Total No. of Questions :8] *[Total No. of Printed Pages :3*

Roll No .....

EX - 7101

B.E. VII Semester

Examination, December 2012

High Voltage Engineering

Time : Three Hours

Maximum Marks : 100 ***Minimum Pass Marks :35***

Note : 1. Attempt any *Five* Questions.
2. All Questions carry equal marks

1. a) Explain the mechanism of development of anode and cathode streamers and explain how these lead to break down. 12

   b) What are the limitations of the Townsend's theory when adopted to explain formation of discharge at high pressure. 8

2. a) What is the effect of polarity on the breakdown voltage of a needle plane gap? Explain. 6

   b) What are the effect of the following on breakdown voltage of a gaseous dielectric (i) Temperature (ii) Pressure. 4

   c) Discuss the methods of minimizing corona power loss on transmission lines. 10

3. a) Explain briefly the mechanisms by which breakdown occurs in solid dielectrics in practice. 10

   b) Draw a neat sketch of the standard test cell for the determination of dielectric strength of transformer oil. 10

4. a) Define the standard impulse voltage wave. Why is it necessary to standardise the impulse wave for testing. 8

   b) Describe Cockroft Waltan Circuit to produce d.c. high voltages. 12

5. a) Why is it preferable to use isolating transformers for excitation with cascade transformer units, if the power requirement is large. 5

   b) How are the wave front and wave tail times controlled in impulse generator circuits? 5

   c) Explain the principle and construction of an electrostatic voltmeter for measurement of very high voltages. What are its merits and demerits for high voltage a.c. measurements? 10

6. a) Explain the necessity of earthing and shielding arrangements in impulse measurements and in high voltage laboratories. Give a sketch of the multiple shielding arrangements used for impulse voltage measurement. 10

   b) Briefly explain how partial discharges in an insulation system or equipment can be detected and displayed. 10

7. a) Explain briefly impulse testing of power transformer. 10

   b) What are BILS? Explain their significance in power system studies. 6

   c) What is a ground wire? Discuss its location with respect to power conductors. 4

8. Write short notes on any three of the following :- 20

   a) Applications of oscilloscopes in high voltage measurement.

   b) Testing of Power cables.

   c) Surge diverters for protection of transmission systems against surge voltages.

   d) Back flash over on transmission line towers.

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