



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF

EDUCATION

SBT 300: CELL BIOLOGY AND GENETICS

DATE: 26/7/2017

TIME: 11:00 – 1:00 PM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain the principles of the cell theory (3 marks)
- b) Describe the structure and function of centrosomes (3 marks)
- c) Briefly, describe the structure and functions of plastids in plant cells (3 marks)
- d) Describe the fluid mosaic structure of the universal cell membrane (3 marks)
- e) Describe amoeboid movement of cells (3 marks)
- f) Explain the Mendelian concept of inheritance (3 marks)
- g) Explain the meaning of the term 'gene expression' as used in genetics (3 marks)
- h) Define the role of DNA and RNA in inheritance (3 marks)
- i) Explain the biological significance of meiosis (3 marks)
- j) Describe the main events of prophase I (3 marks)

QUESTION TWO (20 MARKS)

- a) Describe the major stages of mitosis (10 marks)
- b) Describe the various methods of cell fractionation and disruption (10 marks)

QUESTION THREE (20 MARKS)

- a) Describe the structure, distribution and functions of endoplasmic reticula in cells (10 marks)
- b) Discuss the the structure, distribution and functions of plasma membranes in cells (10 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the structre and function of organelles that are only found in plant cells (10 marks)
- b) Explain the chemicals and organelles involved in genetic translation. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the sex determination mechanisms in animals (10 marks)
- b) Discuss sex linked traits in man (10 marks)