****

**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/2021 ACADEMIC YEAR FOUR**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**FOR THE DEGREE OF BACHELOR OF EDUCATION**

**COURSE CODE: ZOO 400**

**COURSE TITLE: ADVANCED GENETICS**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 08/10/2021 TIME: 2.00-4.00 PM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) 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)**

1. Differentiate between the following. (6 marks)
2. Phenotype and Genotype
3. Homozygote and Heterozygote
4. Complete and Incomplete dominance
5. Define the following? (3 marks)
6. Testcross
7. Polyploidy
8. Gene regulation
9. Describe the different degrees of dominance (3 marks)
10. What were the factors that contributed to the success of Mendel’s experiments? (4 marks)
11. How is feedback inhibition utilized in gene regulation? (2 marks)
12. What is the genetic code? (4 marks)
13. State three (3) stages in gene expression that can be regulated in eukaryotic cells? (3 marks)
14. Describe sex linked characteristics using colour blindness as an example. (5 marks)

**QUESTION TWO**

Describe the different sex determination systems. (20 marks)

**QUESTION THREE**

Describe the process of protein synthesis (20 marks)

**QUESTION FOUR**

1. How is cloning used in plant and animal breeding? (10 marks)
2. Briefly describe the significance of cloning to genetics research. (10 marks)

**QUESTION FIVE**

1. With examples describe various chromosomal disorders (10 marks)
2. A “mystery” pea plant that has purple flowers is presented to you. We cannot tell from its flower colour if this plant is homozygous (PP) or heterozygous (Pp). Determine the genotype of the flower. (10 marks)