

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN HORTICULTURE

AGRI 328: BIOTECHNOLGY IN AGRICULTURE

STREAMS: B.Sc (AGRIC) Y3S1

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- Answer ALL Questions in Section A and any TWO in Section B

SECTION I: [30 MARKS]

QUESTION ONE

- (a) Explain how genes influence the appearance of a trait. [4 Marks]
(b) Describe the DNA molecule and its structural components. [4 Marks]

QUESTION TWO

- (a) Explain the term totipotency and how it has impacted on the development of biotechnology. [4 Marks]
(b) Describe the 4 basic procedures involved in DNA replication. [4 Marks]

QUESTION THREE

Explain how biotechnology could be used to improve on crop product storage. [6 Marks]

QUESTION FOUR

Describe cell division in prokaryotes compared to eukaryotic cell cycle. [8 Marks]

SECTION B [40 MARKS]

QUESTION FIVE

- (a) Explain the role of magnesium ions in PCR reaction mix. [5 Marks]
(b) Describe a selectable marker gene and explain its role in a transformation process. [5 Marks]

QUESTION SIX

- (a) Explain the importance of using meristem culture in micropropagation. [6 Marks]
- (b) Describe the different applications in tissue culture techniques. [14 Marks]

QUESTION SEVEN

- (a) Briefly describe DNA and its structure. [5 Marks]
- (b) Describe the detailed process of DNA replication in eukaryotes and explain its importance. [15 Marks]

.....