Reg. No :.................................

Name :.................................

BACHELOR'S DEGREE (C.B.C.S) EXAMINATION, MARCH 2024
2021 ADMISSIONS REGULAR
SEMESTER VI - CHOICE BASED CORE (CHEMISTRY)
CH6B13AB18 - Nanochemistry and Nanotechnology

Time : 3 Hours

Maximum Marks : 80

Part A

I. Answer any Ten questions. Each question carries 2 marks

(10x2=20)

1. Name the nanomaterial used for cutting tools.

2. List any two uses of quantum dots.

3. Identify the basic approaches used to prepare nanomaterials.

4. List any two examples of natural nanomaterials.

5. Differentiate physical vapor deposition and chemical vapor deposition (any one difference).

6. Cite any substance which can be used for chemical fixation in TEM.

7. Identify the type of SEM which can be used to view the growth of pollen tube in real time.

8. Recall any substance from which the probe in AFM is made from.

9. Identify a reason for the conductivity of carbon nanotubes.

10. Indicate the reason for the change in the colour of different sized quantum dots.

11. Define MOF.

12. Define sensors.

Part B

II. Answer any Six questions. Each question carries 5 marks

(6x5=30)

13. Classify nanomaterials based on origin and structural configuration. Illustrate with examples.

14. Describe the classification of nanomaterials based on dimension with suitable examples.

15. Discuss the growth mechanism of CNT on a metal based catalyst and non-metal based catalyst.

16. Discuss the steps involved in sample preparation in SEM.

17. Discuss the principle of Transmission Electron Microscopy.

18. Summarize the optical properties of Carbon nanotubes.

19. Describe immunogold labelling.

20. Discuss with examples of instances where nanoparticles have been used in early centuries.

21. Discuss the role of nanoparticles in catalysis.

Part C

III. Answer any Two questions. Each question carries 15 marks

(2x15=30)

22. Explain the synthesis, properties and applications of carbon nanotubes.

23. Discuss the common scanning probe techniques. Enumerate the advantages and disadvantages of SPM.

24. Describe in detail the different parts of a transmission electron microscope.

25. Describe nanosensors based on physical properties.