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School of Basic Sciences
Bachelor of Science Honours in Chemistry
Mid Term Examination - Mar 2024

Duration : 90 Minutes
Max Marks : 50

Sem VI - C1UB603B - Basics of Nanoscience and Synthetic Application

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) Explain wet chemical synthesis preferred over other methods for the fabrication of metal nanoparticles? K2 (2)
- 2) Define phenomenon of surface chemistry, and how does it impact the properties and behavior of materials at the nanoscale? K1 (3)
- 3) Explain the conditions required for hydrothermal synthesis and explain how they promote the formation of nanomaterials with controlled properties. K2 (4)
- 4) Explain the principle of operation of a UV-VIS-IR spectrophotometer and how it is utilized for band gap measurements in nanomaterials. K2 (6)
- 5) Illustrate the key principles and mechanisms involved in the electro-deposition process, highlighting the factors that influence the quality and uniformity of the deposited coatings. K3 (6)
- 6) Illustrate the fundamental principles of scanning electron microscopy (SEM) and how they facilitate the characterization of nanomaterials. K3 (9)
- 7) Analyze the principles and steps involved in the sol-gel technique for the synthesis of nanomaterials. K4 (8)
- 8) Analyze the top-down and bottom-up approaches in nanofabrication, discussing their fundamental differences, advantages, and limitations. K4 (12)

OR

- Analyze the various methods for measuring the size of nanoparticles, considering their principles, advantages, limitations, and applications. K4 (12)