



KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF THE
DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE
FIRST SEMESTER 2022/2023
(SEPTEMBER - DECEMBER, 2022)

AGRO 328: INTRODUCTION TO PLANT BIOTECHNOLOGY

STREAM: Y3 S1

TIME: 2 HOURS

DAY: TUESDAY, 3:00 P.M – 5:00 P.M

DATE: 20/12/2022

INSTRUCTIONS:

- 1. Do not write anything on this question paper.***
- 2. Answer ALL Questions in section A (Compulsory) and any other TWO Questions in section B.***

SECTION A (30 MARKS)

1.a) Define the following terms used in Biotechnology

- i. Karyotype
- ii. Genetic map
- iii. Protoplast
- iv. Totipotency (4marks)

b) Explore the procedure of producing transgenic hybrids plants. (5marks)

c) Highlight the limitation of tissue culture in crop improvement. (5marks)

d) Distinguish between the following items

- i) DNA ligase and DNA polymerase
- ii) Auxin and cytokinin hormone (4 marks)

e) Describe the procedure used in the production of double haploid plants

(6 marks)

f) 'DNA finger printing techniques are important tools used in genetic identification and selection of plant materials breeding programs' in light of this enumerate the benefits of using molecular markers as opposed to morphological markers (6 marks)

SECTION B (40 MARKS)

2. Discuss any five Biotechnological approaches to plant disease diagnosis.

(20 marks)

3. Discuss the challenges facing the application of biotechnology in developing countries.

(20 marks)

4. Discuss the future trends in the application of biotechnology in Kenya.

(20 marks)