



# UNIVERSITY OF KABIANGA

## UNIVERSITY EXAMINATIONS 2016/2017 ACADEMIC YEAR THIRD YEAR FIRST SEMESTER EXAMINATION

### FOR THE DEGREE OF BACHELOR OF EDUCATION

**COURSE CODE: BOT 316**

**COURSE TITLE: GENETICS**

**DATE: 29<sup>TH</sup> AUGUST, 2017**

**TIME: 8.00 A.M. – 11.00 A.M.**

### INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF (2) PRINTED PAGES

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SCHOOL BASED

**UNIVERSITY OF KABIANGA**  
**UNIVERSITY EXAMINATIONS**      **2016 /2017 ACADEMIC YEAR**  
**THIRD YEAR FIRST SEMESTER MAIN EXAMINATION (SCHOOL BASED)**  
**FOR THE DEGREE OF BACHELOR OF EDUCATION (SCIENCE)**  
**COURSE CODE: BOT 316 COURSE TITLE: GENETICS**  
**APRIL 2017**

**Instructions to candidates:** Answer **all** the questions in section A and **any three** from section B.

**SECTION A (28 marks)**

1. State **four** reasons why Gregor Mendel succeeded in using the garden pea in his breeding experiments (4 marks)
2. State **four** assumptions that the Mendel's 3:1 and 9:3:3:1 genetic ratio predictions are based on (4 marks)
3. Write short notes on industrial melanism as an experimental verification of natural selection (4 marks)
4. With examples, differentiate between **backcross** and **testcross** (4 marks)
5. a) Explain, with an example, the meaning of the term 'Allele' (1 mark)  
b) Differentiate between a monohybrid and dihybrid crosses (3 marks)
6. Write short notes on microevolution and macroevolution (4 marks)
7. Define polyploidy and state its causes (4 marks)

**SECTION B (42 MARKS) Choose only THREE questions from this section**

8. Discuss **six** facts and/or observations in which Darwin's theory of natural selection are based (14 marks)
9. Discuss objections to Darwinism theory of natural selection (14 marks)
10. Discuss the prezygotic barriers that impede mating between species or hinder fertilization of ova if they attempt to mate. (14 marks)
11. a) Define the term "epistasis" (2 marks)  
  
b) Illustrate diagrammatically 2 types of epistatic gene effects that have shown modification of Mendelian genetic ratios (12 marks)

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