Question Paper Code: R22A12HS03

R22

ANURAG Engineering College

(An Autonomous Institution)

I B.Tech II Semester Supplementary Examinations, January – 2025

APPLIED PHYSICS

(COMMON TO CSE & AIML)

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

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

Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What is constructive interference?	CO1	L1	1M
2.	State Malus law.	CO1	L1	1M
3.	What is black body radiation?	CO2	L2	1M
4.	Explain effective mass of electron.	CO2	L1	1M
5.	Describe npn transistor.	CO3	L1	1M
6.	What is a photovoltaic cell?	CO3	L1	1M
7.	What are nanomaterials?	CO4	L3	1M
8.	Write any two applications of nanomaterials.	CO4	L2	1M
9.	How is population inversion achieved in the laser working principle?	CO5	L1	1M
10.	Explain the construction of fibre with a suitable diagram.	CO5	L2	1M

Section B (Essay Questions)

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

11. A)	Classify Fraunhofer diffraction and Fresnel diffraction.	CO1	L2	10M
	OR			
B)	Explain the phenomenon of light interference and demonstrate Newton's rings experiment procedure to determine the radius of curvature of a plano-convex lens.	CO1	L3	10M
12. A)	Derive the Schrodinger wave equation and mention its significance.	CO2	L2	10M
	OR			
B)	Explain the Kronig-Penny model with a neat diagram.	CO2	L2	10M
13. A)	What is the significance of the Hall effect? Explain the Hall experiment with a suitable diagram and mention four of its applications.	CO3	L1&L2	10M
	OR			
B)	Explain the formation of the pn-junction diode with an energy level diagram and explain its V-I characteristics.	CO3	L2	10M
14. A)	Why do nanomaterials exhibit different properties?	CO4	L3	10M
	OR			
B)	Explain the synthesis of nanomaterials by using the sol-gel method.	CO4	L2	10M
15. A)	Explain the construction and working of semiconductor LASER.	CO5	L2	10M
	OR			
B)	What is the acceptance angle and numerical aperture of an optical fibre? If a light is being launched from air to an optical fibre, derive an expression for the acceptance angle of an optical fibre having a refractive index of core n1 and a refractive index of the cladding is n2.	CO5	L2	10M