UNIVERSITY OF EMBU

INSTRUCTIONS:

Answer ANY FOUR Questions

QUESTION ONE (25 MARKS)

a) In relation to wheat stem rust, write short notes on the following:

   i) Spread of wheat stem rust race-*Ug99* in East Africa.   (4 marks)

   ii) Developing of resistant lines through shuttle breeding.   (1 mark)

b) Briefly discuss the potential application of genomics in breeding wheat in East Africa.

(10 marks)

c) Describe the procedure of preparing the female plants for hybridization by emasculation in wheat.   (10 marks)

QUESTION TWO (25 MARKS)

a) As a Kenyan researcher, discuss five major breeding priorities to increase sweet potato production in Kenya.   (10 marks)

b) Write a short overview on RNA interference as a potential tool in breeding against plant viruses in East Africa. (10 marks)

c) Highlight five reasons perpetuating the use of farm-retained seeds in Kenya.

(5 marks)

QUESTION THREE (25 MARKS)

a) Outline how you can artificially cross pollinate cotton. (7 marks)

b) Discuss the controversies that surround the approval of transgenic cotton in Kenya.

(8 marks)

c) Explain how tissue culture can be applied to improve the production and quality of coffee in East Africa. (10 marks)

QUESTION FOUR (25 MARKS)

a) Write short notes on the major gene pools of common bean. (10 marks)

b) Outline the procedure of breeding for resistance to *Pythium* root rot disease in common bean using marker assisted backcrossing. (9 marks)

c) As a pigeon pea breeder in East Africa, briefly explain three challenges you may face in your work. (6 marks)

QUESTION FIVE (25 MARKS)

a) In relation to mango improvement, write short notes on the following:
   i) Floral biology of mango. (5 marks)
   ii) Inherent constraints to mango breeding. (10 marks)
   iii) Breeding methods applied in mango breeding. (10 marks)

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