Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd.u/s 3of UGC Act 1956, Category A by MHRD [now MoE]
Re-accredited with an A++ Grade by NAAC CGPA 3.65/4, Category I by UGC
Coimbatore-641043, Tamil Nadu, India

Continuous Internal Assessment II – April 2025
II Semester

Class : I UG **Time : 2 hrs**
Major: Biochemistry and Biotechnology **Max Marks : 60**

23BBTC02 Bioanalytical Tools

Course Outcomes :

CO1: Understand the theoretical basis for the practical experiments.
CO2: Recognize the importance of buffer systems in pH maintenance.
CO3: Appreciate the principle, operation, and applications of various techniques for analysing biomolecules.
CO4: Design suitable techniques for the separation of biomolecules.
CO5: Interpret the results of analytical techniques.

Part A **6 x 1= 6**

Choose the Correct Answer

1. Which technique is used to measure the hydrodynamic radius of macromolecules in solution? CO3K2
   a) NMR spectroscopy b) Dynamic Light Scattering (DLS)
   c) X-ray crystallography d) Gel electrophoresis
2. What is the wavelength range of the UV spectrum? CO3K2
   a) 100 nm to 500 nm b) 200 nm to 800 nm
   c) 300 nm to 1000 nm d) 400 nm to 1600 nm
3. Electrophoresis is not used for the separation of CO3K2
   a) Nucleic acids b) Proteins c) Amino acids d) Lipids
4. If proteins are separated according to their electrophoretic mobility then the type of electrophoresis is: CO3K2
   a) SDS PAGE b) Affinity Electrophoresis
   c) Electro focusing d) Free flow electrophoresis
5. What property of sound waves acts like the principle of ultrasound? CO5K1
   a) Reflection and Refraction b) Reflection only
   c) Refraction only d) Diffraction
6. Which part of the spectrophotometer is adjusted to select the desired wavelength? CO1K2
   a) Light source b) Filter c) Sample d) Photodetector

Part B **3 x 6 = 18**

Answer ALL questions
Each answer should not exceed 400 words or two pages

7. (a) Write about the working principles and applications of turbidometry. CO3K2
   (or)
   7. (b) Derive Beer and Lamberts law and write its application. CO3K2
8. (a) Write about working principle of agarose gel electrophoresis. CO4K2
   (or)
   8. (b) Explain in detail about immunoelectrophoresis. CO4K2
9. (a) Give an account on principle and application of flourimetery. CO5K2
   (or)
   9. (b) Write about any two methods of imaging intact biological structures. CO5K2

Part C **3 x 12 = 36**

Answer ALL questions
Each answer should not exceed 800 words or four pages

10. (a) Discuss the working principle and applications of UV-Visible spectroscopy. CO3K3
    (or)
    10. (b) Discuss the working principle and applications of Nephelometry. CO3K2
11. (a) Give an account on electrophoresis, working principle and explain in detail about Polyacrylamide gel electrophoresis. CO4K2
    (or)
    11. (b) Discuss in detail about the methods to measure radioactivity. CO3K2
12. (a) Give an account of principle and applications of mass spectroscopy and NMRspectroscopy. CO5K2
    (or)
    12. (b). Write in detail about the radiation hazards and precautions to be taken in handling radioactive isotopes. CO4K2

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55 + 40 = 95 copies