



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY AND QUALITY

ASSURANCE

AAB 4203: INTRODUCTION TO GENETICS PAPER I

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2024

TIME: 2 HOURS

DATE: Dec., 2024

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) State the significance of mitosis (4 mark)
- b) State the law of segregation (2 marks)
- c) State the properties of DNA (5 marks)
- d) Outline the reasons for the neglect of Mendel's hybridization works on pea plant (4 marks)

- e) Highlight factors affecting point mutation (3 marks)
- a) Explain detection of X-linked dominant inheritance in human pedigree (6 marks)
- b) Explain the mechanisms associated with X-inactivation (6 marks)

Question TWO

- a) Explain occurrence of sex reversal in poultry (10 marks)
- b) Using illustrations, describe the types of chromosomes based on position of centromere (10 marks)

Question THREE

- a) With an aid of a diagram, describe Watson's and Crick's structural model of DNA (12 marks)
- b) Haemophilia in humans is recessive and sex-linked. If a woman heterozygous for haemophilia marries a haemophilic man;
- i) what is the probability that their first child will be a haemophilic daughter? (2 marks)
- ii) If haemophilic daughter is married to normal man, what phenotypes will be produced and in what proportions? (6 marks)

Question FOUR

- a) Discuss oogenesis humans (15 marks)
- b) Highlight the characteristics of heterochromatin (5 marks)

Question FIVE

- a) Discuss transition mutation (12 marks)
- b) Explain suppressor mutations (8 marks)