

Roll No.

23291

**M.Tech 2nd Semester (Electrical
Engineering) Specialization :
Electrical Power Systems
Examination–May, 201**

INSULATION TECHNOLOGY

Paper MTEPS-205(ii)

Time : 3 hours

Max. 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 the examination.

Note : Attempt any **five** questions.

1. Distinguish between three groups of solids with respect to their dielectric behaviour.

20

2. (a) For a polar liquid, make a qualitative sketch of the real and imaginary parts of the dielectric constants as a function of

the temperature at a given radio frequency. 10

(b) Prove that the absorption of energy in materials is proportional to the imaginary part of the complex dielectric constant.

10

3. (a) Explain the Townsend's criterion for spark breakdown. 10

(b) Explain various ionization processes in brief. 10

4. Differentiate between breakdown mechanisms involving solid dielectric breakdowns. 20

5. Explain various breakdown theories involved in commercial liquid dielectrics.

20

6. (a) What are insulation materials ? Differentiate between natural organic and synthetic organic insulating materials, give examples. 10

- (b) Discuss the properties of composite dielectrics. 10
7. (a) Explain the Townsend's criterion for a spark. 10
- (b) Explain the different theories of charge formation in clouds. 10
8. Write technical notes on :
- (i) Breakdown in vacuum insulation 10
- (ii) Suspended particle theory in liquid dielectrics. 10
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