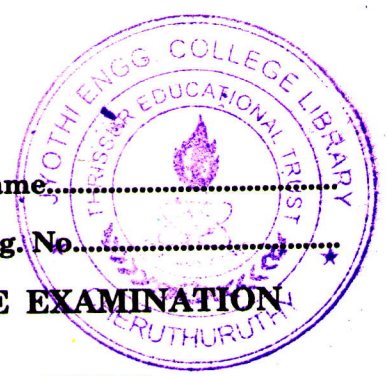


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Name.....

Reg. No.....



**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2006**

EE 2K 506 C/PTEE 2 K 504 C—HIGH VOLTAGE ENGINEERING

Time : Three Hours

Maximum : 100 Marks

- I. (a) What is Paschen's law ?
(b) Define Townsend's first and second ionisation coefficients.
(c) What is meant by a Tesla coil ?
(d) Define the front and tail times of an impulse wave.
(e) How can a sphere gap be used to measure the peak value of a voltage ?
(f) Explain how high impulse currents are measured using Rogowski coil.
(g) What are the different methods employed for lightning protection of overhead lines ?
(h) What is the importance of RIV measurement for EHV power apparatus ?
(8 × 5 = 40 marks)
- II. (a) Explain streamer Theory of breakdown in gases. (7 marks)
(b) Explain the terms "treeing" and "tracking". (7 marks)
- Or*
- (c) What are the factors affecting breakdown strength of solid dielectrics ? (8 marks)
(d) Describe the mechanism of short term breakdown of composite insulation. (7 marks)
- III. (a) Explain the working of a three stage cascade transformer set. (8 marks)
(b) Explain the basic principle of an electrostatic generator. (7 marks)
- Or*
- (c) Explain the function and operation of a trigatron gap. (8 marks)
(d) Discuss the Marx circuit arrangement for multistage impulse generators. (7 marks)
- IV. (a) Discuss the different methods of measuring high D.C. voltage. (8 marks)
(b) Why are capacitor voltage dividers preferred for high A.C. voltage. (7 marks)
- Or*
- (c) Explain how a mixed potential divider is used for impulse voltage measurement. (8 marks)
(d) What are the requirements of an oscillograph for impulse and high frequency measurements in high voltage test circuits ? (7 marks)
- V. (a) How can partial discharges in an insulation system be detected ? (15 marks)
- Or*
- (b) Derive the expression for voltage and current waves on long transmission lines and obtain the surge impedance of the line. (15 marks)
- [4 × 15 = 60 marks]