
CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN BIOLOGY

BOTA 412: PLANT BIOTECHNOLOGY

STREAMS: B.Sc. (BIOL) Y4S1

TIME: 2 HOURS

DAY/DATE: FRIDAY 14/12/2018

2.30 P.M - 4.30 P.M.

INSTRUCTIONS:

- Answer ALL questions in Section A and any TWO Questions in Section B
- Do not write anything on the question paper
- Use illustrations where appropriate to enhance your answers

SECTION A: [30 MARKS]

1. (a) Define the term bioinformatics. [1 Marks]
(b) Explain **four** kinds of analysis that can be done using bioinformatics tools. [4 Marks]
2. Citing examples, describe the mode of activity of herbicides involving the blocking of the biosynthetic pathways for aromatic amino acids in plants. [5 Marks]
3. (a) Define the term recombinant DNA technology. [1 Mark]
(b) The *Agrobacterium* is considered as the “natural genetic engineer of plants”. Explain. [4 Marks]
4. Explain the meaning of “golden rice” and in which way it differs from normal rice. [5 Marks]
5. (a) What is a marker gene? [1 Mark]
(b) Explain the principle underlying the use of marker genes. [4 Marks]
6. (a) Define GMO. [1 Mark]
(b) Describe four areas in which biotechnology is applied for improvement of crop production. [4 Marks]

SECTION B: [40 MARKS]

7. Discuss any **three** techniques used in the incorporation of genes in the nuclear genome of plants. [20 Marks]
8. Write an essay on the tissue and cell culture technology. [20 Marks]
9. Illustrate how plasmid vectors are used in gene cloning. [20 Marks]

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