(6 pages) Reg. No. : .....

Code No. : 30234 E **Sub. Code : SAMI 11/ AAMI 11**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023

First Semester

Microbiology

Allied – BIOINSTRUMENTATION

(For those who joined in July 2017-2020)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Buffers react with _____ ions
   (a) Magnesium, calcium
   (b) Hydrogen, hydroxyl
   (c) Potassium
   (d) Sodium

2. What is the full form of pH?
   (a) Positive hydrogen
   (b) Potential hydrogen
   (c) Positron
   (d) Proton of hydrogen

3. Temperature used for hot air oven is
   (a) 100 degree Celsius for 1 hour
   (b) 250 degree Celsius for 1 hour
   (c) 160 degree Celsius for 1 hour
   (d) 120 degree Celsius for 1 hour

4. Which of the following is (are) the application of lyophilization?
   (a) To process micro organisms like bacteria for storage and to concentrate enzyme
   (b) To process molds, protozoa and most viruses for storage
   (c) (a) Only
   (d) Both (a) and (b)

5. Chromatography with solid stationery phase is _____
   (a) Circle chromatography
   (b) Square chromatography
   (c) Adsorption chromatography
   (d) Solid chromatography

6. The principle of centrifugation is
   (a) Sedimentation (b) Filtration
   (c) Evaporation (d) Size reduction

7. Which of the following cannot be used for the separation of nucleic acids?
   (a) SDS-PAGE (b) Northern blotting
   (c) PAGE (d) None of the above

8. In electrophoresis ,DNA will migrate towards
   (a) Cathode or positive electrode
   (b) Anode or negative electrode
   (c) Cathode or negative electrode
   (d) Anode or positive electrode

9. NMR spectroscopy is used for determining structure in which of the following materials?
   (a) Radioactive materials
   (b) Insoluble chemical compounds
   (c) Liquid
   (d) Gases

10. Which of the following components are used to generate x —rays in x ray spectroscopy?
   (a) Meyer tube (b) West tube
   (c) Anger tube (d) Coolidge tube

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What is buffer capacity? Mention few applications of buffer.

Or

(b) Write about different types of electrodes and their uses.

12. (a) Explain the structure and uses of incubator.

Or

(b) Describe the principle and applications of lyophilizer.

13. (a) Elucidate the principle and applications of ion exchange chromatography.

Or

(b) Write a short note on commonly used matrix materials in column chromatography.

14. (a) Explain the principle and applications of paper electrophoresis.

Or

(b) Write about different support materials used in electrophoresis.

15. (a) Enlight on operating mechanism of colorimeter.

Or

(b) Give a short note on x ray spectrometry.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, by choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) What is titration curve? Explain the titration of a weak base with weak acid and its curve.

Or

(b) Define pH. Explain the techniques of pH measurement.

17. (a) Describe the working principle instrumentation and uses of hot air oven.

Or

(b) Write about the instrumentation, safety measures to be followed and uses of laminar air flow.

18. (a) Write about HPLC and its applications.

Or

(b) Discuss about different types of centrifuges.

19. (a) Give an account of PAGE using native and SDS gel system.

Or

(b) Explain the principle, methodology and applications of Immunoelectrophoresis.

20. (a) Describe the principle and applications of flame photometry.

Or

(b) Explain the instrumentation and applications of NMR spectroscopy.

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