

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 11**

**M.Sc. (BT) (Sem.-1)**  
**NANOBIOTECHNOLOGY**

**Time : 3 Hrs.**

**Max. Marks : 70**

### INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

## SECTION-A

- 1. Write short note on following :**

- (a) Biomaterials
- (b) DNA-oligomers
- (c) Gold nanoparticles
- (d) Transducer
- (e) Amplifiers
- (f) Carbon nanotubes
- (g) Quantum dots
- (h) Buckyballs
- (i) Nanoinsecticides
- (j) Smart packaging

## SECTION-B

2. Describe the structure and functional properties of biomaterials for nanotechnology.
3. Describe protein based nanostructures building blocks and templates with examples.
4. What are gold nanoparticles? Discuss hybrid conjugates of gold nanoparticles.
5. Discuss the impact of nanomaterials in biological processes with examples.
6. Discuss carbon nanotubes and quantum dots interface with biological macromolecules.
7. Discuss the applications of nanotechnology in toxin and contaminant detections.
8. Discuss the historical prospectives of integration of biology with chemistry and material science.

## SECTION-C

9. What is molecular sensing? Discuss molecular recognition and flexibility of biomaterials.
10. What are DNA based nanostructures? Describe the topographic and electrostatic properties of DNA and proteins.
11. Write an essay on applications of nanotechnology in agriculture and food technology.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**