

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – ENVIRONMENTAL SCIENCE

ENVIRONMENTAL MICROBIOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

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

- 1 Who is known as father of Microbiology?
(i) Edwin John Butler (ii) Robert Koch
(iii) Ferdinand Cohn (iv) Antoni van Leeuwenhoe
- 2 Which of the following microbes found in the air?
(i) *Eichornia* (ii) *Hyacinth*
(iii) *Asperigillus niger* (iv) *Escherichia coli*
- 3 Which one of the following is not included in the mechanism of bioleaching?
(i) Acidolysis (ii) Complexolysis
(iii) Redoxolysis (iv) Hydrolysis
- 4 Which of the following is a PAHs?
(i) Chlorine (ii) Brucine
(iii) Toluene (iv) Methane
- 5 Which of the following is a type of phytoremediation?
(i) Phytoextraction (ii) Bioaugmentation
(iii) Phytovolatilization (iv) Both (i) & (iii)

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Explain the three-kingdom classification system of Ernst Haeckel.
OR
b Illustrate the microbial growth curve.
- 7 a Describe the enumeration of micro-organisms present in the air environment.
OR
b Explain the factors affecting microbial population.
- 8 a Illustrate the microorganisms present in rock and minerals.
OR
b Explain the role of geomicrobiology in coal.
- 9 a Evaluate the organisms involved in the degradation of chlorinated hydrocarbons.
OR
b Analyse the microorganisms in removal of metals from contaminated soil.
- 10 a State the selective enrichment in bioaugmentation.
OR
b Differentiate immobilization and encapsulation.

Cont...

SECTION – C (30 Marks)

Answer ALL questions

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

- 11 a Describe the various methods of sterilization techniques and media types.
OR
b Explain the principle & applications of phase contrast microscope.
- 12 a Assess the various microbial communities in different aquatic environments.
OR
b Enumerate the various bacteriological techniques for water quality analysis.
- 13 a Determine the microbial activity in soil and in ground water.
OR
b Discuss in detail about bioleaching in the recovery process of copper.
- 14 a Analyse the organisms involved in the degradation of PAHs.
OR
b Design the method to remove the metals from contaminated water.
- 15 a Classify the types of bioremediation with examples.
OR
b Elucidate the role of GMOs in bioremediation.

Z-Z-Z

END