Name. _____	Printed Pages:01
Student Admn. No.: _____	

School of Basic Sciences
Summer Term Examination – July - August 2024
[Programme: B.Tech.] [Semester: I / II][Batch: All]

Course Title: ENGINEERING PHYSICS	Max Marks: 100
Course Code: BPH101/PHYS1001	Time: 3 Hrs.

Instructions:	1. All questions are compulsory.
	2. Assume missing data suitably, if any.

		K Level	COs	Marks
SECTION-A (15 Marks) 5 Marks each				
1.	State de-Broglie hypothesis . Calculate the de Broglie wavelength associated with an electron accelerated through potential difference of 100 Volt.	K1	CO1	5
2.	Explain interference of light waves .Draw the intensity distribution curve for interference of light.	K2	CO1	5
3.	Compare the basic properties of diamagnetic and paramagnetic substances.	K2	CO1	5
SECTION-B(40 Marks) 10 Marks each				
4.	State Heisenberg's uncertainty principle. Show that electrons cannot exist inside the nucleus using this principle.	K2	CO1	10
5.	Draw the schematic diagram of Newton rings experiment. In Newton's rings experiment the diameter of 4th and 12th bright rings are 0.400 cm and 0.700 cm respectively. Calculate the diameter of 20th bright ring.	K2	CO1	10
6.	Discuss various Einstein coefficients for the production of laser. Deduce relation between Einstein coefficients.	K3	CO2	10
7.	Describe modified Ampere's law. Explain the concept of Maxwell displacement current.	K3	CO2	10
SECTION-C (45 Marks) 15 Marks each				
8.	Derive expressions for the energy eigen values and eigen functions of a particle confined in a one dimensional potential box with infinitely high boundaries, using the Schrodinger wave equation.	K4	CO3	15
9.	Write the Maxwell's equations in differential and integral forms. Prove that the wave equation for electric field $\vec{E}$ is given by $\nabla^2 \vec{E} = \mu_0 \varepsilon_0 \frac{\partial^2 \vec{E}}{\partial t^2}$	K4	CO3	15
10	Describe the magnetic moment of an atom. Obtain the expression for orbital angular moment and deduce the expression of Bohr magneton.	K3	CO4	15