

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

*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)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Classify the types of polarization.	L2	1	2
2.	Define ferroelectricity.	L1	1	2
3.	What is meant by density of energy states?	L1	2	2
4.	What are GMR devices?	L1	2	2
5.	Compare direct and indirect bandgap semiconductors.	L2	3	2
6.	Define Hall devices.	L1	3	2
7.	State the optical processes in quantum wells.	L2	4	2
8.	What are Plasmonics?	L1	4	2
9.	Define quantum tunneling effect.	L1	5	2
10.	How does a quantum well laser work?	L2	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Explain Local field and derive an expression for Clausius-Mossotti equation.	L2	1	16
	Or			
	b i Describe about Insulation breakdown in gases, liquids and solids.	L2	1	8
	ii Explain Piezoelectric and Pyroelectric crystals.	L2	1	8
12.	a Derive an expression for electrical and thermal conductivity of metals.	L3	2	16
	Or			
	b Derive an expression for density of states in a metal.	L3	2	16
13.	a Derive an expression for carrier concentration of charge carriers in an intrinsic semiconductor.	L3	3	16
	Or			
	b Derive the equation of Hall coefficient in n type and p type semiconductors and also mention its applications.	L3	3	16

14.	a	Explain the classification of optical materials and different optical processes in semiconductors.	L2	4	16
		Or			
	b	Describe the principle, construction and working of Solar cell. Also mention its merits and demerits.	L2	4	16
15.	a	Describe the construction and working of single electron transistor. Mention its merits and limitations.	L2	5	16
		Or			
	b	Explain the properties and applications of carbon nanotubes in detail.	L2	5	16
