School of Basic Sciences

Department of Basic Sciences
Mid Term Examination

Exam Date: 26 Sep 2023
Time : 90 Minutes
Marks : 50

Sem V - C1UD503T - Nanomaterials and Characterization Techniques

Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary

1)	Explain the surface to volume ratio in nanotechnology	K2	(2)
2)	Illustrate the interaction of light with materials.	K1	(3)
3)	Determine the minimum energy of an electron moving in one dimension in an infinitely high potential box of width 1Å. [Given Planck's Constant (h) = 6.625×10^{-34} J.s. and mass of electron (m) = 9.1×10^{-31} kg.]	K2	(4)
4)	Show the effect of change of size on the band gap of Nanomaterials.	K2	(6)
5)	Apply the concept of quantum mechanics to explain why the colour of nano particles changes with size.	K3	(6)
6)	An electron is in motion along a line between x=0 and x=L with zero potential energy. At points for which $x \leq 0$ and $x \geq L$, the potential energy is infinite. Solve the Schrodinger's equation and obtain the energy Eigen values.	K3	(9)
7)	Categorize the Quantum dots, quantum wells and their physical significance on the basis of quantum confinement .	K4	(8)
8)	Analyse UV and FTIR analysis of NPs and their significance.	K4	(12)

OR

	Analyse the common methods of characterization of nanoparticles.	K4	(12)