

**ANURAG Engineering College**

(An Autonomous Institution)

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

**APPLIED PHYSICS**

(COMMON TO CIVIL, EEE, ECE &amp; IT)

**Time: 3 Hours****Max. Marks: 60****Section – A (Short Answer type questions)****(10 X 1M = 10M)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Why are colors observed on a soap bubble?	CO1	L1	1M
2. What are some examples of polarized light in daily life?	CO1	L1	1M
3. List out the differences between matter waves and electromagnetic waves.	CO2	L1	1M
4. What is the physical significance of wave function?	CO2	L1	1M
5. What is electroluminescence explain with example?	CO3	L1	1M
6. Compare the functioning of a photodiode and a solar cell.	CO3	L2	1M
7. Why nanoparticles have larger surface area volume ratios than normal size particles?	CO4	L1	1M
8. What are the types of bottom-up approach in nanotechnology?	CO4	L1	1M
9. Why does a two-level laser system not exist? Explain.	CO5	L2	1M
10. How does numerical aperture depend on the refractive index of core and cladding?	CO5	L1	1M

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

11. A) i) What are Newton's rings? Explain why the rings get closer and closer when increase in the order of the fringes.	CO1	L3	8M
ii) Apply the Newton's ring method; the diameter of the 5 <sup>th</sup> dark ring is reduced to half of its value after introducing a liquid below the convex surface. Calculate the refractive index of the liquid.			2M
<b>OR</b>			
B) i) Distinguish between Fresnel and Fraunhofer diffraction	CO1	L3	4M
ii) Explain the working of Nicol's Prism and show how it can be used as polarizer and analyzer.			6M
12. A) Construct the Schrodinger time-independent wave equation.	CO2	L3	10M
<b>OR</b>			
B) What do you mean by band gap classify solids on the basis of band gap?	CO2	L3	10M
13. A) i) Distinguish between direct and indirect band gap semiconductors?	CO3	L3	10M
ii) An LED is constructed from a pn junction based on a certain semi-conducting material whose energy gap is 1.9 eV. Then solve wavelength of the emitted light? (Given that $h = 6.62607015 \times 10^{-34} \text{ m}^2 \text{ kg} / \text{s}$ , $c = 3 \times 10^8 \text{ m/s}$ .)			
<b>OR</b>			
B) Develop the expressions for Hall voltage and Hall coefficient for a semiconductor.	CO3	L3	10M

14. A) Explain the principle, construction and working of a Scanning Electron Microscope with neat sketch. CO4 L3 10M
- OR**
- B) What is Chemical Vapour Deposition (CVD)? Explain the principle and construction of CVD process. CO4 L3 10M
15. A) Analyze the operation of a four-level Nd: YAG laser system using a neat energy level diagram. CO5 L3 10M
- OR**
- B) List out the difference between step index and graded index optical fiber? CO5 L3 10M