



25020407

QP CODE: 25020407

Reg No : .....

Name : .....

**B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE / MERCY CHANCE  
EXAMINATIONS, FEBRUARY 2025**

**Sixth Semester**

**CHOICE BASED CORE COURSE - CH6CBT02 - NANOCHEMISTRY AND  
NANOTECHNOLOGY**

Common for B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry & B.Sc  
Chemistry Model III Petrochemicals

2017 Admission Onwards

D4D1E519

Time: 3 Hours

Max. Marks : 80

**Part A**

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Give two examples for quantum dots.
2. A celebrated Nobel Prize winning physicist is often credited with predicting the potential of nanotechnology. Name the scientist. What was the title of his famous speech given on December 29, 1959?
3. What are two-dimensional nanomaterials? Give an example.
4. Give one example for bottom-up approach of nanomaterial synthesis.
5. Name two sophisticated analytical instruments used for the characterization of nanomaterials.
6. Explain how the discovery of STM revolutionized the nanoscience.
7. Mention one application of SIMS.
8. What property of quantum dots make them suitable in biological imaging?
9. Mention the important advantages of nano photodetector over bulk semiconductor based-photodetector.
10. Mention the benefits of using nano-catalysts in the chemical industry.
11. 'The quantum dots have gained great attention in the field of nanomedicine.' Comment.
12. Mention two advantages of nano-based drug delivery systems.





(10×2=20)

**Part B**

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Write a note on inorganic nanomaterials.
14. Discuss the important properties of fullerenes.
15. Write a note on monolayer protected metal nanoparticles.
16. Discuss the functioning and applications of STEM.
17. Discuss the principle of AFM and Evaluate the importance of AFM in the characterization of nanomaterials.
18. Discuss important electrical properties of metal nanoparticles.
19. Compare electrical conduction in carbon nanotubes to the electrical conduction in a normal macroscopic wire.
20. Describe briefly on nanosensors and nanobiosensors.
21. Discuss the applications of nanoparticles in biology.

(6×5=30)

**Part C**

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Elaborate on the classification, synthesis, and properties of carbon nanotubes.
23. Discuss and evaluate the important microscopic techniques used in the characterization of nanomaterials.
24. Give a detailed account of various nanolithographic techniques.
25. Discuss a) nanocatalysis and b) nano based drug delivery.

(2×15=30)

