

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – ENVIRONMENTAL SCIENCE

ENVIRONMENTAL BIOTECHNOLOGY AND NANO TECHNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 Eutrophication is caused by
(i) P enrichment in soil (ii) P&N enrichment in water bodies
(iii) SO₂ enrichment in air (iv) K enrichment in organisms
- 2 *Thiobacillus ferrooxidans* is involved in the process of
(i) Bioleaching (ii) Biotransformation
(iii) Biosurfactants (iv) None of these
- 3 Mycorrhiza is an example for
(i) Predatory association (ii) Symbiotic association
(iii) Parasitic Association (iv) Amensalic association
- 4 Hydrogels are
(i) Water soluble polymer (ii) Water resistant polymer
(iii) Water insoluble polymer (iv) Water absorbing polymer
- 5 Carbon nanotubes are made up of
(i) Diamond (ii) Organic carbon
(iii) Fullerenes (iv) Graphene

SECTION - B (15 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 3 = 15)

- 6 a) Illustrate the immobilized cells and its applications.
OR
b) Explain the nitrogen removal from wastewater.
- 7 a) State the impacts of hydrocarbons on environment.
OR
b) Discuss the advantages of phytoremediation.
- 8 a) Explain the biosafety guidelines in India.
OR
b) State the role of bioenergy crops in energy production.

Cont...

9. a) Briefly explain the chemical methods of synthesizing nanoparticles.
OR
b) Illustrate the structure-property relationships of nanomaterial.
10. a) Explain the carbon nanotubes and its applications on wastewater treatment.
OR
b) Outline the benefits of nanomaterials in environmental aspects.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

11. a) Elucidate the causes of CO₂ emission and application of biotechnology in prevention and control .
OR
b) Evaluate the environmental impacts of GMOs and LMOs.
12. a) Elucidate the sulphur and cyanide removals from acid mine drainage using microbes.
OR
b) Interpret the use of biosurfactants for the treatment of oil pollution.
13. a) Explain in detail about biopesticides and advantages over synthetic pesticides.
OR
b) Assess the role of phosphate solubilizing bacteria on soil quality with examples.
14. a) Differentiate the pros and cons of natural and synthetic nanomaterials with suitable examples.
OR
b) Categorize the methods used for fabrication of soft materials.
15. a) Evaluate the role of nanotechnology and its applications in energy sector.
OR
b) Formulate the methods of pathogen removal from air.

Z-Z-Z

END