(7 pages) Reg. No. : .....

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

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2022.

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. The p^H of the buffer solution depends upon
   (a) Strong acid
   (b) Strong base
   (c) Weak acid
   (d) Salt

2. The number of moles of a solute per liter of a solution is _____
   (a) Molality
   (b) Normality
   (c) Molarity
   (d) None of the above

3. How long it take for the autoclave to complete its cycle?
   (a) 30-35 minutes
   (b) 50 minutes to 1 hour
   (c) 15 -20 minutes
   (d) 10- 15 minutes

4. In laminar air flow which types of filter is located?
   (a) Membrane filter (b) Seitz filter
   (c) Vaccum filter (d) HEPA filter

5. Thin layer chromatography is
   (a) Partition chromatography
   (b) Electrical mobility of ionic species
   (c) Adsorption chromatography
   (d) None of the above

6. Density gradient centrifugation is used to
   (a) Purify viruses, ribosomes, membranes
   (b) Remove dirt
   (c) Remove fine particles
   (d) Remove large particles

7. Sodium Dodecyl Sulfate (SDS) used in SDS PAGE is
   (a) An anionic detergent
   (b) A cationic detergent
   (c) A non -ionic detergent
   (d) An anion exchanger

8. The most common type of gel used for DNA separation is
   (a) Agar
   (b) Polyacrylamide
   (c) Agarose
   (d) All of the above

9. Beer Lambert's law gives the relation between which of the following?
   (a) Reflected radiation and concentration
   (b) Scattered radiation and concentration
   (c) Energy absorption and concentration
   (d) Energy absorption and reflected radiation

10. Which of the following is not a technique for preparing solid samples in IR spectroscopy?
    (a) Solids run in solution
    (b) Mull technique
    (c) Solid films
    (d) Thin films

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Describe the preparation of molar and normal solutions with example.

    Or

    (b) Explain a glass electrode and its function in p^H meter.

12. (a) Write the working principle of hot air oven and it uses.

Or

(b) Explain the structure, principle and uses of BOD incubator

13. (a) Define chromatography and explain the term R_f value.

Or

(b) Write a short note on low speed and high speed centrifuges.

14. (a) Explain the structure and uses of vertical slab gel electrophoresis.

Or

(b) Brief out the principle and applications of Immunoelectrophoresis

15. (a) Define and explain Beer Lambert's law.

Or

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

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Describe the preparations of different types of buffers.

Or

(b) Define p^H Explain. How p^H is measured using p^H meter.

17. (a) Describe the working principle, instrumentation and uses of autoclave.

Or

(b) Write about the instrumentation and uses of laminar air flow.

18. (a) Describe the principle and applications of thin layer chromatography.

Or

(b) What is density gradient centrifugation? Explain.

19. (a) Explain the principle and method of paper electrophoresis with its applications

Or

(b) Write briefly about SDS-PAGE

20. (a) Describe the principle instrumentation and uses of IR spectroscopy

Or

(b) Explain the instrumentation and applications of Raman spectroscopy

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