

5/10/13

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**B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

5

VI Semester

**EE433 / EE381 / EE 9352 HIGH VOLTAGE ENGINEERING**

(Regulation 2002/2004/2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. Mention any four causes of power frequency over voltages in power systems.
2. Explain the practical significance of the volt-time characteristics and draw the same for a transformer and a lightning arrester.
3. List the essential electrical properties of any dielectric material.
4. Define treeing and tracking in solid dielectrics.
5. What is the need for generating high voltages ?
6. Define the impulse current waveshape as per standard.
7. What is the need for calibrating the generator circuit along with the load ?
8. Explain the working principle of electrostatic voltmeter for power frequency voltage measurements.
9. Define type, routine and special test on power equipment with suitable examples.
10. Define 50% and 100% flashover voltage and withstand voltage.

**Part – B ( 5 x 16 = 80 marks)**

11. Explain the methods of controlling over voltages due to switching and lightning ( any three methods in each) (8+8)
12. a) Explain the breakdown in commercial liquid dielectric using any two theories.(8+8)  
(OR)  
b) What is a composite dielectric, what are its properties and breakdown mechanisms? (2+7+7)
13. a) Explain the generation of lightning impulse voltage using a multistage impulse generator (using Marx circuit) along the desirable requirements of the components.(8+8)  
(OR)  
b) Explain the generation of high voltage alternating voltages using resonant transformers.
14. a) Explain and compare the different potential dividers used for impulse voltage measurement.  
(OR)  
b) Explain the role of sphere gaps in the measurement of high voltages. ( construction and factor influencing the sparkover) (8+8)
15. a) Explain in detail the different dielectric tests to be carried out on a 33kV insulator.  
(OR)  
b) Explain the impulse voltage withstand test on a 250kVA, 11kV/440V , delta/star distribution transformer.