

Roll No.

23291

**M. Tech. 2nd Semester
(Electrical Power Systems)
Examination – May, 2016**

INSULATION TECHNOLOGY

Paper : MTEPS-205 (ii)

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) Discuss in brief various mechanisms of vacuum breakdown. 10
- (b) Describe the current growth phenomenon in a gas subjected to uniform electric fields. 10
2. (a) Explain the streamer's theory of breakdown in air at atmospheric pressure. 10

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7. Write notes on the following : 10 + 10 = 20

(i) Molecular properties of dielectrics.

(ii) Gaseous discharges.

8. Briefly explain : 7 + 7 + 6 = 20

(i) Synthetic organic insulating materials.

(ii) Suspended particle theory of breakdown.

(iii) Thermal breakdown of solid dielectrics.

(b) How does the internal discharge phenomenon lead to breakdown in solid dielectrics ? 10

(a) What is intrinsic strength of a solid dielectric ? Explain the breakdown in solid dielectrics due to electrons. 10

(b) What are commercial liquid dielectrics and how are they different from pure liquid dielectrics ? 10

Explain the various theories that explain the breakdown in commercial liquid dielectrics. 20

How does the frequency dependence of the orientational polarization in liquids and glassy substances gives rise to dielectric losses in the frequency range between zero and many thousand megacycles ? Explain. 20

i. (a) Explain following terms in insulators : infrared absorption & optical absorption. 10

(b) What are synthetic inorganic insulating materials ? Write their properties with examples. 10