Code No.: AP202BS | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–II–Semester End Examinations (Supply) -January- 2025
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)	What is de-Broglie Hypothesis?	[2M]
b)	What is band gap between valence band and conduction band in case of insulators?	[2M]
c)	What is extrinsic semi conductor?	[2M]
d)	Write any two advantages of LED.	[2M]
e)	What is meant by dielectric polarization?	[2M]
f)	What are the properties of ferro magnetic materials?	[2M]
g)	Write any two applications of LASERS in medical field.	[2M]
h)	What is Numerical aperture?	[2M]
i)	What is Nano technology?	[2M]
j)	What are the applications of SEM?	[2M]

PART-B **(50 Marks)**

2.	Show that the energies of a particle in a potential box are quantized.	[10M]
	OR	
3.	Discuss Kronig-Penney model of a crystal in a periodic potential field.	[10M]
4.	Explain Direct and indirect band gap semi conductors.	[10M]
	OR	
5.	Discuss formation of PN junction diode and also explain I-V characteristics of PN junction diode.	[10M]
6.	Derive an expression for internal field seen by an atom in an infinite array of atoms subjected to an external field.	[10M]
	OR	
7.	What is Hysteresis? Explain Hysteresis nature in a ferro magnetic material.	[10M]
8.	Explain the construction and working of Ruby laser.	[10M]
	OR	
9.	Derive an expression for acceptance angle in an optical fiber.	[10M]
10.	Describe the process of synthesis of nano materials using chemical vapour deposition method.	[10M]
	OR	
11.	Explain how X-ray diffraction (XRD) can be used to characterize the nano particles.	[10M]

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