QPC: RN23PHD414 AY 23 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (First Semester) Examinations, January – 2024

23SPPEPH1011/PPEPH1021 - Advanced Experimental Technique for Materials

(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.	Explain hooping mechanism in composite materials with suitable example.	7
b.	Discuss about the different types of bonding in solids and their characteristics.	7
2.a.	Explain different types of polarization mechanism.	7
b.	What are grain boundaries and how they affect electrical conductivity?	7
3.a.	What do you mean by Phase transition in a dielectric?	7
b.	Discuss about the frequency dependence dielectric measurement.	7
4.a.	Define complex refractive index. Discuss its importance in dielectric materials.	7
b.	Discuss different type of emission spectroscopy.	7
5.a.	Explain about the polar and non-polar dielectric materials with examples.	7
b.	What is Spectroscopy and its importance? Discuss about the atomic absorption.	7
6.a.	What do you mean by lattice absorption? Discuss light absorption phenomena in different materials.	7
b.	Write different Spectroscopic techniques used for material characterization.	7
7.a.	What do you mean by Phase transition in a dielectric? Discuss with necessary theory.	7
b.	Discuss on stokes and anti-stokes lines in Raman spectra and its importance.	7
8.a.	Briefly discuss about the XRD-Technique for powder sample and its result.	7
b.	Discuss the various results obtained from AFM, SEM and TEM during characterisation of materials	7

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