



CBCS SCHEME

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18BT55

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021

Bio Analytical Techniques

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain about the electrophoresis method for the separation of DNA molecule. (10 Marks)
b. Explain the mechanism involved in the reverse micelle two-phase extraction. (10 Marks)

OR

- 2 a. Explain about the various mechanisms involved in the chromatographic process. (10 Marks)
b. Explain about the column and planar theory in chromatographic process. (10 Marks)

Module-2

- 3 a. Explain about the rate theory and plate theory in the chromatographic process. (10 Marks)
b. Explain the principles and process of TLC and its preparation methods. (10 Marks)

OR

- 4 a. Explain about the principle and process of paper chromatography and its types. (10 Marks)
b. Explain about the normal phase and reversed chromatographic process and its advantages. (10 Marks)

Module-3

- 5 a. Explain about principles and process of uv – spectroscopy. (10 Marks)
b. Write about the Rayleigh, Stokes, anti-Stokes effect in Raman spectra. (10 Marks)

OR

- 6 a. What is chemical shift? Write about relation between the shielding effect and chemical with suitable example. (10 Marks)
b. i) Explain the principle of NMR step by step to quantify the resonance of the molecules. (10 Marks)
ii) Draw the over view of ^1H spectra for $\text{CH}_3\text{CH}_2\text{Cl}$ and $\text{CH}_3\text{CH}_2\text{OH}$. (10 Marks)

Module-4

- 7 a. Write the schematic representation and explain the protocol of X-ray diffraction. (10 Marks)
b. Explain about the various of mass analysers. (10 Marks)

OR

- 8 a. Explain about X-ray powder diffraction method. (10 Marks)
b. Explain about the process of MALDI. (10 Marks)

Module-5

- 9 a. Discuss about the working principles and instrumentation of SEM. (10 Marks)
b. Explain the process and instrumentation of FTIR. In addition that, explain the significance of FTIR. Comparatively to IR spectroscopy. (10 Marks)

OR

- 10 a. Explain the process and principles of XPS with neat diagram. (10 Marks)
b. Explain about the process of differential thermal analysis with neat diagram. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.