QPC: RN22PHD392 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (Second Semester) Examinations, November – 2023

WPPEPH2024 - Dielectric & Impedance Spectroscopy and Application

(Physics)

Time: 3 hrs Maximum: 70 Marks

The figures in the right hand margin indicate marks.

Answer ANY FIVE Questions **(14 x 5 = 70 Marks)**

		Marks
1.a.	Write short notes on Faradic impedance.	4
b.	What do you mean by phase transition? State 1st and 2nd order phase transition with a special reference to Landu 2nd order phase transition.	10
2.a.	Discuss between dielectric relaxation and ionic relaxation.	10
b.	Define space charge polarization and ionic relaxation.	4
3.a.	Write the theory details of Van-vleck paramagnetism.	10
b.	Write Curie Weiss law and Plot the inverse of susceptibility and temperature graph for paramagnetic material.	4
4.a.	Explain quantum theory of paramagnetic materials.	10
b.	Write Curie Weiss law and give examples of paramagnetic materials.	4
5.a.	Mention the properties of Piezoelectric materials with examples.	4
b.	Discuss different methods for the measurement of dielectric permittivity and impedance.	10
6.a.	Make a comparison between polymer and composite dielectrics.	4
b.	Distinguish between multiferroic and Nano-multiferroic with their applications.	10
7 a.	Explain the synthesis of materials by Solid state route and chemical route.	10
b.	Write the advantages of chemical route.	4
8 a.	Why a Perovskite material is considered on a suitable candidate for photovoltaic application? Explain in detail.	10
b.	Write the structure and properties of one ferroelectric perovskite material.	4

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