

Y M C A University of Science and Technology, Faridabad
MSc.(Physics) IV semester, CBS Examination
NANO SCIENCE AND TECHNOLOGY (PH512)

Time: 3 hrs

Max. Marks: 60

Note: Attempt Five questions and question no. 1[Q1.(a-j)] is compulsory.

- Q1. a What is quantum dot? (2)
b Define trapping of particle in 3-D. (2)
c Define metal nano cluster. (2)
d What is biomimetic? (2)
e Define effect of disorderness on solid nanostructures. (2)
f How bottom up technique is different from top down? (2)
g Define application of Buckminsterfullerene. (2)
h Why carbon is unique element? (2)
i Differentiate between bulk and nano materials. (2)
j Explain porous silicon. (2)
- Q2 a Explain quantum leak in potential step when a particle moving in the potential well. (6)
b Define lithography methods and explain one in detail (4)
- Q3 a Define e-beam evaporation method. What are its applications? (6)
b Define synthesis process of nano clusters? (4)
- Q4 a How electrons or holes confined in One and Zero Dimensions for nanomaterials? (6)
b Explain carbon nano tubes on the basis of its structure. (4)
- Q5 a Through schematic representation explain the working of Molecular Beam Epitaxy. (6)
b Explain synthesis process of Nano Gold particles. (4)
- Q6 a Explain AFM and its utilization. (6)
b Explain nano-composite glasses and its applications. (4)
- Q7 Explain following: (5)
a Sol Gel Method with diagram. (5)
b Scanning Electron Microscopy (SEM). (5)