Question Paper Code: R18A11HS03

R18

ANURAG Engineering College

(An Autonomous Institution)

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

APPLIED PHYSICS

(COMMON TO ECE & CSE)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What is coherence? Write different types of coherence?	CO1	L1	2M
2.	Explain polarization by reflection?	CO1	L2	3M
3.	What is Total Internal Reflection? Explain	CO2	L1	2M
4.	Explain the important characteristics of LASERs?	CO2	L2	3M
5.	What are the draw backs of Classical Free Electron theory?	CO3	L1	2M
6.	Explain about Heisenberg's uncertainty principle?	CO3	L2	3M
7.	Explain about E-K diagram?	CO4	L2	2M
8.	Write a short note on temperature dependence of Fermi level?	CO4	L1	3M
9.	What are direct and indirect band gap semiconductors?	CO5	L1	2M
10.	What are the different applications of LEDs?	CO5	L1	3M

Section B (Essay Questions)

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

11. A)	Illustrate Newton's rings experiment and obtain an expression for dark ring diameter in the reflected light.	CO1	L3	10M
	OR			
B)	Demonstrate Fraunhofer diffraction due to single slit for obtaining the condition for principal maximum and minimum	CO1	L3	10M
12. A)	Build an expression for acceptance angle and Numerical Aperture for an optical fibre cable	CO2	L3	10M
	OR			
B)	Construct Ruby Laser system with a neat sketch and explain its working using energy level diagram	CO2	L3	10M
13. A)	Construct an expression for density of states and obtain an expression for carrier concentration in a metal by using Fermi-Dirac distribution function	CO3	L3	10M
	OR			
B)	Analyze and apply Schrodinger time independent wave equation for obtaining eigen values and eigen functions for a particle in 1-D potential well	CO3	L3	10M
14. A)	Analyze the electron motion in a periodic potential by using Kronig-Penny model	CO4	L3	10M
	OR			
B)	Calculate the carrier concentration of electrons in the case of Intrinsic semiconductor by using Fermi-Dirac distribution function	CO4	L3	10M
15. A)	With the help of neat diagram explain the construction and working of a Solar Cell	CO5	L3	10M
	OR			
B)	Investigate the semiconductor diode Laser device structure and its characteristics.	CO5	L3	10M