

Code No. : 30503 E Sub. Code : CAMI 11

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

First Semester

Microbiology – Allied

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. Which of the following mixture is an example of a buffer solution?
- (a)  $\text{NaNO}_2$  and  $\text{HNO}_2$  (b)  $\text{KCl}$  and  $\text{HCl}$   
(c)  $\text{NH}_4\text{NO}_3$  and  $\text{HNO}_3$  (d)  $\text{NaCl}$  and  $\text{NaOH}$

6. What is the principle of centrifugation?
- (a) Sedimentation principle  
(b) Filtration principle  
(c) Evaporation principle  
(d) Size reduction principle
7. In SDS-PAGE, separation is based on
- (a) Molecular weight (b) Shape  
(c) Charge (d) All of the above
8. The technique electrophoresis, for the separation of charged molecules was developed by
- (a) Tswett (b) Svedberg  
(c) Tiselius (d) Sanger
9. Cuvette of Colorimeter is made of
- (a) Alkali halide (b) Quartz  
(c) Glass (d) All of these
10. The visible portion of the electromagnetic spectrum occurs between \_\_\_\_\_ nm and \_\_\_\_\_ nm.
- (a) 1, 10 (b) 10, 300  
(c) 400, 740 (d) 800, 1200

2. pH meters can be considered as voltage sources with which of the following internal resistances?
- (a) Very low resistance (b) Moderate resistance  
(c) Very high resistance (d) No resistance
3. Autoclaves are used in the medical applications to perform \_\_\_\_\_.
- (a) Vulcanization (b) Heating  
(c) Sterilization (d) Cleaning
4. BOD is a measure of
- (a) Industrial wastes passed into water bodies  
(b) Amount of carbon monoxide combined with haemoglobin  
(c) Extent of pollution with organic matter  
(d) Amount of oxygen required by plants during night
5. Thin layer chromatography is
- (a) Partition chromatography  
(b) Electrical mobility of ionic species  
(c) Adsorption chromatography  
(d) None of the above

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the uses of Buffer Solution.
- Or
- (b) Generalize the techniques of pH measurement methods.
12. (a) How does autoclave sterilization work?
- Or
- (b) How do you plan to freeze dry samples?
13. (a) Examine what is the retardation factor? How it is calculated?
- Or
- (b) Analysis of applications of Centrifugation.
14. (a) How does gel electrophoresis identify proteins?
- Or
- (b) Summarize about immunoelectrophoresis.

15. (a) How does the UV VIS spectroscopy works?

Or

(b) Interpret NMR spectrophotometer and how its work.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) Collect the detail about pH Meter.

Or

(b) Describe the techniques of pH measurement.

17. (a) Demonstrate the principles and applications of incubator.

Or

(b) Summarize the principles and applications of Lyophilizer.

18. (a) Interpret about the principle and application of HPLC.

Or

(b) Summarize the principle and application of centrifuge and their types.

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19. (a) Describe about isoelectric focusing and PAGE in detail.

Or

(b) Establish the application of immune electrophoresis.

20. (a) Construct what is UV-VIS spectrophotometer used for? What is the function of a spectrophotometer?

Or

(b) Describe a detail notes on Raman Spectroscopy and their applications.

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