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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

MAIN EXAMINATIONS
MAIN CAMPUS

SECOND YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN BIOTECHNOLOGY AND BIOCHEMISTRY

COURSE CODE: **SBT 221**

COURSE TITLE: **GENOME ORGANIZATION**

DATE: THURSDAY, 28TH APRIL 2022 **TIME: 3:00 – 5:00 P.M.**

INSTRUCTIONS TO CANDIDATES

Answer ALL QUESTIONS in section A and ANY TWO selected from section B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A (SHORT ANSWER QUESTIONS, 40 MARKS)

1. Outline any five proteins associated with organization of chromosomes. (5 marks)

2. Physical agents can be used to interferre with organization of chromosomes. Validate this statement. (5 marks)

3. Using a case example; demonstrate how variation of temperature levels after fertilization of an egg can lead to reorganization of chromosome number in some organisms. (5 marks)

4. Highlight the levels of organization of DNA in eukaryotes. (5 marks)

5. Outline the characteristics of "A DNA" conformation and its role in maintaining genome integrity. (5 marks)

6. List some of the bottlenecks that have made colchicine unpopular in antimitotic experiments. (5 marks)

7. Using an illustration show the differences between double tetrasomy and double nullisomy genome organization. (5 marks)

8. Using an illustration explain the classes of pseudogenes and how they arise in the genome. (5 marks)

SECTION B (ESSAY QUESTIONS, 30 MARKS)

11. Using an illustration discuss the organization of the gene's general structure. (15 marks)

12. Discuss the steps of achieving interspecies genome hybridization through protoplasm fusion. (15 marks)

13. Using an illustration discuss the differences observed in the development of a triploid and tetraploid fish. (15 marks)