

M.Sc. CHEMISTRY
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SEMESTER-IV EXAMINATION, 2019
PAPER CODE: MCHOE 407
PAPER TITLE: CHEMISTRY OF NANOSCIENCES

Duration: 3 hr**Max. marks 75**

(Write your roll no. immediately at the top on receipt of the question paper)

Attempt All questions. All parts of a question must be attempted in continuation.**Q1. Answer All the question given below:****1.5 x 10 = 15**

- A. List bottom-down manufacturing techniques for nanomaterials.
- B. STEM stands for _____.
- C. Give an example of hydrogel based nanoparticulate drug delivery system.
- D. Cite an example of nanoparticles used in cancer cell detection.
- E. What is nanoparticle tagging?
- F. Give an example of biodegradable synthetic nanopolymer.
- G. What are Optical Tweezers?
- H. Define ORMOSIL.
- I. What is Capping agent?
- J. What is the role of XRD (X-ray diffraction) in characterization of nanoparticles?

Q2. Answer ANY THREE of the following:**5 x 3 = 15**

- A. How do you characterize nanoparticles using TEM and SEM?
- B. Differentiate between DLS (dynamic light scattering) and Zeta sizer.
- C. Describe one Industrial method to manufacture nanomaterials.
- D. Explain role of stabilizing agent and capping agent in synthesis of metal nanoparticles.
- E. Explain SPR (Surface plasmon Resonance).

Q3. Write Short note on ANY THREE of the following:**5 x 3 = 15**

- A. Enhanced Permeability and retention effect.
- B. Solid Lipid nanoparticle-based drug delivery.
- C. Brain Targeted drug delivery
- D. Photothermal therapy
- E. Gene Delivery

Q4. Answer ANY THREE of the following:

5 x 3 = 15

- A. What are the applications of electron spun nanofibers?
- B. What are carbon nanotubes? What are the key applications of carbon-nanotube?
- C. Explain the protecting role of nanoparticles against pathogens.
- D. What are Nanocrystallites? What are the applications of Nanocrystallites?
- E. Explain the role of the hybrid nanoparticles in drug delivery.

Q5. Answer ANY THREE of the following:

5 x 3 = 15

- A. What are the uses of nanotechnology in molecular imaging?
- B. Explain the role Gold nanoparticles in diagnostics.
- C. What is the role of size reduction in application of inorganic fluorophores in diagnostics?
- D. What are the applications of nanomaterials in cardiovascular diseases?
- E. What is the future use of nanotechnology?

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