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10NT52

**Fifth Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Nano Chemistry**

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 with a neat diagram. Explain the classification of nano-materials with example. (10 Marks)
- b. i) What is precipitation? Explain the steps involved with the help of flow chart.  
       ii) What is micro emulsion? Explain in detail the Winsor classification of micro emulsion. (10 Marks)
- 2 a. Explain the growth of metal and metal oxide nanocrystal with example. (10 Marks)
- b. Explain the diffusion limited growth and reaction limited growth. (10 Marks)
- 3 a. Explain the formation of cluster by using any two series of method. (10 Marks)
- b. Explain the process of detection and analysis of the gas phase cluster using “Wein filter technique” and TOF mass filter techniques. (10 Marks)
- 4 a. i) Explain in detail about 2D assembly with at least one example.  
       ii) Describe the self assembly of amphiphilic (10 Marks)
- b. Write a short note on hierarchical  
       i) Assembly and 2D assembly  
       ii) Explain the electrostatic multilayer. (10 Marks)

**PART – B**

- 5 a. Explain any two preparation method of nanowires in detail. (10 Marks)
- b. Describe the purification methods and types of functionalization of CNT'S. (10 Marks)
- 6 a. Write about Block copolymer thin films with a neat diagram and preparation method. (10 Marks)
- b. Write a note on  
       i) Spatial confinement of block co-polymers  
       ii) Electrical ordering. (10 Marks)
- 7 a. Describe the analytical methods of organic nano particles and properties. (10 Marks)
- b. Explain briefly about hydrophobic drugs and one preparation technique. (10 Marks)
- 8 a. Discuss the adsorption of surfactants at solid surfaces and explain about Langmuir  
    b. adsorption (10 Marks)
- c. Discuss in detail about Bilayer system and Lipid membranes. (10 Marks)

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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