M.Sc. Physics Examination 2016
Semester - III
Paper No- N301 Paper Name: Physics of Nanomaterials
Paper Code- 4707

Time : 2 Hours 30 min | Maximum Marks 70

1.	(a) Explain characteristic length scale of Nanomaterials. What is "quantum dot" ? (b) What are applications of nano-technology ? Discuss nanotechnology health risk and ethics	[07] [07]
OR		
1.	(a)What are naturally occuring nano-materials? Are there nano objects around you and in your body? Name a few. What are the human activities that generate nano-particles ? (b) Write in detail: Emergence of Nanotechnology	[04] [10]
2.	How does nano size influence the electron band gap in semiconductor /metal nanostructures? What is the effect on electrical conductivity when particle size is reduced to less than 100 nm ?	[14]
OR		
2.	(a)Discuss conduction electron and dimensionality with example (b)Show two size effects in metal or semiconductor nanoparticles	[07] [07]
3.	(a)Explain two-dimensional Nanomaterials (b)Explain Electrostatic Stabilization of Nanomaterials	[07] [07]
OR		
3.	(a)Explain as to why properties of Nanomaterials change at Nano scale. (b)What are the various methods for stabilizing colloids ? Explain Steric Stabilization of Nanomaterials. What are the best steric stabilizers ?	[07] [07]
4.	(a)Explain the arc evaporation technique of synthesis for Carbon nano tube (CNT) in detail. What are the applications of CNT ? (b)Explain the LASER evaporation technique of synthesis for CNT in detail	[07] [07]
OR		
4.	Explain followings with adequate figures and graphs (a) Vector notation for CNT (b) Unit cells of CNT (c) Symmetry classification of CNT	[14]
5.	(a) Explain mechanism of magnetosoms formation (b) Explain the Biosynthesis of Nanoparticles	[07] [07]
OR		
5.	(a) Write note on applications of magnetotactic bacteria (b) Explain features of magnetosoms	[07] [07]

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