

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026***First Semester**Common to all Branches***PH3151 / UPHT24103- ENGINEERING PHYSICS***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>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	State parallel axis theorem.	L1	1	2
2.	Define gyroscope.	L1	1	2
3.	Give any four properties of electromagnetic waves.	L1	2	2
4.	What is meant by radiation pressure?	L1	2	2
5.	State Doppler effect.	L1	3	2
6.	Relate the applications of laser in various fields.	L2	3	2
7.	Recall the matter waves.	L1	4	2
8.	write the physical significance of wave function.	L1	4	2
9.	State the principle of resonant diode.	L1	5	2
10.	Give a note on origin of energy bands.	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 Multi-particle dynamics and center of mass of a system of particles. Derive the expression for it. Or	L2	1	16
	b Describe with relevant theory, how the moment of inertia of the disc of the torsional pendulum is experimentally determined and also indicate how the rigidity modulus of the suspension wire is found.	L2	1	16
12.	a Derive Maxwell's equations in differential and integral form. Or	L1	2	16
	b Discuss the reflection and transmission of electromagnetic waves from non-conducting medium.	L1	2	16
13.	a i Explain Simple harmonic motion and occurrence of resonance.	L2	3	4
	ii Explain the formation of interference fringes in an air- wedge shaped film. How is the thickness of the wire determined by this method? Or	L2	3	12
	b Derive the Einstein relations for atomic transitions and use them to obtain the expressions for spontaneous and stimulated emission.	L2	3	16

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| 14. | a | Describe the theory of Compton effect and derive an expression for Compton shift and also explain briefly about its experimental verification. | L2 | 4 | 16 |
| | | Or | | | |
| | b | Derive the Eigen functions and its corresponding Eigen values for a particle in an infinite potential one dimensional box and find the normalization of wave function to study the behavior inside the potential well. | L2 | 4 | 16 |
| 15. | a | Explain the concept of Barrier penetration and Quantum tunneling in detail with neat sketch. | L2 | 5 | 16 |
| | | Or | | | |
| | b | Describe Bloch theorem for a particle in periodic finite potential well and also explain Kronig-Penny model. | L2 | 5 | 16 |
