

(6 pages)

Reg. No. : .....

Code No. : 6506

Sub. Code : ZMBE 11

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

First Semester

Microbiology

Elective – BIOCHEMICAL TECHNIQUES AND  
INSTRUMENTATION

(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. What is the wavelength range for UV spectrum of light?

- (a) 400 nm – 700 nm    (b) 700 nm to 10 nm  
(c) 1000 to 1100 nm    (d) 10 nm to 400 nm

2. The intensity of an adsorption band is always

- (a) Atomic population  
(b) Molecular population of the initial state  
(c) Molecular population of the final state  
(d) Temperature

3. Which of the following centrifugation is used to separate certain organelles from whole cell?

- (a) rate-zonal centrifugation  
(b) normal centrifugation  
(c) differential centrifugation  
(d) isopycnic centrifugation

4. Which of the following is used as a media for density gradient?

- (a) Agarose                      (b) Ficoll  
(c) Luria broth                (d) Propylene glycol

5. Chromatography is a physical method that is used to separate and analyze \_\_\_\_\_ mixtures

- (a) simple                      (b) complex  
(c) viscous                      (d) metal

6. Which of the following cannot be used as an adsorbent in column adsorption chromatography?
- (a) Magnesium-oxide
  - (b) Silica gel
  - (c) Activated alumina
  - (d) Potassium permanganate
7. Which technique separates charged particles using electric field?
- (a) Hydrolysis
  - (b) Electrophoresis
  - (c) Protein synthesis
  - (d) Protein denaturing
8. What does the electrophoresis apparatus consist of \_\_\_\_\_.
- (a) Gel, buffer chamber and fire pack
  - (b) Buffer chamber and electrophoresis unit
  - (c) Electrophoresis unit and gel separator
  - (d) Power pack and electrophoresis unit
9. Which of the following is not a type of radiation detectors?
- (a) Geiger Muller Counter
  - (b) Proportional Counter
  - (c) Semi conductor detector
  - (d) Flame emission detector

10. When nuclear radiations pass through, gas ionization is produced this is the principle of which of the following detectors?
- (a) proportional counter
  - (b) flow counter
  - (c) Geiger muller counter
  - (d) Scintillation counter

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Describe titration curve and measurement of PH value.
- Or
- (b) Write the principles and applications of colorimetry.
12. (a) Explain the principles of centrifugation.
- Or
- (b) Discuss centrifugation techniques with examples.

13. (a) State the principles and applications of gas chromatography.

Or

(b) Focus on affinity chromatography.

14. (a) Collect some informations about radiolabelling.

Or

(b) Explain the basic principles of electrophoresis.

15. (a) Tell the principles and structural components of X ray spectroscopy.

Or

(b) List the types of Raman spectroscopy. Add note on its applications.

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 principle and applications of ultraviolet spectrophotometer.

Or

(b) Record the principle, components and applications of infrared spectroscopy.

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17. (a) List the types of centrifugal rotors and add notes on its applications.

Or

(b) Discuss about the types of analytical centrifugation.

18. (a) Explain the general principle and application of thin layer chromatography.

Or

(b) Describe general principles and application of gel filtration chromatography.

19. (a) Recommend a few staining method for the analysis of bands in electrophoresis process.

Or

(b) Define autoradiography and its principle.

20. (a) State the importance of NMR spectroscopy and how does it work.

Or

(b) Evaluate and measuring radioactivity content of a specific environment.

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