

2123

M. Tech. (Micro-Electronics)

Third Semester

MIC-303: Nanoscale Devices and System

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.*

x-x-x

I. Answer the following:-

- a) Define Nanoscale devices.
- b) Define Ballistic transport.
- c) Differentiate between Quantum wires and Quantum dots.
- d) Discuss phase interference.
- e) What are Nano powders?

(5x2)

**UNIT - I**

- II. Discuss in detail electrical, magnetic, optical and thermal properties of nanostructured materials (10)
- III. What information is available about unique release and exposure patterns of Nanomaterials? (10)
- IV. How does the ability of a nanostructure to accept carriers affect its properties? (10)

**UNIT - II**

- V. How does the shape of the nanostructure affect its properties? Explain briefly. (10)
- VI. Discuss Bottom up approach for synthesis of Nanomaterials. (10)
- VII. Write short notes on following:
  - a) Self Assembly
  - b) Contact imprinting (10)

x-x-x