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Fourth Semester B.E. Degree Examination, June/July 2019 Synthesis and Processing Techniques

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Mention different types of CVD techniques. Explain in detail about CVD method including both hot wall and cold wall set up. (10 Marks)
b. With a neat schematic diagram explain the Langmuir Blodgett technique in detail for thin film making. (06 Marks)

OR

- 2 a. Mention some of the application of arc discharge method and explain briefly about working of arc discharge method. (10 Marks)
b. Explain the working process of laser pyrolysis with neat schematic diagram. (06 Marks)

Module-2

- 3 a. Define Sol and Gel. Explain in detail about Sol-Gel process along with proper diagram of Sol-Gel options. (10 Marks)
b. Explain the process of solution combustion method along with proper flow chart in detail. (06 Marks)

OR

- 4 a. Explain in detail about co-precipitation and arrested precipitation methods for synthesizing nanoparticles. (08 Marks)
b. Explain the working process of photochemical synthesis method with an example of nanoparticles synthesizing in detail. (08 Marks)

Module-3

- 5 a. Explain in detail about growth mechanism and kinetics and rate determining steps in VLS method. (10 Marks)
b. Write short notes on Flame Spray Pyrolysis. (06 Marks)

OR

- 6 a. Explain briefly about VLS growth of nanowires and control of the size of the nanowires. (10 Marks)
b. Explain in detail about gas condensation working process in detail. (06 Marks)

Module-4

- 7 a. Draw Electron Beam Lithography set up and explain working process in detail. (10 Marks)
b. Define nanolithography and explain in brief about nanolithography based on AFM. (06 Marks)

OR

- 8 a. Write a note on oxidation and metallization and mask and its application. (10 Marks)
b. Explain briefly about Ion beam Lithography with schematic diagram. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Explain the process of developing photo catalyst inserted into surface of porous alumina silica. (10 Marks)
- b. Explain instantaneous nano foaming method for fabrication of closed porosity silica particle. (06 Marks)

OR

- 10 a. Explain the fabrication technique of organic nano crystals and their optical properties and materialization. (10 Marks)
- b. Explain briefly about surface modification of in-organic nanoparticles by organic functional groups (06 Marks)
