6E6072

6E 6072

B.Tech. VI Semester(Main/Back) Examination, May-June 2015
Electrical Engineering
6EE2A High Voltage Engineering

Time : 3 Hours | **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **one** question from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Explain thermal ionization in gases at high temperatures and applications of gases in power system. **(8)**

   b) Explain phenomenon of electrical conduction in liquids. On what factors breakdown strength depends in liquid breakdown. **(8)**

OR

1. a) Explain "Treeing and Tracking breakdown" in solids **(8)**

   b) Explain suspended solid particle mechanism in liquids. **(8)**

Unit - II

2. a) Explain marx circuit configuration for multistage impulse generation. **(8)**

   b) Explain cock-roft walton circuit for high voltage DC voltage. **(8)**

OR

2. a) Explain cascaded transformers method for AC voltage generation. **(8)**

b) Explain capacitance potential divider for compensated matching and damped capacitance divider for simple matching. **(8)**

Unit - III

3. a) Explain phenomenon of partial discharges and draw equivalent circuit for a typical partial discharge. **(8)**

b) Explain the working of basic wide-band partial discharge measuring circuit. **(8)**

OR

3. a) Describe the shunt arrangement for measurement of large capacitance. **(8)**

b) Show dissipation factor due to conduction loss alone is inversely proportional to the frequency with regard to dielectric loss. **(8)**

Unit - IV

4. a) Describe the wilson's theory for explanation of charge formation in thunder cloud. **(10)**

b) Describe the typical characteristics of lightning stroke. **(6)**

OR

4. a) A surge of 100 kilovolt travelling in a line of natural impedance 600 ohms arrives at a junction with two lines of impedances 800 ohms and 200 ohms respectively. Find the surge voltages and currents transmitted into each branch line. **(10)**

b) Why overhead line is terminated near a substation by connecting the station equipment to the overhead line through a short length of underground cable. **(6)**

Unit - V

5. Explain Expulsion type lightning arrester working by drawing the neat figure and also explain purpose of surge absorbers and ground wires with figures. **(16)**

OR

5. Describe the statistical methods for insulation coordination by representing overvoltage distribution in the form of probability density function and the insulation breakdown probability by the cumulative distribution function. **(16)**
