



QP CODE: 26019147



26019147

Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026

Fourth Semester

M Sc PHYSICS (MATERIAL SCIENCE)

ELECTIVE - PH840402 - NANOSCIENCE AND NANOTECHNOLOGY

2019 Admission Onwards

F08A5ED9

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Are there any nano objects in your body? Name a few.
2. Explain solution phase routes by chemical reduction.
3. What do you mean by confined nanoclusters?
4. Write four examples of molecular clusters.
5. What do you mean by in situ nano measurements?
6. Write any two properties measured by AFM.
7. Write about fullerence derived crystals.
8. Write different characteristics of nano composites.
9. Write a note on phase relaxation length.
10. What is ment by zero field cooled (ZFC) susceptibility?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Explain core-shell structure of nanomaterials.
12. Explain density of states of the low dimensional systems.
13. Explain briefly enviornmental TEM.
14. What are the difference between WAXS and SAXS?





15. Write the importance of surfactance in ordered mesoporous nano structures.
16. Explain class I hybrid materials with suitable examples.
17. What is the working principle of AFM ? How it is different from STM?
18. Write a note on ferrimagnetism.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Explain in detail the exciton confinement in quantum dots.
20. Describe electron deflection system in case SEM.
21. Explain emulsion polymerization strategy for metal-polymer core shell structures.
22. Give an introduction about nanolithography.

(2×5=10 weightage)

