GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem I - C1UD124B - Semiconductor and Optoelectronic Devices

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Classify the steps for wafer formation briefly	K2	(2)
2)	Explain four postulates of quantum mechanics	K2	(4)
3)	Interpret the difference between normal heating and annealing of a semiconductor	K1	(3)
4)	Calculate the de Broglie wavelength associated with a particle (electron) accelerated through a potential difference of 100 V.	K2	(6)
5)	Discuss the Heisenberg's uncertainty principle. Calculate the smallest possible uncertainty in position of an electron moving with velocity 3 ×10^7 m/s.	K3	(6)
6)	Analyze Einstein's quantum theory of photoelectric effect . Find maximum kinetic energy in eV of photo electrons if the work function of the material is 3.0 eV and frequency of radiation is $2.0X10^{15}Hz$	K3	(9)
7)	Explain blackbody radiation and discuss the ultraviolet catastrophe associated with it.	K4	(8)
8)	The stopping potential for the electrons emitted from a photosensitive surface illuminated with light of wavelength L1 is V1. When the incident wavelength is changed to a new value L2, the stopping potential is V2. Prove that V1 - V2 = [1/L1 - 1/L2] hc/e.	K4	(12)
	OR		
	Derive time dependent Schrodinger wave equation.	K4	(12)