 Roll No .....

EX - 7101(NGS)

B.E. VII Semester

Examination, December 2013

High Voltage Engineering

Time : Three Hours

Maximum Marks : 100 *Minimum Pass Marks :35*

Note: Attempt any five questions. All questions carry equal marks.

1. a) Explain briefly that the distribution of the field between plane electrodes by volume charges of the initial avalanche is highly non uniform. 8
   b) Define and explain Townsend's first and second ionisation coefficients. 6
   c) State and explain Paschen's Law. 6

2. a) What is time lag? Discuss its components and the factors which affect the components. 8
   b) What are 'Tree ring and Tracking'? Explain clearly the two processes in solid dielectrics. 8
   c) How is corona-power loss on transmission lines affected by the frequency? 4

3. a) Explain the various theories that explain breakdown in commercial liquid dielectrics. 12
   b) What are partial discharges? Explain the mechanism of break down of a solid insulation due to partial discharges. 8

4. a) Define the front and tail times of an impulse wave. What are the tolerances allowed as per the specifications. 8
   b) What is the principle of operation of a resonant transformer. How is it advantageous over the cascade connected transformers? 8
   c) Explain the basic principle of impulse generator with a neat sketch. 4

5. a) Explain the operation of multistage Mars impulse generator circuit. Give the procedure and describe the equipments. 10
   b) Explain clearly the procedure for measurement of impulse and a.c. high voltages using sphere gap. 10

6. a) Draw a neat schematic diagram of a generating volt meter and explain its principle of operation. Discuss its application and limitations. 10
   b) Explain the operation of high voltage schering bridge when the test specimen has high loss factor. 10

7. a) Explain with neat diagrams how wide band circuit can be used for measuring partial discharge. 10
   b) What are the causes of over voltages? With the help of sketches explain the wave shapes, order of magnitudes and duration of these over voltages. 10

8. Write short notes on any three of the following: 20
   a) Techniques to observe wave front on CRO
   b) Tesla coil
   c) Potential dividers for high voltage measurement
   d) Measurement of breakdown strength of oil
   e) Methods of insulation coordination.

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