

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS:M.Sc/I.M.Sc  
BRANCH: ALL

SEMESTER : II  
SESSION : SP/22

SUBJECT: BT 429 Concepts in Nanobiotechnology

TIME:02 h

FULL MARKS: 50

**INSTRUCTIONS:**

1. The question paper contains 6 questions each of 10 marks and total 60 marks.
  2. The candidate must attempt any 5 question of total 50 marks only.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
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- Q.1(a) "Explain the concept of Quantum Confinement and SPR with respect to nanomaterials? [5]
- Q.1(b) List the different Bottom-up approaches for nanofabrication? Explain any one in detail. [5]
- Q.2(a) Classify nanostructures based on dimension scale and briefly explain each category. [5]
- Q.2(b) "Fullerens are advanced allotropes of carbon". Justify? Describe a method for its production? [5]
- Q.3(a) Describe the principle behind UV-vis Spectroscopy? Differentiate between AFM and STM? [5]
- Q.3(b) Describe the principle of DLS? Draw the schematic representation of SEM & TEM with suitable labeling. [5]
- Q.4(a) Discuss about Self- assembly and self-organization with suitable examples? [5]
- Q.4(b) Describe the concept of "Machine-Phase bionanotechnology" and Biomolecular Motor with suitable examples? [5]
- Q.5(a) Describe the principle, working and applications of carbon nanotube biosensor? [5]
- Q.5(b) Evaluate the nanotoxicological challenges with its impact on health and environment? [5]
- OR
- Q.6(a) Support with suitable explanation how nanoscale characterization has revolutionized Nanotechnology? [5]
- Q.6(b) Differentiate between FESEM and HRTEM? Explain the principle of XRD? [5]

09/05/2022 E  
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