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Code No: 118CJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, April - 2018

INTRODUCTION TO NANOTECHNOLOGY

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Write any two applications of nanotechnology?	[2]
b)	What is the significance of nanotechnology in day to day life?	[3]
c)	What is dislocation in nano crystalline materials?	[2]
d)	Write briefly about optical properties of nanomaterials.	[3]
e)	What is Chemical Vapor Deposition?	[2]
f)	Write briefly about Inert gas condensation.	[3]
g)	Write any two differences between Tem and FEM.	[2]
h)	Write briefly about Field ion microscope.	[3]
i)	What is the role of MEMS in medical field?	[2]
j)	Write briefly about significance of Nanocrystals.	[3]

PART - B

(50 Marks)

2. Write in detail about evolution and future scope of Nanotechnology. [10]

OR

3. What is Biomimicking? Write in detail about it with the help of any two examples. [10]

4. Write in detail about effect of Nano dimensions on Material behavior. [10]

OR

5.a) Write briefly about how mechanical properties will get effected at nano-dimensions.
b) Write briefly about grain boundaries in Nano crystalline materials. [5+5]

6. Write in detail about Molecular Beam Epitaxy with the help of a neat schematic diagram. [10]

OR

7.a) Write briefly about self assembly.
b) Write briefly about spark plasma sintering. [5+5]

8. Write in detail about principle and operation of Atomic force microscope. [10]

OR

9.a) Write briefly about Principle of Three dimensional atom probe.

b) Write briefly about Principle of Small angle X-ray scattering. [5+5]

10.a) What are nanosensors? Write in detail about nano sensors with the help of two examples?

b) Write defense and space applications of Nanotechnology. [5+5]

OR

11. Write in detail about role of nanotechnology in medical applications. [10]

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