

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)**

Branch – MICROBIOLOGY

BIOINSTRUMENTATION

Time: 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 pH of sea water?
 (i) 8 (ii) 9
 (iii) 10 (iv) 11
2. Which statement is correct
 (i) Wavelength is directly proportional to frequency
 (ii) Wavelength is directly proportional to energy
 (iii) Wave number is directly proportional to energy
 (iv) Wave number is directly proportional to wavelength
3. What is the meaning of rpm?
 (i) Round per minutes (ii) Rotation per minutes
 (iii) Roteur per minutes (iv) Rolling per minutes
4. Method used to separate the different components of a cell on the basics of mass
 (i) Differential centrifugation (ii) Preparative centrifugation
 (iii) Analytical centrifugation (iv) Density gradient centrifugation
5. A physical method that is used to separate and analyse complex mixtures is called
 (i) Centrifugation (ii) chromatography
 (iii) Electrophoresis (iv) All the above
6. Which can be used as a mobile phase in HPLC?
 (i) Any compound with solubility in liquid
 (ii) Any compound with limited solubility in liquid
 (iii) Any compound with non-solubility in liquid
 (iv) Any of the above
7. Electrophoresis cannot be used to separate
 (i) Lipid (ii) DNA
 (iii) RNA (iv) Protein
8. SDS-PAGE separation is based on
 (i) Molecular weight (ii) Shape
 (iii) charge (iv) all the above
9. The thin wire at the cathode of GM tube act as
 (i) Cathode (ii) Anode
 (iii) Neutral (iv) None
10. The Phenomenon of flurescence due to exitation by radioactivity is known as
 (i) Scintilation (ii) Auto radiography
 (iii) Radisisotopes (iv) PCR

Cont...

SECTION - B (35 Marks)Answer **ALL** Questions**ALL** Questions Carry **EQUAL** Marks (5 x 7 = 35)

- 11 a What does the Beer-Lambert law state?
OR
b Write the working principle of electrochemical Biosensors.
- 12 a Explain the working principle of centrifugation.
OR
b Describe the functional difference between analytical and preparative centrifugation.
- 13 a Write a note on TLC.
OR
b Discuss the working principle of gel permeation chromatography.
- 14 a Comment on polyacrylamide gel as supporting medium in electrophoresis.
OR
b Give an account on principle and applications of Immunoelectrophoresis.
- 15 a Discuss the applications of radio isotopes in median.
OR
b List out the disadvantages of scintillation counting.

SECTION - C (30 Marks)Answer any **THREE** Questions**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 Explain the working principle and uses of UV spectro-photometer.
- 17 Illustrate the working mechanism of density-gradient centrifugation.
- 18 What is the principle of HPLC? Add a note on the function of column in HPLC.
- 19 Elaborate the working principle of agarose gel electrophoresis of DNA.
- 20 Write the details on the types of scintillation counting's.

Z-Z-Z

END