



Code No. : 838

**FACULTY OF SCIENCE**  
**M.Sc. IV Semester Examination, April/May 2013**  
**PHYSICS**  
**Paper – II : Nano Materials**

Time: 3 Hours]

[Max. Marks: 64

**Note : Answer all questions from Part A and Part B.**

**PART – A**  
**(Short Answer Type)**

**(8×3=24 Marks)**

1. Explain the topdown and bottom up method of nano materials synthesis.
2. Explain the hydro method of synthesis of nano materials.
3. Explain how EDAX measurements can be used for nano materials characterization.
4. Explain the principle of working of AFM.
5. What is the role of particle size in determining properties of nano materials ?
6. How the energy gap varies in nano materials with particle size ?
7. Explain the important consumer goods applications of nano materials.
8. What are the important health hazards associated with nano materials ?

**PART – B**  
**(Essay Answer Type)**

**(4×10=40 Marks)**

9. a) With necessary diagrams explain the synthesis of nano materials using chemical methods.  
OR  
b) Describe any two bottom up methods of nano material synthesis.
10. a) Explain the principle of working of Raman spectroscopy. How can it be used for nano materials characterization ?  
OR  
b) Explain the working of a scanning electron microscope. What are the nano materials characteristics that can be obtained using SEM ?

(This paper contains 2 pages)



11. a) Explain the important medical applications of nano wires.

OR

b) Elaborate the applications of nano materials based on their magnetic properties.

12. a) Explain the use of nano materials in sensor applications.

OR

b) What are the health hazards and societal implications of nano technology ?

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