

M. Tech. (Nano Technology) Sem-II (CBCS – 2015 Course) :

SUMMER - 2019

SUBJECT : NANOFABRICATION AND ADVANCED SYNTHESIS TECHNOLOGY

Day : Thursday

Time : 11.00 AM TO 02.00 PM

Date : 06/06/2019

S-2019-3348

Max. Marks : 60

N. B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SAME** Answer book.
- 4) Draw neat and labeled diagram **WHEREVER** necessary
- 5) Assume suitable data, if necessary.

SECTION - I

Q.1 Describe the principle, operation and application of Molecular Beam Epitaxy with net diagram. (10)

OR

Define 'zeolites'. List their synthesis methods and potential applications in Nanotechnology. (10)

Q.2 Describe the experimental set up and operating parameters to produce CNTs using chemical vapor deposition. (10)

OR

Define 'Inert gas'. State the principle of IGC technique for synthesis of nonmaterial's, giving suitable examples. (10)

Q.3 Discuss the laser ablation technique to produce CNTs, with schematic experimental set up and process parameters. (10)

OR

Define 'porous silicon'. State the parameters that control its pore size. (10)

SECTION - II

Q.4 Explain the role of 'Nanomechanics' in synthesis and manipulation of nano materials. (10)

OR

Explain the mechanism of 'self assembly' for synthesis of nanoparticles using organic molecules. (10)

Q.5 Give and overview of template synthesis technique and confined nucleation for nanomaterial synthesis. (10)

OR

Discuss the L – B method for synthesis of organic thin films. (10)

Q.6 Define 'Nanobots'. Describe their prospective functional mechanisms being used for research. (10)

OR

Write short notes on: (10)

- a) Polymer matrix isolation
- b) High energy ball milling process

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