

**Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University) - Coimbatore - 641 043**

**Master's Degree Examination – November 2018
I Semester**

**Class : I PG
Major : Biotechnology**

**Time : 3 hours
Max. Marks: 60**

17MBTC04 Biophysical Techniques

Part A

(10 x 1/2=5)

Choose the correct answer

1. The magnifying power of ----- is up to 2 million times
a) Light Microscope b) Electron microscope c) TEM d) SEM
2. Object is brightly illuminated, while the surrounding field appears black in-----microscope
a) Compound b) Phase contrast c) Dark field d) Fluorescence
3. Liquid samples are injected into column in gas chromatography using-----
a) Micro-syringe b) Gas tight syringe c) Rotary sample valve
d) Solid injection syringe
4. The-----method is commonly used for the separation of DNA by electrophoresis
a) Agarose-vertical b) Agarose-horizontal c) PAGE-vertical d) PAGE-horizontal
5. In NMR, when energy is absorbed by sample then change in signal is developed by -----
a) Amplifier b) Photodetector c) GM counter
d) Radiofrequency detector
6. The unit of molar absorptivity for determining absorbance A in Beer Lambert's formula is ----
a) $L \text{ mol}^{-1} \text{ cm}^{-1}$ b) $L \text{ gm}^{-1} \text{ cm}^{-1}$ c) Cm d) $\text{gm}^{-1} \text{ cm}^{-1}$
7. Laminar flow burner used in Flame photometers is also known as ----- burner
a) Turbulent b) Premix c) Total consumption d) Nozzle mix
8. Globar rod which is used as a source in Mid IR spectroscopy contains-----
a) Silicon carbide b) Silver chloride c) Silicon dioxide d) Silver carbide
9. The quenching gas used in Geiger Muller counter is-----
a) Alcohol b) Argon gas c) Krypton d) Hydrogen
10. In glucose electrode, glucose oxidase is coupled to an electrode by -----
a) Ferrocene derivatives b) Urease c) Polyacrylamide d) Biochips

Part B

5 x 4 = 20

Answer ALL questions

Each answer should not exceed 200 words or one page

- 11.a. Sketch the principle and applications of optical microscopy?
(OR)
- 11.b. Report on the applications of TEM.
- 12.a. Sketch the principle of analytical ultracentrifuge.
(OR)
- 12.b. Differentiate paper chromatography and TLC?
- 13.a. Sketch the principle and applications of fluorescence spectroscopy?
(OR)
- 13.b. Restate the types of electromagnetic radiation.
- 14.a. Sketch the mechanism by which ionization takes place in MALDI.
(OR)
- 14.b. Examine that Illumina sequencing is a NGS.
- 15.a. Criticise on alpha and gamma decay.
(OR)
- 15.b. Illustrate the applications of radioisotopes in diagnosis and treatment of diseases.

Part C

5 x 7 = 35

Answer ALL questions

Each answer should not exceed 600 words or three pages

- 16.a. Describe about the production and properties of X-rays.
(OR)
16. b. Illustrate the principle and applications of SEM.
- 17.a. Tell about the types of ion exchange resins and its uses.
(OR)
- 17.b. Discuss on the principle and applications of EMSA.
- 18.a. Express the principle and instrumentation of UV visible spectroscopy.
(OR)
- 18.b. Report on the principle and radiation sources used in atomic absorption spectroscopy.
- 19.a. Explain the principle and instrumentation of flame photometry.
(OR)
- 19.b. Describe the principle, instrumentation and applications of GC-MS.
- 20.a. Sketch on the principle and applications of circular dichroism.
(OR)
- 20.b. Discuss on the applications of biosensors.
