

SECTION C – (5 x 10 = 50 marks)

ANSWER ALL QUESTIONS

21. A Explain in detail the classification of nano particles.
OR
B Describe various methods of consolidations of nanopowders.
22. A Outline method of synthesis of metallic nanoparticle by sol-gel and solvo thermal method.
OR
B Enumerate the microwave assisted synthesis of nanoparticles.
23. A Write down the synthesis and Properties of Gold nano particles.
OR
B Explain the theories relevant to mechanical properties of nanomaterials.
24. A Discuss the Photovoltaic cell of nanomaterials.
OR
B Outline the photogalvanic cell of nanomaterials.
25. A Write the applications of nano particles in different fields.
OR
B Sketch the block diagram of TEM and explain the principle, instrumentation and application of Transmission electron microscopy.

6/12/23
Four Pages

S. No. 70413

23PCHEC01

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END SEMESTER EXAMINATION NOV/DEC-2023

First Semester

M.Sc CHEMISTRY

ELECTIVE – I NANOMATERIALS AND NANOTECHNOLOGY

Time: Three Hours

Maximum: 75 marks

SECTION A – (15 x 1 = 15 marks)

ANSWER ALL QUESTIONS

1. The nanostructures are categorized into ____ many types according to their dimensions.
A One B Two
C Three D Four
2. Nanomaterials are the materials with at least one dimension measuring less than _____.
A 1 nm B 10 nm
C 100 nm D 1000 nm
3. The colour of the nano gold particles is _____.
A Yellow B Orange
C Red D Variable
4. In nano form, the melting point of particles _____.
A Increases B Decreases
C Remains same D Increases then decreases
5. Which property of nanoparticles provide a driving force for diffusion?

- A Optical Properties B High surface area to volume ratio
C Sintering D There is no such property
6. On both ends of the CNTs, which carbon nanostructure is placed?
A Graphite B Diamond
C C₆₀ D Benzene
7. Which one of the following is an example for thermal properties of nanostructure?
A Melting temperature B Absorption and scattering of light
C Both a and b D None of the above
8. Which one of the following is used in cancer treatment?
A nanorods B carbon nanotubes
C nanowires D None of the above
9. The synthesized magnetic nano particles from _____ have been found to self-arrange automatically.
A Zinc B Copper
C Iron D Zirconium
10. Nano sized polymers built from branched units are called _____.
A Dendrimers B Composites
C Carbon-based materials D Metal-based materials
11. Which one of the following is an example for semiconducting nanowires?
A Nickel B Platinum
C Silicon D All of the above
12. Which one of the following is used in solar cells?
A carbon nanotubes B nanorods

- C nanowires D None of the above
13. What is the standard form of AFM?
A Automatic Force Microscope B Atomic Force Microscope
C Atomic Force Micrometer D None of the above
14. Nano crystalline materials synthesized by sol-gel technique results in a foam like structures called _____.
A Gel B Aerosol
C Foam D Aerogel
15. What is the standard form of SEM?
A Scanning Electron Microscope B Scanning Electrode Microscope
C Scanning Electrical Microscope D None of the above

SECTION B – (2 x 5 = 10 marks)
ANSWER ANY TWO QUESTIONS

16. Classify 0D, 1D, 2D and 3D nanomaterials.
17. How will you synthesize nanomaterials by Laser ablation method?
18. Discuss the thermal properties of nanomaterials.
19. Sketch the applications of semiconductors of nanomaterials.
20. Illustrate the importance of Core-Shell nanoparticles.