



**Avinashilingam Institute for Home Science and Higher Education for Women**  
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)  
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B  
Coimbatore - 641 043, Tamil Nadu, India

**Continuous Internal Assessment Test I, August 2025**

**SEMESTER V**

**Class: III UG**  
**Major: Zoology**

**Time : 2 Hours**  
**Maximum Marks : 60**

**23BZOC10 BIOTECHNIQUES**

**Course Outcomes:**

- CO1: Understand the purpose of the technique, its proper use and possible modifications/ improvement.  
CO2: Learn the theoretical basis of technique, its principle of working and its correct application.  
CO3: Gain knowledge about the construction repair and adjustment of any equipment required for a technique.  
CO4: Analyse the technique of cell and tissue culture and preparation of solution of given percentage and molarity.  
CO5: Imparting the process of preparation of buffer and techniques of separation of amino acids, proteins and nucleic acids.

**Part A**

**Choose the correct answers**

**1 X 6 = 6**

**Answer all questions**

- |    |                                                                                   |     |    |
|----|-----------------------------------------------------------------------------------|-----|----|
| 1. | Who is the father of Microscopy?                                                  | CO1 | K1 |
|    | a) Galileo Galilei   b) Robert Hook   c) Anton Von Leuwenhoek   d) Ernst Ruska    |     |    |
| 2. | FoV stands for                                                                    | CO2 | K2 |
|    | a) Field of View   b) Fluorescence of View   c) Field of Visit   d) Focal of View |     |    |
| 3. | The first microtomy device was invented by                                        | CO2 | K2 |
|    | a) George Adams   b) Paldwell Trefall   c) Queckett   d) Sir Horace Darwin        |     |    |
| 4. | The most common buffers in the human body are _____ ion                           | CO5 | K2 |
|    | a) hydrogen   b) sodium   c) Carbonate   d) Bicarbonate                           |     |    |
| 5. | The ultracentrifuge can sediment _____ in the bioseparation technique.            | CO3 | K1 |
|    | a) Colloidal particles   b) Huge particles   c) Solution   d) Non-colloidal       |     |    |
| 6. | Electrophoresis was developed by:                                                 | CO2 | K1 |
|    | a) Tswett   b) Tsvedber   c) Tiselius   d) Sanger                                 |     |    |

**Part B**

**Answer ALL questions**

**3 x 6 =18**

Each answer should not exceed 400 words or two pages

- |      |                                                                                                    |     |    |
|------|----------------------------------------------------------------------------------------------------|-----|----|
| 7.a  | Define resolving power, limit of resolution and magnification.<br>(or)                             | CO1 | K2 |
| 7.b  | Differentiate SEM and TEM.                                                                         | CO1 | K2 |
| 8.a  | Describe the different types of saline solutions used in medicine.<br>(or)                         | CO1 | K3 |
| 8.b  | State and explain Beer-Lambert's Law and its applications in pharmaceutical and clinical analysis. | CO2 | K2 |
| 9. a | Compare the analytical performance of a colorimeter and a spectrophotometer.<br>(or)               | CO2 | K3 |
| 9.b  | Discuss how agarose gel electrophoresis separates nucleic acids.                                   | CO3 | K4 |

**Part C**

**Answer ALL questions**

**3x12 = 36**

Each answer should not exceed 800 words or four pages

- |       |                                                                                                                                        |     |    |
|-------|----------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 10.a  | Enumerate the types of microscopes with optical illustration. (any 3)<br>(or)                                                          | CO1 | K3 |
| 10.b  | Discuss the procedure and application of microtomy.                                                                                    | CO1 | K4 |
| 11.a  | Explain the principle of a pH meter and its components, calibration process, applications in laboratory and clinical settings.<br>(or) | CO1 | K3 |
| 11.b  | Elucidate the principle and procedure of density gradient centrifugation and How does it differ from differential centrifugation?      | CO3 | K2 |
| 12. a | Illustrate the ultracentrifugation principle, types, and applications in biological and pharmaceutical sciences.<br>(or)               | CO3 | K2 |
| 12.b  | Describe the principle, procedure, and applications of 2D Native PAGE in the separation of biomolecules.                               | CO2 | K3 |