ROBERT MUGABE SCHOOL OF HERITAGE AND EDUCATION

DEPARTMENT OF SCIENCE AND TECHNICAL EDUCATION

BACHELOR OF EDUCATION SECONDARY IN-SERVICE HONOURS DEGREE AGRICULTURE

BACHELOR OF EDUCATION PRIMARY IN-SERVICE HONOURS DEGREE AGRICULTURE

LEVEL 2 SEMESTER 2

EXAMINATION QUESTION PAPER

MODULE CODE TPAG/TSAG 221

MODULE NARRATION AGRICULTURAL BIOTECHNOLOGY

DATE JUNE 2024

DURATION 3 HOUR

INSTRUCTIONS TO CANDIDATES:

1. Answer **three** questions.

2. All questions carry equal marks.

1(a) Define the following terms as used in Biotechnology:

(i) Genetic Engineering

(ii) Plasmid

(iii) Restriction enzymes

(iv)Transgenic plants

(v) Cloning (15)

(b) By use of a flow chart, describe how the recombinant DNA is formed (10)

2(a) For each of the following, discuss the application of one recent advances in Agricultural biotechnology using:

(i) Transgenic plants

(ii) Transgenic animals (16)

(b) Using examples, explain the ethical issues associated with Agricultural Biotechnology. (9)

3 Explain the reasons and benefits for the use of *Agrobacterium tumefaciens* as a vehicle for introducing foreign DNA into plants. (25)

4 Discuss the importance of Agricultural biotechnology to the developing countries. (25)

5(a) Justify the commonly use of *Escherichia coli* in genetic engineering. (5)

(b) Describe how the problem of pests and diseases in plants and animals have been solved by genetic engineering in the agricultural industry. (20)

END