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**CODE NO:- Z-289**

**FACULTY OF ENGINEERING & TECHNOLOGY**

**B.E(EE/EEP)Year Examination June– 2015**

**High Voltage Engineering**

**(Revised)**

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- i) Question no.1 & question no.6 are compulsory
- ii) Attempt any two questions from remaining questions of each section
- iii) Assume suitable data wherever necessary.

**SECTION A**

- Q.1 Solve any five 10
- a) Why there is need to control electric stress in voltage equipment?
  - b) List out the various methods for estimation of electric field stresses
  - c) State the application of insulating material in power cables.
  - d) What is difference between insulation and dielectrics?
  - e) What is meta stable atoms
  - f) What is treeing and tracking
  - g) Define the specification of impulse voltage as Indian standard
  - h) What is tesla coil?
- Q.2 a) Explain with neat diagram, the procedure to control electric field intensity in HV equipment. 07  
b) What is “Boundary elements method” .How does it differ from charge simulation method. 08
- Q.3 a) Explain ionization by collision, photoionisation and secondary ionization process in gases. 07  
b) Explain the different mechanism by which breakdown occurs in solid dielectrics in practice 08
- Q.4 a) Describe the construction, principle of operation and application of multistage Marx’s surge generator. 07  
b) Draw a neat diagram of a high current generator and also explain its analysis with wave form. 08
- Q.5 Solve (any three)short notes 15
- a) Difference between pure and commercial liquid insulator
  - b) Townsend’s criteria of break down in gases
  - c) Paschen’s law
  - d) Electrostatic generator

**SECTION B**

- Q.6 Solve any five 10
- a) Write the factors influencing the sparkover voltage sphere gaps
  - b) Define impulse current.
  - c) Draw the circuit diagram of capacitance potential divider
  - d) Define insulation co-ordination
  - e) List out the different theories of charge formation in clouds
  - f) Define creepage distance
  - g) What is loss factor?
  - h) Define surge impedance.

- Q.7 a) Explain the different theories of charge formation in clouds 07  
 b) What are the causes of switching and power frequency over voltages? How are they controlled in power system 08
- Q.8 a) Explain measurement of very high voltage sphere gaps mention merits and demerits of using sphere gaps. 08  
 b) Explain the methods of measurements of high impulse current. 07
- Q.9 a) Explain high voltages schering bridge for the  $\tan\delta$  and capacitance measurement of insulator and Bushing. 08  
 b) Define following terms 07  
 i) Disruptive discharge voltage  
 ii) Withstand voltage  
 iii) 50% flash over voltage  
 iv) 100% flash over voltage  
 v) Impulse voltage  
 vi) Ac test voltage  
 vii) Faraday cage.
- Q.10 Write short notes (any three) 15  
 i) Partial discharge  
 ii) testing of cables  
 iii) Natural causes of over voltage  
 iv) CRO measurement