



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS**

**2023/2024 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER**

**BACHELOR OF SCIENCE IN MICROBIOLOGY  
AND BACHELOR OF EDUCATION (SCIENCE)**

**COURSE TITLE: BIO 2206-1**

**COURSE CODE: ADVANCES AND TECHNIQUES  
IN CELL BIOLOGY**

**DATE: 23/4/2024**

**TIME: 0830-1030 HRS**

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**Instructions**

**A. Answer ANY TEN (10) questions.**

**B. Illustrate your answers with diagrams and give examples where appropriate.**

**ANSWER ANY TEN (10) QUESTIONS (50 MARKS)**

1. Define the following terms as used in cell biology techniques;
  - a) Sedimentation (1 mark)
  - b) Centrifugation (1 mark)
  - c) Cryopreservation (1 mark)
  - d) Tissue Culture (1 mark)
  - e) Growth medium (1 mark)
2. Elucidate the advancement of the electron microscope over the light microscope in their gross performance in observation of cellular components (5 marks)
3. State and explain five principles on which biochemical techniques are based. (5 marks)
4. Explain subcellular fractionation as used in elucidating the various components of eukaryotic cells. (5 marks)
5. State and explain the advantages and limitations of free hand sectioning. (5 marks)
6. Distinguish between microtomes and tissue slicers. (5 marks)
7. Give five factors that you would consider when choosing a slicing technique. (5 marks)
8. Explain what is meant by a physiological balanced salt solution and distinguish between the two types of balanced solutions. (5 marks)
9. Give an account of how pH buffered culture media work. (5 marks)
10. Classify reptiles into the various taxonomic orders giving the distinguishing features of each. (5 marks)
11. Differentiate between mechanical and non-mechanical methods of cell disruption. (5 marks)
12. a) Distinguish between the three types of cell culture. (2 marks)  
b) What is the fundamental difference between cell culture and tissue culture? (3 marks)
13. Name and distinguish between the various biosafety levels of cell culture laboratories. (5 marks)
14. Highlight the components and ingredients of a cell culture media. (5 marks)
15. Describe BACs, MACs and FACs as used in cell sorting techniques. (5 marks)

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