

## CMR TECHNICAL CAMPUS

## UGC AUTONOMOUS

B. Tech. I Sem Regular &amp; Supply End Examinations, January-2024

## Applied Physics

Common to ECE, CSM, CSD, AIML, CSC

Time: 3 Hours

Max. Marks: 60

## Note

- i. This Question paper contains Part- A and Part- B.
- ii. All the Questions in Part A are to be answered compulsorily.
- iii. All Questions from Part B are to be answered with internal choice among them.

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## PART-A

10 X 01 = 10 Marks

	Marks	CO	BL
1. a Define Photoelectric effect?	1	CO1	L1
b Define Heisenberg's uncertainty Principle?	1	CO1	L1
c Classify types of Semiconductors?	1	CO2	L1
d Write the applications of LED.	1	CO2	L1
e Define the term Dielectric constant?	1	CO3	L1
f Define Magnetic moment?	1	CO3	L1
g Explain Surface to Volume ratio?	1	CO4	L2
h Write applications of nanomaterials.	1	CO4	L1
i What is population Inversion?	1	CO5	L1
j Define the term Attenuation?	1	CO5	L1

## PART- B

5 X 10 = 50 Marks

	Marks	CO	BL
2. a Explain how Davisson–Germer's experiment verified the existence of matter waves?	7	CO1	L2
b What is de Broglie hypothesis and deduce an expression for de Broglie wavelength in terms of kinetic energy?	3	CO1	L2
OR			
3 a Show that the energies of a particle in a potential box are quantized?	8	CO1	L2
b Calculate the first two permitted levels of an electron, in a one-dimensional box of $1 \text{ \AA}$ .	2	CO1	L3
4 a Obtain an expression for carrier concentration of electrons in	10	CO2	L2

an intrinsic semiconductor.

OR

- 5 a Explain the V-I characteristics of Zener diode? 3 CO2 L2  
 b Explain working principle and structure of avalanche photo diode. 7 CO2 L2
- 6 a What is electronic polarization? Derive an expression for it? 8 CO3 L2  
 b Write a note on Piezo electricity? 2 CO3 L2
- OR
- 7 a Distinguish between Soft and Hard magnetic materials? 7 CO3 L2  
 b Write a note on multiferroics? 3 CO3 L2
- 8 a Explain synthesizing of nano materials by using Ball milling method? 3 CO4 L2  
 b Explain how the nano particles are synthesized using CVD technique? 7 CO4 L2
- OR
- 9 Explain the construction and working of SEM with the help of neat diagram? 10 CO4 L2
- 10 a Derive the relation between Einstein's Co-efficient? 7 CO5 L2  
 b Write few applications of lasers? 3 CO5 L1
- OR
- 11 a Explain in detail different types of Optical fibers? 7 CO5 L2  
 b Write a note on different types of losses in Optical fibers? 3 CO5 L2

CO : Course Outcomes

BL : Bloom's Taxonomy Levels

L 1 : Remembering

L 2 : Understanding

L 3 : Applying

L 4 : Analysing

L 5 : Evaluating

L 6 : Creating

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