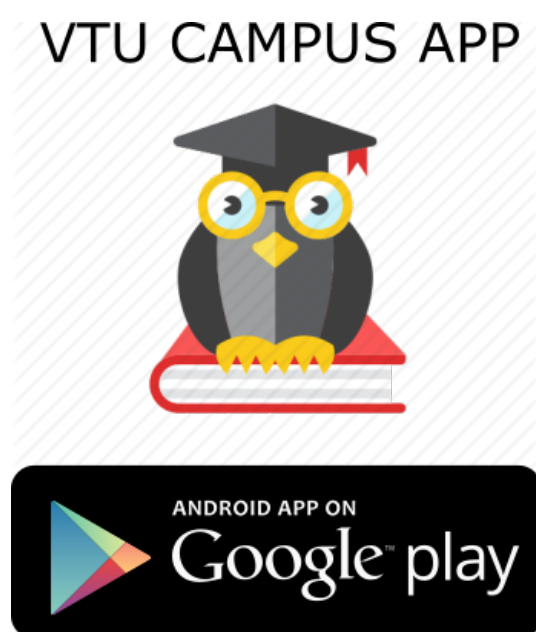


Synthesis of Nanomaterials VTU CBCS Question Paper Set 2018



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10NT61

Sixth Semester B.E. Degree Examination, June/July 2016
Synthesis of Nanomaterials

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting
at least TWO questions from each part.

PART – A

- 1 a. Explain sol-gel process? How to synthesize the nano particles with suitable examples and its advantages. (10 Marks)
b. Illustrate the mechanical alloying and mechanical milling with suitable flow chart. (10 Marks)
- 2 a. Explain PVD (Pressure Vapour Deposition) method with suitable examples and write a note on MBE. (10 Marks)
b. How to prepare the Langmuir – Blodgett film (LBF) and its applications. (10 Marks)
- 3 a. Write a short note on nano manipulation and nano lithography. (10 Marks)
b. Write a note on assembly of nano particles and nano-wires. (10 Marks)
- 4 a. Explain the VLS growth and size control of nanowires with suitable examples. (10 Marks)
b. Illustrate the chemical vapour Deposition (CVD) with suitable reactions to synthesize the nanomaterials. (10 Marks)

PART – B

- 5 a. Explain the Preparation of nano fibres by electro-spinning and its uses. (10 Marks)
b. Explain the general process of Reverse micelle. Explain any two factors affecting the particle size. (10 Marks)
- 6 a. How to synthesize the metal oxide nanoparticles by using co-precipitation? Explain with suitable mechanism. (10 Marks)
b. Explain the general method of chemical reduction with suitable flow chart. (10 Marks)
- 7 a. Explain the Preparation of colloidal nanoparticles by using photochemical method and explain the role of light sources. (10 Marks)
b. Brief about Hydrothermal method and role of water in the reaction medium. Mention the merits and characteristics of Hydrothermal method. (10 Marks)
- 8 a. How to synthesize the nano metal oxide by using solution combustion method? Explain with suitable example. (10 Marks)
b. Mention the differences between spray pyrolysis and flame spray pyrolysis. (10 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2017
Synthesis of Nanomaterials

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. What is the principle of sol-gel process? Explain synthesis of nano-structured materials by sol-gel method. (08 Marks)
- b. Write a note on mechanical milling. (05 Marks)
- c. Explain inert gas condensation technique with neat diagram. (07 Marks)
- 2 a. Explain laser pyrolysis with example. (08 Marks)
- b. Explain in brief physical vapor deposition method. (06 Marks)
- c. Discuss Langmuir-Blodgett technique. (06 Marks)
- 3 a. What is nanomanipulation? Explain nanolithography. Mention its applications. (10 Marks)
- b. Write a note on sol-gel lithography. (10 Marks)
- 4 a. Discuss the VLS growth of nanowires with example. (08 Marks)
- b. Discuss the role of precursors and catalysts in VLS growth. (06 Marks)
- c. Explain CVD technique. (06 Marks)

PART – B

- 5 a. Explain the process of template filling. (08 Marks)
- b. Write a note on:
 - (i) Reverse micelles method.
 - (ii) Electrophoretic deposition. (12 Marks)
- 6 a. Explain the following:
 - (i) Co-precipitation method. (12 Marks)
 - (ii) Arrested precipitation method. (08 Marks)
- b. Discuss chemical reduction method. (08 Marks)
- 7 a. Discuss electrochemical synthesis of nanomaterials. (08 Marks)
- b. What is sonochemical synthesis? Explain. (08 Marks)
- c. Distinguish between hydrothermal and solvothermal processes. (04 Marks)
- 8 a. Explain solution combustion process. (06 Marks)
- b. Write a note on chemical vapor condensation. (08 Marks)
- c. Discuss the fundamental aspects of SLS process. (06 Marks)

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Important Note : 1 On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.