**KLS Gogte Institute of Technology (Autonomous)**

**Department of Chemistry**

Subject : Nanoscience and Nanotechnology Code : 16CH661

Internal Assessment Test - I

Semester : VI Div : Open ElectiveDate : 16/02/2019

Max. Marks : 25 Duration: 1 Hr

**Instructions**: **Answer any five questions. (5 x 5 = 25 marks)**

1. Discuss the merits and demerits of bottom up and top down approaches.

[L2], [CLO1], [PO 4, 5]

1. What are zero, one and two dimensional nanostructures? Give an example for each.

[L2], [CLO1], [PO 4, 5]

1. An aluminium industry would like set up a unit to produce Aluminium nanoparticles in large scale. Suggest and explain a top down method to produce Aluminium nanoparticles with neat labeled diagram. [L3], [CLO1], [PO 4, 5]
2. Explain sol-gel method of nanoparticle synthesis with neat labeled diagram.

[L2], [CLO1], [PO 4, 5]

1. How plasma plumes by laser ablation is used in the preparation of Noble metal nanoparticles, explain with neat labeled diagram [L3], [CLO1], [PO 4, 5]
2. Differentiate between optical microscope and electron microscope. [L3], [CLO2], [PO4, 5]
3. Explain any three components used in transmission electron microscope [L2], [CLO2], [PO 4, 5]

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**Instructions**: Answer all the ten questions compulsorily. **(10 x 0.5 = 5 marks)**

1. The ball to material mas ratio in ball milling technique is normally maintained at

a) 1:3 b) 2:3 c) 2:1 d) 1:2

1. Nanowires are the examples for \_\_\_\_\_\_\_\_ dimension objects

a) Zero b) one c) two d) three

1. Ball milling is an example for \_\_\_\_\_\_\_\_method of nanoparticle synthesis

a) Mechanical b) Physical c) Top down d) all of these

1. The cathode used for electron gun is

a) Tungsten filament b) LaB6 c) Both a) and b) d) None of these

1. Electromagnetic lenses are used in

a) optical microscopes b) electron microscopes c) optical telescopes d) None

1. In which of the following method hydrolysis and condensation of precursors is involved
2. Precipitation b) Sol-gel c) combustion d) Sputtering
3. Metal nitrates and fuels are used in

a) Ball milling b) Sol-gel c) Combustion d) Precipitation

1. The role of vacuum system in TEM is to \_\_\_\_\_\_\_\_\_

a) increase mean free path b) decrease mean free path c) produce arc d) None

1. \_\_\_\_\_\_\_\_\_is used to decrease the beam intensity of electrons

a) Condenser lens b) electromagnetic lens c) Aperture d) specimen stage

1. Liquid mixing/supersaturation, nucleation, crystal growth and aggregation processes are involved in

a) precipitation b) sol-gel c) combustion d) laser ablation

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