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Er. No.....
Academic Year: 2023-24

Semester V (B.Tech.)

Jaypee University of Engineering & Technology, Guna
T-2 (Odd Semester 2023)
18B14PH542- Nano Science

Maximum Marks: 25

Maximum duration: 1:30 Hour

Notes:

1. There are total 5 questions. Marks are indicated against each question.
2. Write relevant answers only.
3. Do not write anything on question paper except enrollment number.
4. Symbols used have their usual meaning.

		Marks	COs
Q1.	Obtain energy eigen value and eigen function by solving Schrodinger steady state equation for a particle in a box of width 'L'.	[5]	[CO2]
Q2.	Discuss the Kronig-Penney model and derive the relation $P' \frac{\sin \alpha a}{\alpha a} + \cos \beta b = \cos ka$	[5]	[CO3]
Q3.	Provide graphical solution to the given equation. $\left(\frac{mV_0 b a}{\hbar^2}\right) \frac{\sin \alpha a}{\alpha a} + \cos \beta b = \cos ka$. Draw clean and neat diagram.	[5]	[CO3]
Q4. a)	Calculate the packing factor for the FCC structure.	[3]	[CO1]
b)	Prove that C_5 rotation axis doesn't exist.	[2]	[CO1]
Q5. a)	Calculate the density of state for 3D structure.	[3]	[CO2]
b)	Normalized the wave function $\Psi = A \sin \frac{n\pi x}{L}$ and determine the constant 'A'.	[2]	[CO2]

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