Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Second Semester

Electrical and Electronics Engineering

PH3202/ UPHT24203 - Physics for Electrical Engineering

Regulations – 2021/2024

Duration: 3 Hrs ***Maximum: 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	What is relative Permittivity?	L1	1	2
2.	Compare Piezo and Pyroelectric Crystals.	L2	1	2
3.	Define Mean Free Path.	L1	2	2
4.	The thermal and electrical conductivities of Copper at 20°C is 390 $Wm^{-1}K^{-1}$ and $5.87x10^7$ Ω^{-1} m^{-1} respectively. Calculate Lorentz number.	L2	2	2
5.	Recall the concept of hole in semiconductor.	L2	3	2
6.	What is drift current?	L1	3	2
7.	How does the classification of Optical Materials?	L1	4	2
8.	How form excitonic state?	L2	4	2
9.	What is tunneling?	L1	5	2
10.	List any two the properties of Carbon Nano Tubes.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Explain the various types of polarization mechanisms involved in dielectric material.	L2	1	16
			Or			
	b		Explain about piezo-electricity, ferroelectricity and pyroelectricity in detail.	L2	1	16
12.	a		Derive an expression for electrical and thermal conductivities of a metal.	L2	2	16
			Or			
	b	i	Explain the classifications of magnetic materials.	L2	2	8
		ii	Explain about Gaint magneto Resistance Devices.	L2	2	8

13.	a		Derive an expression for density of electrons in the conduction band in an intrinsic semiconductor.	L2	3	16
			Or			
	b	i	What is Hall effect? Explain the experimental set up and find Hall voltage.	L2	3	10
		ii	Derive the expression for Hall coefficient in n-type semiconductor.	L2	3	6
14.	a		Explain the theory of generation and recombination of charge carriers.	L2	4	16
			Or			
	b		Explain the principle, construction and working of solar cell. Mention its merits and demerits.	L2	4	16
15.	a		Explain Quantum confinement and Quantum structures in nanomaterials.	L2	5	16
			Or			
	b		Describe construction and working of Single Electron Transistor. Mention its merits and limitations.	L2	5	16