

Total No. of Questions : 8]

SEAT No. :

**P3073**

**[5059]-594**

[Total No. of Pages : 2

**B.E.(Electrical)**

**HIGH VOLTAGE ENGINEERING**

**(2012 Course)(Elective-III)(Semester-II)(End Semester) (403149)**

*Time :2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer all questions.*
- 2) *Answer Q1 or Q2, Q3 or Q4,Q5 or Q6,Q7 or Q8.*
- 3) *Neat diagram must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*
- 6) *Use of calculator is allowed.*

- Q1)** a) Define Townsend first and second ionization coefficients How is the condition for breakdown obtained in Townsend discharge? [8]
- b) What is the stress oil volume theory and how does it explain breakdown in large volume of commercial liquid dielectrics [8]
- c) Describe the various factors that influence breakdown in a gas. [4]

OR

- Q2)** a) What is thermal breakdown on solid dielectrics and how it is practically more significant then other mechanisms? [8]
- b) Describe the phenomenon of lightning and explain the terms pilot streamer, stepped leader, return streamer and dart leader. [8]
- c) Explain the various factors that influence breakdown in pure liquid dielectrics and commercial liquid dielectrics [4]
- Q3)** a) Give the different circuits that produce impulse wave and explain clearly their merit and demerits. [8]
- b) Explain one method of controlled tripping of impulse generator why is controlled tripping necessary. [8]

OR

**P.T.O.**

**Q4) a)** With neat circuit diagram , describe the construction principle of operation and application of Marx's impulse generator. [8]

b) Draw the standard wave shape of impulse voltage wave and specify the values of the wave front and wave tail. [8]

**Q5) a)** Explain sphere gap measurement of high voltages. [8]

b) Explain the method of measurement of partial discharge using Schering Bridge. [8]

OR

**Q6) a)** Explain current transformer with electro-optical signal converter for EHV system. [8]

b) Explain Generating voltmeter for measurement of high voltages. [8]

**Q7) a)** What are the different power frequency tests done on insulator? Mention the procedure for testing? [9]

b) Classify the different high voltage laboratories and give salient features of each of them [9]

OR

**Q8) a)** Explain the partial discharge tests on high voltage cables. How is the fault in the insulation located in this test? [9]

b) Explain earthing and safety measures used in high voltage laboratory [9]

