

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE (ANIMAL SCIENCE)**

ANSC 342: BIOTECHNOLOGY IN ANIMAL BREEDING

STREAMS: BSC(ANSC)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 06/12/2017

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- **This examination has TWO sections: A and B**
- **Attempt ALL questions in section A and TWO questions in section B**
- **Mobile phones are NOT allowed in the examination room**

SECTION A: ATTEMPT ALL QUESTIONS – TOTAL 30 MARKS

1. Differentiate between the following
 - (a) Minor genes and major genes
 - (b) Polygenic traits and simply inherited traits
 - (c) Pleiotropy and mutation
 - (d) Polymorphism and linkage disequilibrium [12 marks]
2. Describe the process of mRNA processing. [6 marks]
3. Using a diagram describe the Chargaff's law and its role in the double helical structure of DNA. [6 marks]
4. Write short notes on the following
 - (a) Direct markers
 - (b) Linked markers [6 marks]

SECTION B: ATTEMPT ANY TWO QUESTIONS – TOTAL 40 MARKS

5. Artificial insemination is a common reproductive technology in dairy cattle.
 - (a) Describe the AI process in cattle. [5 marks]
 - (b) Using examples, illustrate how AI can be used to impact a dairy cattle breeding program. [10 marks]
 - (c) Discuss the possible negative impacts of AI from a breeding perspective. [5 marks]

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6. Advances in molecular genetics has led to use of marker information in animal breeding
- (a) Define the following terms
 - (i) DNA markers
 - (ii) QTL
 - (iii) DNA finger printing [6 marks]
 - (b) Briefly discuss Marker Assisted Selected [8 marks]
 - (c) Describe three types of DNA markers. [6 marks]
7. Protein synthesis is key in the expression of traits
- (a) With details differentiate between translation and transcription [4 marks]
 - (b) Discuss the three types of RNA's stating their roles. [6 marks]
 - (c) Briefly discuss the process of DNA semi-conservative replication. [5 marks]
 - (d) State the difference between DNA and RNA. [5 marks]
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