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## School of Computing Science and Engineering

Bachelor of Technology in Computer Science and Engineering

Mid Term Examination - May 2024

Duration : 90 Minutes

Max Marks : 50

### Sem VI - E2UC513T - Nano Science and Nano Technology

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Explain some metals become semiconductors as their size is decreased? K2 (2)
- 2) Define Optical Properties (SPR) and explain its significance in nanoscience and nanotechnology. K1 (3)
- 3) Explain the role of nanoparticles in cancer therapy and discuss how nanomedicine approaches enhance treatment efficacy and reduce side effects. K2 (4)
- 4) Explain the difference between ferromagnetism, paramagnetism, and diamagnetism. Provide examples of materials exhibiting each type of magnetism. K2 (6)
- 5) Illustrate how quantum confinement affects the electronic band structure of semiconductor nanocrystals, illustrating the relationship between particle size and bandgap energy. K3 (6)
- 6) Illustrate the process of drug delivery specifically role of nanomedicine/drugs in Cancer therapy. K3 (9)
- 7) Analyze Microwave Plasma Processing technique for the synthesis of nanomaterials. K4 (8)
- 8) Analyze the principles and steps involved in the sol-gel technique for the synthesis of nanomaterials. K4 (12)

**OR**

Analyze how mixtures of fullerenes are separated and purified, and conclude also the purification of C60 and C70 by chromatographic method. K4 (12)