M.Sc.DEGREE EXAMINATION,APRIL 2020
II Year III Semester
Nano Science and Technology

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. What is meant by covalent bond? Give an example.
2. Write the difference between nanoscience and nanotechnology.
3. Define quantum confinement effect.
4. What is quantum well?
5. Define phase transitions.
6. Mention the role of bottom up approach in nanotechnology.
7. State the principle of TEM.
8. Define nanolithography.
9. What is biological imaging?
10. How nanomaterials can be used in drug delivery?
11. Give an energy expression for quantum wires.
12. Mention any two advantages of clean room.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Write a note on applications of polymers and ceramics.
14. Explain the principle and working of nano MOSFET.
15. Write a note on sol gel synthesis in bottom up approach method.
16. Explain the structure and determination of grain size using X-ray line broadening.
17. Explain the principle of Immuno fluorescent biomarker.
18. Explain the electronic structure of nanocrystals.
19. Explain the process of self-assembled monolayers.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Explain in detail about the types of bonds.
21. Describe briefly the quantum confinement of electrons in semiconductor nanostructures.
22. Discuss in detail the synthesis and growth mechanics of carbon nanotubes.
23. Describe briefly about the principle and working of scanning electron microscope with neat sketch.
24. Write a note on nanotechnology in diagnostic and therapeutic applications.

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