

Code No.: R22AP202BS

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H.T.No.

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CMR ENGINEERING COLLEGE: : HYDERABAD

UGC AUTONOMOUS

I-B.TECH-II-Semester End Examinations (Regular) - September- 2023

APPLIED PHYSICS

(Common for ECE, CSE, IT)

[Time: 3 Hours]

[Max. Marks: 60]

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

Part A is compulsory which carries 10 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

(10 Marks)

1. a) What is black body? [1M]
- b) Define Symmetry in solids. [1M]
- c) What are the majority and minority charge carriers in the P-type semiconductors. [1M]
- d) List out applications of BJT. [1M]
- e) Define Magnetic Susceptibility. [1M]
- f) Distinguish between dielectric and Insulators. [1M]
- g) What is nanoscale. [1M]
- h) Write any two methods for Bottom-up approach. [1M]
- i) Abbreviate LASER. [1M]
- j) Explain the phenomenon of total internal reflection. [1M]

PART-B

(50 Marks)

2. Explain the application of Schrodinger time independent wave equation in the case of a particle in a 1-dimensional (1-D) box and show that the energies of the particles are quantized. [10M]

OR

3. Describe the behavior of electron under periodic potential using Kronig- Penny model. [10M]

4. Explain the construction and working mechanism of PIN diode. [10M]

OR

5. Define Hall effect and derive the expression for Hall coefficient. [10M]

6. What do you mean by hysteresis in Ferro magnetic materials and explain the hysteresis curve on the basis of domain theory. [10M]

OR

- 7.a) Discuss about the Ferroelectric materials. [7M]
- b) Write a note on memory devices. [3M]

8. Describe the method of Physical vapor deposition (PVD) in Nanomaterials preparation. [10M]

OR

9. Describe the synthesis of Nanomaterials using sol-gel method. [10M]

10. Describe the construction and working principle of Ruby laser with neat diagram. [10M]

OR

11. Derive an expression for acceptance angle and numerical aperture of an optical fiber. [10M]
