

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



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

FIFTH SEMESTER – NOVEMBER 2022

UPB 5602 – NANOTECHNOLOGY

Date: 30-11-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

(10 x 2 =20 Marks)

Answer the following, each within 50 words

1. What is surface-to-volume ratio?
2. “There is plenty of room at the bottom” - Comment.
3. State Beer-Lambert’s law.
4. List out the electrical properties of nanoparticles.
5. Write a note on nanorods.
6. What is Young’s modulus?
7. Define nanomedicine.
8. Differentiate nanofibers from nanocomposites.
9. What are biotemplates?
10. Write notes on ethical concerns of nanotechnology.

PART – B

(5 x 7 = 35 Marks)

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

- 11 a. Give an account on Quantum confinement.
or
b. Write notes on Surface Plasmon Resonance (SPR).
- 12 a. Write notes on photoluminescence.
or
b. Differentiate between Scanning Electron Microscope and Transmission Electron Microscope.
- 13 a. Give an account on the properties and applications of graphene.
or
b. Write briefly on quantum dots.
- 14 a. Present an account on nanobots in medicine. Add a note on their advantages.
or
b. Discuss the magnetic nanoparticles as drug carriers.
- 15 a. Give an account on nanosensors.
or
b. Write notes on DNA origami and its applications.

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 the green synthesis of nanoparticles.
17. Give an account on i) Atomic force microscopy ii) Scanning Tunelling Microscopy.
18. Discuss in detail on the discovery, types, properties and applications of carbon nanotubes (CNTs).
19. Present a detailed account on solid lipid nanoparticles (SLN) with their applications.
20. Write in detail on the applications of nanoparticles in i) paint industry ii) food industry.

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