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GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (Second Semester) Examinations, April – 2024

PPEPH2024 - 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. Make a comparison between Electronic polarization and ionic polarization.	7
b. Define space charge polarization and ionic relaxation	7
2.a. State different magnetic properties and mention the types of magnetic materials with examples.	8
b. Explain quantum theory of paramagnetic materials.	6
3.a. Define ferromagnetism. Derive Curie-Weiss law in ferromagnetic materials.	8
b. Write the theory details of Van-vleck Para magnetism.	6
4.a. Discuss different methods for the measurement of dielectric permittivity and impedance.	8
b. Differentiate between ferroelectric and multiferroelectric materials and mention their applications.	6
5.a. Write short notes on linear & nonlinear dielectrics.	6
b. Discuss the transport mechanism in different types of dielectric materials.	8
6.a. Explain the synthesis of materials by Solid state route and chemical route.	8
b. Discuss in detail about the device application of ferroelectric ceramics	6
7.a. Mention the Ferroelectric Thin Films and Electro-optic Applications	7
b. Write short notes on Transducer and Actuator.	7
8.a. What is Memories device? Write different memory devices with their applications.	7
b. Why a Perovskite material is considered on a suitable candidate for photovoltaic application, explain.	7

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