



# MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)

University Examinations for 2013/2014

DEPARTMENT OF COMPUTING AND APPLIED SCIENCES

End of Term Examination for Science Laboratory Technology Craft II

Biology Techniques

**Date:** Wednesday 26<sup>th</sup> March, 2014

**Time:** 2 Hours

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## **INSTRUCTIONS:**

*i) Write your admission number on the answer sheet*

*ii) Answer **all Questions** in Section A & **2 questions** in section B*

## **SECTION A**

1. Name the two classes of Lipids and state their differences (3 marks)
2. State four (4) differences between mitosis and meiosis (4 marks)
3. Haemolysis and crenation are physiological processes. With the help of diagrams briefly describe the conditions that cause them. (8 marks)
4. Define the following terms (6 marks)
  - (i) Plasmolysis
  - (ii) Hydrolysis
  - (iii) Decalcification
5. (a) Define nutrition (2 marks)  
(b) Draw a flow diagram to show the clotting of blood (5 marks)
6. State the functions of the following tissues : Sclerenchyma, Connective, Adipose Parenchyma and Skeletal (5 marks)
7. Calculate the final magnification for a microscopic whose working tube length is 180mm, objective lens x60, eye piece x15. (4 marks)
8. (a) What is a buffer? (2 marks)  
(b) State the role of buffers in living organisms (2 marks)

9. Using suitable diagrams illustrate the feeding process in phagocytes (4 marks)
10. Name four cellular structures that are **not** visible under the light microscope(4 marks)
11. Outline the procedure that would be used to observe Red Blood Cells under the light microscope in the laboratory (4 marks)
12. Differentiate between Antibody and Antigen (4 marks)
13. Name the pairs of monosaccharide that make up each of the following disaccharides:  
i). Sucrose ii) Lactose and iii) Maltose (3 marks)

## **SECTION B**

14. a) Discuss the procedure for preparing Benedict's solution in the Laboratory (10 marks)
- b) Briefly explain how active transport takes place in plants (5 marks)
- c) Describe the construction and the functioning of a Sunshine recorder (5 marks)
15. You are provided with a sample of fresh leaves to examine under the light microscope.
- a) Describe the process you would use to make thin sections of a fresh leaf for observation under the light microscope (10 marks)
- b) Differentiate between impregnation and embedding of tissues (5 marks)
- c).Briefly describe an experiment to demonstrate the effect of heat on the activity of enzymes in living tissues (5marks)
16. a) Discuss the immunological conditions that lead to the occurrence of the haemolytic disease of the newly born. (10 marks)
- b). Outline the adaptations of desert plant for survival in dry environment (5 marks)
- c). Explain the how palpation is done in Laboratory Animals (5 marks)