CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE IN PLANT BREEDING, MASTER OF SCIENCE IN CROP PROTECTION AND MASTER OF SCIENCE IN DRYLAND AGRICULTURE

AGRI 824: BREEDING FOR PEST AND DISEASE RESISTANCE
AGRI 843: BREEDING FOR DROUGHT TOLERANCE

STREAMS: MSC Y1S2 **TIME: 3 HOURS**

DAY/DATE: TUESDAY 24/12/2024 **11.30 A.M – 2.30 P.M**

INSTRUCTIONS:
Answer Question **ONE** and any other **TWO** questions.
Do not write anything on the question paper.

QUESTION ONE (20 marks)

(a) Discuss the following secondary metabolites with respect to pest resistance:
  (i) Phenolic. (5 marks)
  (ii) Terpenes. (5 marks)
(b) Describe the genetic basis of stay green. (10 marks)

QUESTION TWO (20 marks)

(a) Describe the evolution of R genes. (8 marks)
(b) Discuss the mechanism of drought tolerance in crop plants. (12 marks)

QUESTION THREE (20 marks)

(a) Discuss the consideration for breeding resistance to:
  (i) Pathogens. (5 marks)
  (ii) Drought. (5 marks)
(b) Detail a scheme of genomic selection (GS) in a given breeding program, giving advantage of GS over marker assisted selection. (10 marks)

QUESTION FOUR (20 marks)

Describe how you can incorporate a resistant gene for a given trait that is controlled by a recessive gene. (20 marks)
