M. TECH. (NANOTECHNOLOGY) SEM-II CHOICE BASED CREDIT SYSTEM : SUMMER - 2018

SUBJECT : NANOFABRICATION AND ADVANCED SYNTHESIS TECHNOLOGY

Day : **Wednesday** | **S-2018-2945** | Time : **11.00 AM TO 02.00 PM**
Date : **13/06/2018** | Max. Marks : 60

N. B. :

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

SECTION - I

Q.1 Define 'Lithography'. State various lithographic techniques commonly used for fabrication of nanomaterials. **(10)**

OR

Explain in detail the 'High energy ball milling' process to produce bulk nanoparticles. **(10)**

Q.2 Explain the mechanism of 'self assembly' for synthesis of nanoparticles using organic molecules. **(10)**

OR

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

Q.3 Discuss why CVD is the preferred method for synthesis of CNTs. **(10)**

OR

Describe the principle, operation and application of Molecular Beam Epitaxy. **(10)**

SECTION - II

Q.4 Discuss the industrial application of nanoporous and mesoporous materials. **(10)**

OR

Define 'Inert gas'. Hence describe the IGC technique for nanofabrication. **(10)**

Q.5 Give an overview of various types of zeolites. Explain their synthesis methods and applications. **(10)**

OR

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

Q.6 Describe the process to synthesis porous silicon. State the mechanism of pore formation. **(10)**

OR

Write an overview of laser ablation technique to produce CNTs. Give schematic experimental set up and process parameters. **(10)**

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