

Roll No. ....

**23291**

**M. Tech. 2nd Sem. (Electrical Power  
Systems) Examination – May, 2018**

**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) What are the requirements of insulating materials ?  
(b) Explain the dependency of permittivity on humidity and voltage. Use mathematical interpretation for the same.
2. (a) Explain the behavior of dielectrics under alternating fields. Derive mathematical expression for the same.  
(b) Explain the concept of permittivity of mixtures.

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3. (a) What is gaseous discharge ? How electric field is instrumental in such processes ?  
(b) State and explain Streamer theory with the help of practical case study.
4. (a) Explain how gaseous discharge shows behavior in vacuum ?  
(b) Explain the concept of breakdown in vacuum insulation.
5. (a) Explain Thermal breakdown of solid dielectrics.  
(b) What are electronegative gases and their influence on gaseous discharge ?
6. (a) What is cavitations breakdown of liquid dielectrics ? Why it is used ?  
(b) State and explain suspended particle theory of breakdown of liquid dielectrics.
7. (a) What are organic insulating materials ? Give examples and applications of the same.  
(b) Compare natural and synthetic organic insulating materials.
8. Write short notes on :  
(a) Townsend's theory  
(b) Molecular properties of dielectrics.