

School of Basic Sciences**Bachelor of Science Honours in Chemistry
Semester End Examination - Jun 2024****Duration : 180 Minutes
Max Marks : 100****Sem IV - C1UB405T - Basics of Nanoscience and Nanotechnology**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) What is surface plasmon resonance? Explain it with the help of suitable figure. K1(3)
- 2) Explain the term diamond like carbon (DLC). Enumerate the major properties of diamond like carbon (DLC). K2(4)
- 3) Explain fullerenes. Discuss the hetero-hedral, exo-hedral and endo-hedral fullerenes. K2(6)
- 4) Illustrate the important features of fullerenes and applications of C60 molecule in the field of superconductivity. K3(6)
- 5) Illustrate chirality of carbon nanotube (CNT). How does chirality affects the various properties of CNT? K3(6)
- 6) Illustrate the arc-discharge preparation method of fullerenes with suitable diagram. K3(9)
- 7) Illustrate any one method for preparation of Fullerenes. Write the applications of Fullerenes. K3(9)
- 8) Analyse the cathodic vacuum arc method for the preparation of diamond like carbon (DLC). K4(8)
- 9) Analyze the basic principles of photoconductive effect. Discuss the working process and spectral response of CdS cells. K4(12)
- 10) Compare sol-gel and pechini method for fabrication of metal oxide nanocomposites. K5(10)
- 11) Examine the Plasma-enhanced chemical vapor deposition (PECVD) method with suitable diagram. K5(15)

OR

Examine the Laser Ablation method with suitable diagram. K5(15)

12) Compare top-down and bottom-up approach of nanomaterials synthesis with suitable diagram. K6(12)

OR

Elaborate any two physical methods of synthesis of nanomaterial in detail. K6(12)