

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – APPLIED MICROBIOLOGY

BIORESEARCH INSTRUMENTATION & AI

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

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

1. Which of the following centrifugation is used to separate certain organelles from whole cell?
(i) Analytical (ii) isopycric
(iii) Differential (iv) Rate zonal
2. The tracking dye used in SDS-PAGE will be -----
(i) Anionic (ii) Cationic
(iii) Non ionic (iv) Amphipathic
3. What is ethidium bromide?
(i) Buffer (ii) chelating agent
(iii) DNA Solution (iv) Enzyme
4. CARD-FISH uses ----- molecule with fluorescent labelling for identification
(i) Pyrimidine (ii) Tyramide
(iii) purine (iv) Tyrosine
5. Chemiluminescent EIA is used to detect ----- organisms
(i) paramecium (ii) Trichomonas
(iii) Giardia (iv) Trachomatis

SECTION - B (15 Marks)

Answer ALL Questions

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

- 6 a Explain about the principle and function of atomic force microscopy.
OR
b Explain about Radioactive isotopes.
- 7 a Write a note on NMR spectroscopy.
OR
b Explain about Beer Lamberts law for absorption spectroscopy.
- 8 a Explain the working principle of Gas chromatography.
OR
b What is the principle of Ion exchange chromatography with examples of cation and anion exchanges?
- 9 a Explain the working principles of biosensors.
OR
b Explain RFLP and their applications in DNA fingerprinting.
- 10 a Illustrate the probe hybridization technique with examples.
OR
b What are the common uses and amplification of AI? Explain in brief.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 6 = 30)

- 11 a Write in detail about the principle and application of SEM.
OR
b Write in detail about bright field and dark field microscope.
- 12 a Describe the working principle and applications of Spectrophotometer.
OR
b Explain the various types of centrifuges with their working principles.
- 13 a Explain HPLC. Write the principle and instrumentation with neat diagram.
OR
b Explain in detail about flow cytometry.
- 14 a Explain the advantages of metagenomics analysis.
OR
b Explain about SDS DAGE with neat diagram.
- 15 a Discuss in detail about CO₂ gas detection in BACTEC systems.
OR
b Explain about the molecular diagnosis of MDR-TB and MRSA.

Z-Z-Z

END