

Code No.: AP202BS

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**CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS**

I-B.TECH-II-Semester End Examinations (Supply) -February- 2024

APPLIED PHYSICS

(Common for CSM, ECE, MECH, AI&DS)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) Mention any two properties of matter waves. [2M]
- b) What are the draw backs of classical free electron theory? [2M]
- c) What is Intrinsic semiconductor? [2M]
- d) Write any two applications of solar cells. [2M]
- e) Define dielectric constant. [2M]
- f) What is Bohr magneton. [2M]
- g) Abbreviate LASER and Write two applications of laser. [2M]
- h) Draw the diagram of an optical fiber. [2M]
- i) What is meant by Nanoscale. [2M]
- j) Mention any two applications of nanotechnology. [2M]

PART-B

(50 Marks)

2. Derive the expression for Schrodinger's time independent wave equation and write the physical significance of wave function used in the above equation. [10M]
- OR**
3. Discuss origin of energy bands formation in solids and explain the classification of crystalline solids. [10M]
4. What is Hall effect? Derive an expression for Hall voltage and mention its applications. [10M]
- OR**
5. Explain the construction, working and applications of LED. [10M]
6. What is internal field? Derive the expression for Clausius - Mossotti equation. [10M]
- OR**
7. Explain the classification of magnetic materials qualitatively. [10M]
8. Discuss the construction and working of He-Ne laser. [10M]
- OR**
9. Explain the classification of optical fibers based on refractive index profile. [10M]
10. Explain quantum confinement. Describe the synthesis of nanomaterial by Sol-gel method. [10M]
- OR**
11. Explain the principle of TEM and explain its advantages. [10M]
