

MASTER OF TECHNOLOGY (NANO TECHNOLOGY) (CBCS- 2015 COURSE)
M. Tech. (Nano Technology) Sem-II :SUMMER- 2022
SUBJECT : NANO FABRICATION & ADVANCED SYNTHESIS TECHNOLOGY

Day : Thursday
Date : 28-07-2022

S-14247-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Draw neat diagram **WHEREVER** necessary.
- 4) Answer to both the sections should be written in **SEPARATE** answerbook.

SECTION - I

Q.1 Describe the process of '*chill block melt spinning*' for synthesis of Al-alloy ribbons. (10)
List the composition of alloying elements as well as the properties of embedded nanoparticles.

OR

Explain the variation in electrical properties of nanostructured bulk materials with reference to conductance at Fermi level.

Q.2 State and explain any one bulk synthesis process of nanostructured materials. State (10)
its advantages.

OR

State the principle, working and applications of the '*inert gas condensation*' technique for nanomaterial synthesis.

Q.3 Define '*porous silicon*'. Explain the process to synthesize it along with the (10)
parameters that control the pore size.

OR

Discuss the role of AFM for nano manipulation and nano-lithography.

SECTION - II

Q.4 State the principle, working and applications of the '*chemical vapour deposition*' (10)
process for nanomaterial synthesis.

OR

What are '*thin films*'? Describe the L-B method for deposition of thin films. List their applications.

Q.5 Explain '*molecular beam epitaxy*' with operation parameter and applications. Draw (10)
a suitable diagram.

OR

Justify the suitability of '*sol-gel*' process for nanomaterial synthesis. State the advantages and limitations of the method.

Q.6 List different types of nanostructures that can be synthesized by '*LASER ablation*' (10)
and '*LASER pyrolysis*'. Explain the processes in detail.

OR

Write brief notes on

- c) Zeolites and their applications
- d) Smart sunglasses and their applications.

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