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**M.Tech. 2nd Semester Electrical Power System
Examination, May-2017**

INSULATION TECHNOLOGY

Paper-MTEPS-205(ii)

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt five questions.

1. (a) How vacuum breakdown is different from normal breakdown in gases ? 10
- (b) Define Townsend's first and second ionization coefficients. How is the condition for breakdown obtained in a Townsend discharge. 10
2. (a) What are electronegative gases ? Why is the breakdown strength higher in these gases compared to that in other gases. 10
- (b) What is thermal breakdown in solid dielectrics ? Why is it more significant than other mechanisms ? 10
3. (a) What is a composite dielectric and what are its properties ? 10
- (b) What are the factors affecting the conduction in pure liquid dielectrics and in commercial liquid dielectrics ? 10

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4. Explain the various theories that explain breakdown in commercial liquid dielectrics. 20
5. How are the complex dielectric constant of non-dipolar solids is determined by the complex polarizabilities ? Explain. 20
6. (a) Explain following terms in insulators :-
Complex dielectric constant and colour centre. 10
- (b) What are natural inorganic insulating materials ?
Write their properties with examples. 10
7. Write notes on :-
(i) Synthetic organic insulating materials
(ii) Molecular properties of dielectrics. 10+10
8. Briefly explain :-
(i) Electromechanical breakdown
(ii) Suspended particle theory of breakdown
(iii) Gaseous discharge in non-uniform fields. 7+7+6

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