Total No. of Questions : 4]

SEAT No. :

PE-534

[Total No. of Pages : 2

[6578]-7

S.E. (Electrical Engineering) (Insem.)

MATERIAL SCIENCE

(2019 Pattern) (Semester - III) (203142)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Use of non-programmable scientific calculator is allowed.***
5) ***Assume suitable data, if necessary.***

Q1) a) Derive Clausius Mossotti Equation from the first principle applied to dielectric materials and state Debye's Equation. **[7]**

b) State following terms with their units : **[8]**

i) Dielectric Constant

ii) Electric dipole moment

iii) Polarization

iv) Polarizibility

OR

Q2) a) Define dielectric loss and loss tangent and explain negative tan delta concept. **[7]**

b) Explain with diagrams Piezoelectric effect and Pyroelectric effect. Give two names of materials in which these effects are observed. **[8]**

Q3) a) State and explain the factors affecting breakdown strength of Solid Insulating Materials. **[7]**

b) Define ionization and explain Townsend's ionization theory for gaseous dielectric materials. **[8]**

P.T.O.

OR

Q4) a) Explain how dielectric loss tangent (tan δ) can measure by using Schering Bridge as per IS 13585-1994. **[7]**

b) Explain the test of measurement of dielectric strength of gaseous insulating materials with objectives, equipments required, circuit diagram, and observation table. **[8]**

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