GARISSA UNIVERSITY

UNIVERSITY EXAMINATION 2017/2018 ACADEMIC YEAR ONE FIRST SEMESTER EXAMINATION

SCHOOL OF EDUCATION, ARTS AND SOCIAL SCIENCES

FOR THE DEGREE OF BACHELOR OF EDUCATION (ARTS)

COURSE CODE: BOT 100

COURSE TITLE: CELL BIOLOGY

EXAMINATION DURATION: 3 HOURS

DATE: 14/12/17 **TIME: 2.00-5.00 PM**

INSTRUCTION TO CANDIDATES

- **The examination has SIX (6) questions**
- **Question ONE (1) is COMPULSORY**
- **Choose any other THREE (3) questions from the remaining FIVE (5) questions**
- **Use sketch diagrams to illustrate your answer whenever necessary**
- **Do not carry mobile phones or any other written materials in examination room**
- **Do not write on this paper**

This paper consists of TWO (2) printed pages ***please turn over***

QUESTION ONE (COMPULSORY)

(a) Clarify the meaning of these words used in microscopy:

i. Resolution **[1 mark]**

ii. Magnification **[1 mark]**

iii. Name **two types** of microscope stating the source of illumination in each. **[2 marks]**

(b) (i) Explain the procedural steps taken when preparing a temporary slide for viewing under a microscope. **[5 marks]**

(ii) Note some salient considerations for laboratory usage and maintenance of microscopes. **[3 marks]**

(c) Tabulate the difference between prokaryotic and eukaryotic cells **[4 marks]**

(d) Draw a well labeled diagram of a generalized plant cell. **[6 marks]**

i. Briefly describe the structure, distribution and functions of mitochondrion **[3 marks]**

QUESTION TWO

(a) Describe the general structure of cell membranes and list cell membrane bound organelles in plant and animal cells **[5 marks]**

(b) Outline the various ways substances go into and out of cells. **[10 marks]**

QUESTION THREE

(a) Define mitosis and list in sequence, the stages in mitotic cell division. **[5 marks]**

(b) Compare and contrast plant cell mitotic cell division and meiotic cell division **[10 marks]**

QUESTION FOUR

(a) State the main levels of organization of all living things. **[5 marks]**

(b) Explain in details how stems and leaves are adapted for the function of food and water storage. **[10 marks]**

QUESTION FIVE

(a) Briefly explain what happens to a plant cell when placed in a solution of hypertonic, isotonic and hypotonic concentration **[5 marks]**

(b) Discuss the factors affecting the rate of diffusion and its significance in plants **[10 marks]**

QUESTION SIX

Discuss the corestructure of microtubules and microfilaments found in unicellular organisms and state their significance. **[15 marks]**