

Total No. of Questions : 6]
P595

SEAT No. :

[Total No. of Pages : 2

BE/Insem/APR - 193
B.E. (Electrical)
HIGH VOLTAGE ENGINEERING
(2015 Pattern) (Semester - II) (Elective - III)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6.*
- 2) *Use of non programmable calculator is allowed.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

Unit - I

- Q1)** a) Compare between Townsend's and Streamer breakdown mechanism. [7]
b) Draw Paschen's curve and explain the law. [3]

OR

- Q2)** a) Derive current growth equation in presence of primary and secondary ionization processes. [6]
b) In an experiment in a certain gas, it was found that the steady state current is 5.5×10^{-9} A at 8 kV at a distance of 0.4 cm between plane electrodes keeping the field constant and reducing the distance to 0.1 cm result in a current of 5.5×10^{-9} A. Calculate Townsend's primary ionization coefficient α . If the breakdown occurred when the gap distance was increased to 0.9 cm what is the value of Townsend's secondary ionization coefficient? [4]

Unit - II

- Q3)** a) Describe Thermal mechanism of breakdown in solid insulating materials. [6]
b) A solid dielectric material with dielectric constant of 4.8 has void of thickness 1 mm. The dielectric material thickness is 1 cm and the voltage applied across it is 100 kV(rms). If void is filled with air and has dielectric strength of 30 kV/cm (peak). Find the voltage at which internal discharge can occur. [4]

OR

P.T.O.

- Q4)** a) Define following : [3]
- i) Impulse waveform
 - ii) Wave front time
 - iii) Wave tail time
- b) Draw a neat diagram of Tesla coil and explain principle of operation, construction, advantages and disadvantages. [7]

Unit - III

- Q5)** a) Draw any one scheme of Tripping and control of impulse generators and explain it. [5]
- b) Draw modified Marx circuit of impulse generator. Explain its construction and operation. [5]

OR

- Q6)** a) What is the use of series resonance circuit? How it works? Write down advantages and disadvantages. [7]
- b) Draw a standard impulse waveform and define it as per IS. [3]
