Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: ME468

Course Name: Nanotechnology

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1	a)	Explain the concept of super lattices structure of material?	(6)
	b)	What is mean by nano clusters?	(4)
2	a)	Explain in detail the concept of quantum dots and quantum wells.	(6)
	b)	What is miniaturization? What are the challenges involved in it?	(4)
3		What are the important mechanical properties of material at nano level? Explain any four in detail.	(10)
4		Define size effect. Describe it in detail with respect to thermal properties of materials.	(10)

PART B

Answer any three full questions, each carries 10 marks.

5	a)	What are the advantages and limitations of PVD techniques?	(6)
	b)	What are the different types of reactors used in CVD process?	(4)
6	a)	Compare the working of Scanning Electron Microscope and Transmission Electron Microscope.	(6)
	b)	Why objects in nanoscale cannot be seen by visible light? How do we characterize nanostructures?	(4)
7		With a neat sketch explain the working of Molecular Beam Epitaxy fabrication technique.	(10)
8		Describe the working of atomic force microscope. What are the precautions required while operating AFM?	(10)

PART C

Answer any four full questions, each carries 10 marks.

9	a)	Explain the concept of nano-biosensors.	(6)
	b)	What is smart dust?	(4)
10	a)	What is meant by single walled and multiwalled Carbon Nano Tubes.	(6)
	b)	Explain the following : (a) Nano composites (b) Nano crystalline materials	(4)

11	a)	Explain the following (a) Nano magnetic materials (b) Nano layered structures	(6)
	b)	Describe the working of electro chemical sensor.	(4)
12	a)	What are the differences between molecular machines and macroscopic machines?	(6)
	b)	What are molecular switches?	(4)
13	a)	Explain the variation of thermo physical properties of nanofluids by the addition of nanoparticles.	(6)
	b)	What are the applications of nano fluids?	(4)
14		How to prepare nano fluid? Explain any three methods for producing nanofluids.	(10)

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