

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

FIFTH SEMESTER – APRIL 2023

UPB 5602 – NANOTECHNOLOGY

Date: 15-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

Part A

Answer the following, each within 50 words

(10 x 2 = 20 marks)

1. What is a nanometer?
2. Differentiate top down and bottom up approach.
3. List out the optical properties of nanoparticles.
4. What is photoluminescence?
5. Write notes on 1-D nanostructures.
6. What are quantum dots?
7. Describe polymeric micelles.
8. What are nutraceuticals?
9. List any 2 health hazards of Nanotechnology.
10. Write notes on DNA origami.

PART B

Answer the following, each within 500 words. Draw diagrams and flowcharts wherever necessary.

(5 x 7 = 35 marks)

11a. Write notes on the biosynthesis of nanoparticles.

or

b. List out the milestones in the field of Nanotechnology.

12a. Write notes on the principle and uses of Atomic Force Microscopy (AFM).

or

b. Give an account on the working principle of UV- Visible Spectroscopy.

13a. Give an account on properties and applications of fullerenes.

or

b. Write briefly on nanowires and its significance.

14a. Discuss on the controlled release of drugs.

or

b. What are the applications of solid lipid nanoparticles (SLN)?

15a. Give an account on the applications of nanoparticles in textile industry.

or

b. Write notes on health hazards of nanotechnology.

PART C

Answer any three of the following, each within 1200 words. Draw diagrams and flowcharts wherever necessary. (3 x15 = 45 marks)

16. Give a detailed account on i) Surface Plasmon Resonance ii) Quantum confinement.
17. Give an account on the working principle and applications of SEM and TEM.
18. Discuss in detail on the discovery, types, properties and applications of graphene.
19. Illustrate polymeric nanotubes and the biopolymeric materials utilized in the drug delivery systems.
20. Write in detail on the applications of nanoparticles in Waste water treatment and environmental remediation.

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