

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

I B.Tech I Semester Supplementary Examinations, July -2024

**ENGINEERING PHYSICS
(Common to CSE, CSE(AIML), CSE(AI) and CSE(DS))**

Time: 3 hours

Max. Marks: 70

Note:

- i. Question 1 shall contain 10 compulsory short answer questions(2 questions from each unit) for a total of 20 marks such that each question carries 2 marks.
- ii. In each of the questions from 2 to the last question, there shall be either/or type questions of 10 marks each. Student shall answer any one of them.

Q. No.	Questions	BTL	CO	Marks
1.	a) Write short note on Interference of light.	K1	CO1	2M
	b) What is Resolving Power?	K1	CO1	2M
	c) Sketch the following planes of the cubic unit cell of (111) and (101)	K2	CO2	2M
	d) Define Miller indices.	K1	CO2	2M
	e) Explain Permeability and Magnetic field intensity.	K2	CO3	2M
	f) Discuss Dielectric constant and Dielectric loss.	K1	CO3	2M
	g) Explain Dual nature of light.	K2	CO4	2M
	h) Discuss Drift velocity.	K1	CO4	2M
	i) Define Hall effect.	K1	CO5	2M
	j) Write the difference between P-type and N-type semiconductor.	K2	CO5	2M
UNIT-I				
2.	a) Explain Newton's rings experiment with necessary theory and derive expression for wavelength.	K2	CO1	6M
	b) What are the necessary conditions for obtaining Interference fringes.	K1	CO1	4M
OR				
3.	a) Describe the Fraunhofer diffraction pattern obtain due to Single slit.	K2	CO1	6M
	b) Differentiate Fresnel's and Fraunhofer diffraction.	K2	CO1	4M
UNIT-II				
4.	a) Describe Seven Crystal system with diagrams.	K2	CO2	6M

	b)	Find the Packing fraction for FCC.	K3	CO2	4M
OR					
5.	a)	Briefly explain Powder method.	K2	CO2	5M
	b)	Derive Bragg's law of X-ray diffraction.	K3	CO2	5M
UNIT-III					
6.	a)	Derive Clausius Mossotti Equation.	K3	CO3	5M
	b)	Explain the Electronic polarizability in terms radius of atom.	K2	CO3	5M
OR					
7.	a)	Discuss Hard and Soft magnetic materials.	K2	CO3	5M
	b)	Explain Classification of magnetic materials on the basis of electron spin.	K2	CO3	5M
UNIT-IV					
8.	a)	Show that the energy values of a particle in a 1-D potential box of infinite height and width 'a' are quantized.	K2	CO4	7M
	b)	What is Physical significance of wave function.	K1	CO4	3M
OR					
9.	a)	What are the drawbacks of classical free electron theory.	K1	CO4	4M
	b)	Derive an expression for electrical conductivity of metals based on Quantum theory.	K4	CO4	6M
UNIT-V					
10.	a)	Explain the concept of effective mass of electron.	K2	CO5	5M
	b)	Give Classification of solids based on band theory of solids.	K2	CO5	5M
OR					
11.	a)	Explain Fermi level of Intrinsic semiconductor.	K2	CO5	5M
	b)	Discuss Drift and Diffusion current.	K2	CO5	5M