

(6 Pages)

Reg. No. :

Code No. : 20544 E Sub. Code : CAMI 11

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

First Semester

Microbiology — Allied - I

BIOINSTRUMENTATION

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Why does a buffer solution resist any change in pH?
 - (a) They give unionised acid or base on reaction with acid or a base
 - (b) Acids and bases in the buffer solutions are protected from attack by other ions
 - (c) They have an excess of H^+ or OH^- ions
 - (d) They have a fixed pH value

2. The electrodes used in pH measurement have which of the following internal resistances?
 - (a) Very low resistance
 - (b) Moderate resistance
 - (c) Very high resistance
 - (d) No resistance
3. The autoclave process gives a ——— pathogen and virus kill rate.
 - (a) high
 - (b) very high
 - (c) low
 - (d) very low
4. Which of the following statements about lyophilization is false?
 - (a) it is a method for drying materials for long-term storage
 - (b) initial investment is high
 - (c) it is processed at high temperature
 - (d) materials can be dried with minimum damage to its internal structure
5. Separation of different fatty acids by
 - (a) counter current chromatography
 - (b) affinity chromatography
 - (c) gas chromatography
 - (d) thin layer chromatography

6. Who invented centrifugation?
(a) Newton (b) G.G. Stokes
(c) Antonin Prandtl (d) Al-Kindi
7. 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
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 part of the spectrophotometer is adjusted to select the desired wavelength?
(a) Filter (b) Sample
(c) Light source (d) Photodetector

Page 3 Code No. : 20544 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Interpret the preparation of buffer solution.
Or
(b) Illustrate the titration curve and describe the importance of titration curve.
12. (a) Identify the working mechanism of hot air oven.
Or
(b) Illustrate and justify the working mechanism of BOD incubator.
13. (a) Define the terms : (i) Stationary phase
(ii) Mobile phase (iii) Elution.
Or
(b) Interpret about centrifugation.
14. (a) Construct the detailed note on AGE electrophoresis for biomolecules.
Or
(b) Predict what does the meaning of horizontal and tube gel types of electrophoresis.

Page 4 Code No. : 20544 E

[P.T.O.]

15. (a) Differentiate a spectrometer and a colorimeter.

Or

- (b) Summarize the principles of IR 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 about the pH measurement methods and its advantages and disadvantages.

Or

- (b) Write an essay on buffers.

17. (a) Evaluate the principles and applications of autoclave.

Or

- (b) Estimate the principles and application of biosafety cabinets.

18. (a) Organize about the principle and application of paper chromatography with its types.

Or

- (b) Describe about the principle and application of centrifuge.

19. (a) How does PAGE work? Give detailed note on applications of PAGE.

Or

- (b) Summarize electrophoresis and its types and applications.

20. (a) Describe about X-ray crystallograph and NMR in detail.

Or

- (b) Review the principle of UV-visible spectrophotometer. What are the components of a spectrophotometer?
-