

CRASH COURSE

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10NT52

Fifth Semester B.E. Degree Examination, May 2017 NanoChemistry

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Write the classification of Nanostructures. (04 Marks)
b. Explain the hydrothermal method of synthesis of nanoparticles. (06 Marks)
c. What is VLS method? How this method is helpful in synthesizing nanoparticles? (06 Marks)
d. Discuss the distinction between bottom up and top down methods. (04 Marks)
- 2 a. Explain the synthesis of nanoparticle by reduction method with growth of mechanism. (06 Marks)
b. What are capping agents? How it effects on Growth Kinetics? (04 Marks)
c. Discuss the diffusion limited Growth and reaction limited growth. (10 Marks)
- 3 a. Describe cluster formation by Gas phase processes. (08 Marks)
b. Explain the bonding in Clusters. (06 Marks)
c. Write a note on types of clusters. (06 Marks)
- 4 a. What are self assembled monolayers? Write a note on self assembled monolayers. (08 Marks)
b. Which are two common routes for patterning monolayers. (06 Marks)
c. Write a short notes on electrostatic multi-layers. (06 Marks)

PART – B

- 5 a. Write the synthesis method and purification of carbon nanotubes. (06 Marks)
b. Explain a suitable method for nanowire growth. Mention its application. (06 Marks)
c. Describe the functionalization of CNT's and its importance. (08 Marks)
- 6 a. How do copolymer self assembly can be blocked? (08 Marks)
b. Explain the application of block copolymer in thin films fabrication. (06 Marks)
c. What is Nano-epitaxy? Explain the spatial confinements of block co-polymers. (06 Marks)
- 7 a. Explain the types of nanoparticles. (06 Marks)
b. Describe the preparation and properties organic nanoparticles. (08 Marks)
c. What are nano co-chalet? Explain its prospectus of future challenges. (06 Marks)
- 8 a. Discuss the adsorption of surfactants at solid surfaces. (06 Marks)
b. Explain the two dimensional adsorption isotherm through supra molecular approach. (08 Marks)
c. Write a note on :
i) Dipole – dipole interaction
ii) Die – stacking interaction. (06 Marks)

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