Question Paper Code: R22A11HS02

R22

ANURAG Engineering College

(An Autonomous Institution)

I B.Tech I Semester Regular/Supplementary Examinations, January-2025

APPLIED PHYSICS

(COMMON TO EEE, ECE & IT)

Time: 3 Hours **Max. Marks: 60**

Section – A (Short Answer type questions) (10 Marks)

Answer All Questions

		Course Outcome	B.T Level	Marks
1.	Define the polarisation of light.	CO1	L1	1M
2.	What is diffraction?	CO1	L1	1M
3.	State De Broglie's hypothesis.	CO2	L2	1M
4.	Mention one dimensional normalisation condition.	CO2	L1	1M
5.	Distinguish p-type and n-type semiconductors.	CO3	L2	1M
6.	What is the effective mass of an electron?	CO3	L1	1M
7.	What is quantum confinement?	CO4	L1	1M
8.	Classify nanomaterials and bulk materials.	CO4	L2	1M
9.	Define spontaneous emission.	CO5	L1	1M
10.	Write any two applications of optical fibres.	CO5	L2	1M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	State Interference of light. Describe Newton's rings experiment to determine the wavelength of a given monochromatic light.	CO1	L2	10M
	OR			
B)	Classify Fraunhofer diffraction and Fresnel diffraction.	CO1	L3	10M
12. A)	Demonstrate that the energy of a particle in a 1-dimensional box is quantized using the Schrödinger wave equation.	CO2	L2	10M
	OR			
B)	Discuss the Kronig-Penney model with a neat diagram to support your explanation.	CO2	L2	10M
13. A)	Explain formation and V-I characteristics of P-N junction diode with a neat diagram.	CO3	L2	10M
	OR			
B)	Explain the working principle, construction, and V-I characteristics of an LED.	CO3	L2	10M
14. A)	Describe the synthesis of nanomaterials using the ball milling method with an appropriate diagram.	CO4	L3	10M
	OR			
B)	Explain the working of scanning electron microscope (SEM) with neat sketch.	CO4	L2	10M
15. A)	Explain the construction and working of the He-Ne laser with a neat sketch.	CO5	L3	10M
	OR			
B)	Classify different types of optical fibres and write any four applications of optical fibres.	CO5	L2	10M