Registration no: | | | | | | | | | | |

Total Number of Pages: 01 **M.Tech**

P2NTBC02

2nd Semester Regular Examination 2016-17

Fabrication Techniques & Characterization of Nanomaterials

BRANCH: NANO TECH.

Time: 3 Hours

Max Marks: 100

Qcode:Z485

Answer Question No.1 which is compulsory and any four from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** (2.5 x 10)

a) What do you mean by nano manipulation, give example of it?

b) Define cascading effect in ball milling?

c) Define oxidation and metallization and how they differ from each other?

d) Define Chemical Vapor Deposition method and its importance in the production of Nano materials?

e) What is Ion beam Lithography?

f) How X-ray diffraction used in the study of Nano technology?

g) Define Nano lithography and its importance in nano technology?

h) Why plasma arc technique used in fabrication of nano material?

i) What do you mean by electro deposition?

j) What is the use of mask in lithography technique?

Q2 a) What do you mean by Scanning Probe Microscopy (SPM) and how it is used for the analysis of different materials? (10)

b) What is Scanning probe Microscopy (SPM) and how it is used for the analysis of different Nano material? (10)

Q3 a) What do you mean by molecular beam epitax and what is its application? (10)

b) Narrate the mechanism of Ball milling and how it is used for processing of Nano material? (10)

Q4 a) What is the importance of TEM for the analysis of Nano material? (10)

b) Describe the fabrication of Nano materials by Laser ablation process? (10)

Q5 a) How Nano lithography differes from E-beam lithography? (10)

b) Describe the fabrication of Nano materials by Laser Pyrolysis process? (10)

Q6 a) What do you mean as Ion sputtering effect? (10)

b) What do you mean by Physical Vapor Deposition, give its application? (10)

Q8 **Answer the following** (4 x 5)

a) EDAX

b) Inert Gas Condensation Technique

c) UV and VISIR- Spectrometers

d) Difference between M based Lithography vs SEM based nano lithography