

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch - APPLIED MICROBIOLOGY

BIORESEARCH INSTRUMENTATION

T Three Hours Maximum: 75 Marks

SECTION-A (10 Marks!

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- 1 What is the condenser on a light microscope used for?
(i) To focus the light source (ii) To diffuse the light source
(iii) To provide the light source (iv) To control the light source
- 2 X-rays and gamma rays have significant penetrating power due to their
(i) short wavelength (ii) medium wavelength
(iii) long wavelength (iv) wide range of wavelengths
- 3 In mass spectrometer, the sample that has to be analysed is bombarded with which of the following?
(i) Protons (ii) Electrons
(iii) Neutrons (iv) Alpha particles
- 4 Which of the following centrifugation is used to separate certain organelles from whole cell?
(i) Rate-zonalcentrifugation (ii) Normal centrifugation
(iii) Differential centrifugation (iv) Isopycnic centrifugation
- 5 Which type of mechanism is applicable to chromatography?
(i) Absorption and desorption (ii) Adsorption and absorption
(iii) Adsorption and desorption (iv) Adsorption and diffusion
- 6 Which of the technique is suited for the separation of large DNA fragments?
(i) AGE (ii) PAGE
(iii) PFGE (iv) SDS - PAGE
- 7 Which of the following template should give optimum best results for NGS experiments?
(i) Genomic DNA (ii) PCR product
(iii) Bacterial Artificial Chromosome (iv) All the above
- 8 Which of the following biosensors use the movement of electrons produced during redox reactions?
(i) Amperometric biosensor (ii) Potentiometric biosensor
(iii) Piezo-electric biosensor (iv) Optical biosensor
- 9 Lateral flow immunochromatography is used in
(i) human health (ii) animal health
(iii) plant health (iv) all the above

Luciferase assay will be performed by which of the following devices?

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

11 a Briefly explain phase contrast microscopy and add a note on its applications.

OR

b Illustrate on radioactive isotopes.

12 a Explain the instrumentation of pH meter.

OR

b Determine the significance of preparative centrifugation.

13 a Illustrate the working principle of TLC.

OR

b State the mechanism of PFGE.

14 a Discuss briefly on metagenomics.

OR

b Draw a neat sketch of flow cytometry and add notes on its application.

15 a Explain Ligase chain reaction.

OR

b Evaluate the applications of Radio immune assay.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

16 a Differentiate the working principles and properties of TEM and SEM.

OR

b Analyze on the tracer elements in biology.

17 a Determine the principle and application of UV-visible spectrophotometry.

OR

b Assess the mechanism of ultracentrifuges.

18 a Give a detail analysis of HPLC.

OR

b Compare Native PAGE and SDS - PAGE

19 a Formulate the methodology of RFLP.

OR

b Criticize on HIV detection using SPR.

20 a How will you interpret the results for MRSA?

OR

b Analyze on blood culture system.