

SCHOOL OF BIOSCIENCES AND TECHNOLOGY
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

Programme Name & Branch : BTech Biotechnology
Course Code and Course Name : BBIT206L, Analytical techniques in Biotechnology
Slot(s) : A1+TA1
Faculty Name(s) : Dr Priti Talwar, Dr Podili Koteswaraiah
Class Number(s) : VL2025260502439, VL2025260502524
Date of Examination :
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Q.No	Question	M	CO	BL
1.	Write a short note on Beer Lamberts law and limitations. Explain the principle, instrumentation, and working of a UV-Vis spectrophotometer. Add a note on advantages of double-beam over single-beam instruments.	10	CO5	2
2.	Explain the principle of IR spectroscopy. What is the fingerprint region? Why is it important? Calculate the wave number and energy of radiation with a wavelength of 6000 Å.	10	CO4	2
3.	a) What do you infer from the following absorption spectrum diagram of two states of a biomolecule? Do you observe such spectra in practice? Name one specific scenario where you observe such graph.	5	CO5	4
	b) A solution of a compound has an absorbance of 0.5 when measured in a cuvette with a 1.0 cm path length. If the same solution is measured in a cuvette with a 2.0 cm path length, what will be the absorbance?	5		
4	a) Define sampling and explain its importance in research. Describe any two sampling methods. b) How does the polarity of a solvent affect the $\pi \rightarrow \pi^*$ transitions in acetone? A standard solution was prepared by dissolving 3.101 g of sodium carbonate	5	CO1	3



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	in distilled water and making up the volume to 250 ml. A 25 ml aliquot of this solution was titrated against hydrochloric acid (HCl). 18.7 ml of the acid was required for complete neutralization. What is the concentration of the acid? (MW of $\text{Na}_2\text{CO}_3 = 106 \text{ g mol}^{-1}$)	5		
5	Discuss the principle of atomic emission spectroscopy and explain the instrumentation and applications.	10	CO4	1
