

**B.E. (Electrical) (Semester - VII) Examination, December - 2015****HIGH VOLTAGE ENGINEERING****Sub. Code : 47936****Day and Date : Thursday, 10 - 12 - 2015****Total Marks : 100****Time : 10.00 a.m. to 1.00 p.m.**

- Instructions :**
- 1) All questions are compulsory.
  - 2) Figures to right indicate full marks.
  - 3) Draw the neat sketches wherever necessary.
  - 4) Make suitable assumptions wherever necessary.

**Q1) Solve any Two : [16]**

- a) Starting with Laplace equation in two dimension explain the finite difference method for evaluation of field distribution. State its advantages and disadvantages.
- b) Explain the breakdown due to gaseous bubbles in case of commercial liquids.
- c) What are electronegative gases? Why is the breakdown strength higher in the gases compared to that in other gases?

**Q2) Solve any Two : [16]**

- a) Explain Cockroft-Walton voltage multiplier circuit and derive the expression of  $(V_{omax})_{max}$ .
- b) Describe in brief various mechanism in breakdown in solids.
- c) Explain series-parallel resonant circuit and discuss its advantages and disadvantages.

**Q3) Solve any Three : Write a short note on [18]**

- a) Van de Graff generator.
- b) Sphere gap arrangement to measure high voltage
- c) Cascade Transformers for generating high ac voltages.
- d) Measurement of high ac currents using current transformer and electro optical system.

**P.T.O.**

Q4) Solve any Two :

[16]

- a) Describe various tests to be carried out on C.B.
- b) Explain measurement of dielectric constant and loss factor.
- c) Describe various tests to be carried out on power capacitor.

Q5) Solve any Two :

[16]

- a) Differentiate between a hot lightning stroke and cold lightning stroke.
- b) Draw and explain high voltage Schering bridge with various features.
- c) An electrostatic voltmeter has two parallel plates. The movable plate is 10cm in diameter. With 10kv between the plates the pull is  $5 \times 10^{-3}$  N. Determine change in capacitance for a movement of 1mm of movable plate.

Q6) Solve any Three Write a short note on

[18]

- a) Electrostatic voltmeter.
- b) Modified Marx's circuit.
- c) Insulation coordination in substation.
- d) Charge generation and separation in thunder clouds.

