



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 107: INTRODUCTION TO HISTOLOGY

DATE: 9/5/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any other two** questions
2. Use clean well labelled diagrams wherever appropriate.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Differentiate between a smooth and a striated muscle. (3 marks)
- b) Outline the use of histological preparations in medicine. (3 marks)
- c) Outline the functions of connective tissue. (3 marks)
- d) Use an example to differentiate an organ from an organ system. (3 marks)
- e) Explain the basis of differential staining when preparing an animal tissue for microscopy. (3 marks)
- f) Relate the structure to function of squamous epithelium. (3 marks)
- g) Explain the characteristics of the cardiac muscle. (3 marks)
- h) Outline composition of the fluid tissue of the circulatory system. (3 marks)
- i) Outline the salient labels on a permanent microscope slide. (3 marks)
- j) Explain the roles of the nucleus in an eukaryotic cell. (3 marks)

QUESTION TWO (20 MARKS)

- a) Illustrate the structure of the mitochondrion and relate it to function. (5 marks)
- b) Discuss 'processing' as a procedure in preparing permanent histological slides. (15 marks)

QUESTION THREE (20 MARKS)

Discuss the structure and function of a mammalian nervous system.

QUESTION FOUR (20 MARKS)

- a) Identify the micrograph sample provided and draw a fully labelled plan diagram. (8 marks)
- b) Compare the functionality of a light compound microscope with that of an electron microscope (12 marks)

QUESTION FIVE (20 MARKS)

- a) distinguish two main types of cells based on evolutionary trends, (10 marks)
- b) Explain how you focus on a sample for microscope once it is mounted on the microscope stage (10 marks)