

**SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)**

**(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.**

B.Sc. END SEMESTER EXAMINATIONS NOVEMBER-2022

SEMESTER - V

20UPHCT5010 - Fundamentals of Nanoscience and Nanotechnology

Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

Section A

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. With a neat diagram explain the band structure of the nanoscale materials.
2. Differentiate top down and bottom-up approaches of synthesis.
3. Classify the carbon-based nano materials based on their geometry.
4. Explain 1D, 2D and 3D nano structures with examples.
5. List out the difference between TEM and light microscope.
6. What are all the modes imaging modes of AFM?
7. Elucidate the role of nanomaterials in energy sector.
8. Write the benefits of nanotechnology via EHS and ELSI efforts.

Section B

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Elucidate how the magnetic, electrical, optical and thermal properties vary at nano scale.
10. Explain the chemical vapor deposition technique.
11. Describe the principle of image detection using backscattered and secondary electrons in SEM.
12. Explain the fabrication and characteristics of nano sensors.
13. Explain how nanotechnology is used to detect the cancer and diagnosis.

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