void of thickness 1mm, the specimen is 1cm thick and is subjected to a voltage of 80kV rms. If the void is filled with air and breakdown strength of air is 30 kV/cm (peak) find voltage at which internal discharge occurs. **[4]**

b) Explain treeing and tracking phenomenon on solid dielectrics. **[6]**

P.T.O.

Unit - III

Q5) a) Explain mechanism of lightning strokes. **[4]**

b) Explain various reasons for switching surges. Also state the remedial actions for the same. **[6]**

OR

Q6) a) Explain different theories of charge formation in clouds. **[4]**

b) Explain statistical method of insulation coordination. **[6]**