

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17NT33

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019 Foundations of Nanoscale Science and Technology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Describe the Bohr atomic model with neat diagram. explain three phases. (07 Marks)
b. Write a note on classical physics and Quantum mechanics. (07 Marks)
c. Discuss the challenges of Recharad Feynman. (06 Marks)

OR

- 2 a. Discuss the inter disciplinary nature of nanoscience and nanotechnology. (07 Marks)
b. Explain surface to volume ratio with examples. (07 Marks)
c. Write a note on molecular and phases. (06 Marks)

Module-2

- 3 a. Explain the classifications of nanostructures with examples. (07 Marks)
b. What are Semiconductors? Write a note on types of semiconductors. (07 Marks)
c. What are Quantum dots? Mention the properties and applications of Quantum dots. (06 Marks)

OR

- 4 a. Define Nanowires. Describe Nanosheets with examples. (07 Marks)
b. Write a note on ceramics and mention its classifications. (07 Marks)
c. Explain the different structures of Carbon Nanotubes. Mention in applications. (06 Marks)

Module-3

- 5 a. Explain Lotus effect. Mention its applications. (07 Marks)
b. Explain biological materials and their applications. (07 Marks)
c. Describe industrial significance of Biomimetics. (06 Marks)

OR

- 6 a. Explain Velcro effect. Mention the application. (07 Marks)
b. Write a note on Biologically inspired mechanism. (06 Marks)
c. What are biomimetics? Mention their application with examples. (07 Marks)

Module-4

- 7 a. Discuss the metal oxide nanoparticles TiO_2 and ZnO . Mention their applications in solar cell. (07 Marks)
b. Discuss the bottom gated and top gated Graphene FET with neat diagram. (07 Marks)
c. Explain CNT-FET with neat diagram. Mention the CNT – FET circuit. (06 Marks)

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.

OR

- 8 a. Write a note on Magnetic nanomaterials and their applications. (07 Marks)
b. Discuss the applications of semi conductivity cadmium and Selenide quantum dots bio-imaging. (07 Marks)
c. Explain the Carbon based nano-materials. Mention their applications. (06 Marks)

Module-5

- 9 a. Write a note on Toxicology of airborne and nano-materials deposition studies. (07 Marks)
b. Describe the disposal of nano-materials. (07 Marks)
c. Write a note on Nano-material pollution. (06 Marks)

OR

- 10 a. Explain packing and transportation of Nano-materials. (07 Marks)
b. Write a note on storage of Nanomaterials. (07 Marks)
c. Give a brief note on Handling of nano-materials. (06 Marks)
