

(6 pages)

Reg. No. :

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

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 :

- The electrodes used in pH Measurement have which of the following internal resistances?
 - very low resistance
 - Moderate resistance
 - Very high resistance
 - No resistance
- Which of the following types of chromatography involves the separation of substances in a mixture over a 0.2 mm Thick layer of an adsorbent?
 - Gas liquid
 - Column
 - Thin layer
 - paper
- Electro phoresis was developed by _____
 - Tswett
 - Tsredberg
 - Tiseliws
 - sangar
- The speed of migration of Ions in electric field depends upon _____
 - Shape and size of molecule
 - Magnitude of charge and shape of molecule
 - Magnitude of charge shape and mass of molecule
 - Magnitude of charge and mass of molecules
- The different types of energies associated with a molecule are _____
 - Electronic energy
 - Vibrational energy
 - Rotational energy
 - All the above

- What is the principle of a colorimeter?
 - Heat loss rate is directly proportional to temperature difference
 - The total heat lost by a hot body is same as the total heat gained by the cold body provided no heat is lost to the surroundings.
 - Heat loss depends only on specific heat of a substance.
 - None of these
- Which of the following is not a type of centrifugation?
 - Hydrocyclone
 - Tabular centrifuge
 - Microfiteration
 - Disk stack separator
- At what speed do you centrifuge blood?
 - 2200- 2500 rpm
 - 500 – 1000 rpm
 - 4000 to 5000 rpm
 - 10,000 rpm
- In which type of chromatography, The stationary phase held in a narrow tube and the mobile phase is forced through it under pressure?
 - Column Chromatography
 - Planar chromatography
 - Liquid chromatography
 - Gas chromatography

- The transition zone for Raman spectra is _____
 - between vibratitonal and rotational levels
 - between electronic levels
 - between magnetic levels of nuclei
 - between magnetic levels of unpaired electrons

PART B — (5 × 5 = 25 marks)

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

- List the Applications of mass spectrophotometry?
Or
 - State the principles of Flame Photometry?
- Collect the informations about the safety aspects in the use of centrifuges?
Or
 - Describe briefly about density gradient centrifugation?
- Focus on the important applications of column chromatography?
Or
 - Describe briefly about High performance liquid chromatography?

14. (a) Write about Rocket immune electrophoresis?

Or

(b) Describe the function of isoelectric focusing electrophoresis.

15. (a) Differentiate Raman spectroscopy and IR spectroscopy?

Or

(b) Recommend some radio isotopic technique to detect radioactivity?

PART C — (5 × 8 = 40 marks)

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

16. (a) Explain the detail about pH meter?

Or

(b) Focus the Principle and applications of viscometry?

17. (a) Write a detail notes on centrifuge rotors?

Or

(b) Explain the principles of centrifugation method?

18. (a) Explain the principles and applications of paper chromatography?

Or

(b) State the principle and application of Ion exchange chromatography.

19. (a) Apply the electrophoresis techniques in immunology studies?

Or

(b) Choose an important technique for protein separation and identification.

20. (a) Write the principle, component structure and applications of AAS.

Or

(b) Practice the safety aspects of radio isotopic technique?