

**ANURAG Engineering College**

(An Autonomous Institution)

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

**APPLIED PHYSICS****(COMMON TO ECE & CSE)****Time: 3 Hours****Max. Marks: 75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
1. What is Huygen's principle?	CO1	L1	2M
2. What are the differences between Fraunhofer and Fresnel diffraction?	CO1	L1	3M
3. Explain the working principle of optical fiber.	CO2	L2	2M
4. What are the important components of laser?	CO2	L1	3M
5. Explain the drawbacks of classical free electron theory.	CO3	L2	2M
6. What is deBroglie hypothesis? Mention the few properties of matter waves.	CO3	L1	3M
7. Compare between conductors, semiconductors and insulators.	CO4	L2	2M
8. Write a short note on Extrinsic semiconductors	CO4	L2	3M
9. Explain Direct and Indirect band gap semiconductors.	CO5	L2	2M
10. What are the applications of Photodiodes?	CO5	L1	3M

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

11. A) Explain in brief Newton's rings experiment and obtain an expression for radius of curvature of a given Plano convex lens.	CO1	L3	10M
<b>OR</b>			
B) Discuss in detail Fraunhofer diffraction at single slit.	CO1	L3	10M
12. A) Derive the equation for numerical aperture and acceptance angle with neat diagram	CO2	L3	10M
<b>OR</b>			
B) Explain the construction and working principle of He-Ne laser.	CO2	L2	10M
13. A) Deduct an expression for density of energy states	CO3	L3	10M
<b>OR</b>			
B) Discuss the experimental evidence for the existence of matter waves by using Davisson and Germer experiment.	CO3	L3	10M
14. A) Discuss the salient features of Kronig-penney model of a crystal. Discuss the origin of energy band structure in solids.	CO4	L3	10M
<b>OR</b>			
B) Determine the Expression for carrier concentration in Intrinsic semiconductors by applying the Fermi Dirac function.	CO4	L3	10M
15. A) Explain the formation of p-n junction diode with the characteristic curves.	CO5	L2	10M
<b>OR</b>			
B) With neat diagram explain the construction and working of LED. Mention few applications.	CO5	L3	10M