THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

134/2

AGRICULTURE 2
(For Both School and Private Candidates)

Time: 3 Hours **Friday, 10th February 2012 p.m.**

Instructions

1. This paper consists of **ten (10)** questions in sections A and B.
2. Answer **five (5)** questions choosing at least **two (2)** questions from each section.
3. Each question carries **twenty (20)** marks.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

CROP SCIENCE AND PRODUCTION

1. (a) Explain the meaning of the following terms as used in plant pathology.
   (i) Die back
   (ii) Cankers
   (iii) Black leg **(3 marks)**

   (b) Explain in brief five effects caused by fungi on the stored crops. **(5 marks)**

   (c) Sorghum smut is the most important fungal disease of sorghum in Tanzania.
   (i) What do you understand by the term smut? **(1 mark)**
   (ii) Name four types of sorghum smuts and their causative organisms. **(4 marks)**
   (iii) Briefly describe one symptom for each type of sorghum smut. **(4 marks)**
   (iv) Suggest three control measures which can be used to control sorghum smuts. **(3 marks)**

2. (a) Weeds are both friends and enemies of Tanzanian farmers. Justify this statement by giving five reasons in each case. **(5 marks)**

   (b) (i) Explain briefly six mechanisms that enable weeds to dominate farms quickly and suppress crops. **(6 marks)**
   (ii) Suggest two control methods that can be used to control 'witch weed'. **(3 marks)**

   (c) Tillage is among the mechanical methods of weed control.
   (i) What is the purpose of tillage in controlling weeds? **(2 marks)**
   (ii) Briefly explain four disadvantages of tillage in weed control. **(4 marks)**

3. (a) What is the role of each of the following filler materials as used in pesticide application?
   (i) Stricker
   (ii) Emulsifier
   (iii) Spreader
   (iv) Defloculator **(4 marks)**

   (b) State three advantages and three disadvantages of insecticide application in crop production. **(6 marks)**

   (c) (i) By giving four reasons, explain briefly why storage pests are highly successful than field pests. **(4 marks)**

(ii) Diparopsis castanea and Protephanus trucanius are two pests which are difficult to control. Justify this statement by giving two reasons in each case. **(4 marks)**

(iii) State two control measures of Diparopsis castanea. **(2 marks)**

4. (a) (i) What do you understand by the term heterosis? **(1 mark)**

(ii) Giving an example, briefly explain the beneficial application of mutation in agriculture. **(2 marks)**

(b) (i) In Mendel's experiment on crossing two varieties of beans, he chose round and wrinkled seeds with yellow and green colours respectively. **R** is a gene for round and **r** is a gene for wrinkled whereby **Y** is a gene for yellow and **y** is a gene for green. When homozygous round and yellow seeds were crossed to wrinkled green seeds, the resulting F_1 generation were all heterozygous round yellow seeds. Use punnett square to determine the phenotype in F_2 generation when F_1 individuals will breed among themselves. **(9 marks)**

(ii) State four assumptions in genetic segregation. **(4 marks)**

(c) Explain briefly two advantages and two disadvantages of progeny testing. **(4 marks)**

5. (a) Blast is a common disease that infects paddy. Account for the disease using the following guidelines:
(i) Causative agent.
(ii) Symptoms.
(iii) Control measures. **(5 marks)**

(b) Briefly describe five symptoms of viral infections in plants. **(5 marks)**

(c) (i) Define the term epiphytology. **(2 marks)**

(ii) Briefly explain four factors that influence the occurrence of epiphytotic diseases in the field. **(4 marks)**

(d) Bemisia tabei is the vector of several crop diseases in Tanzania. Name two diseases that are transmitted by the vector and suggest three control measures for the vector. **(4 marks)**

(ii) Diparopsis castanca and Protephanus trucantus are two pests which are difficult to control. Justify this statement by giving two reasons in each case. **(4 marks)**

(iii) State two control measures of Diparopsis castanca. **(2 marks)**

4. (a) (i) What do you understand by the term heterosis? **(1 mark)**

(ii) Giving an example, briefly explain the beneficial application of mutation in agriculture. **(2 marks)**

(b) (i) In Mendel's experiment on crossing two varieties of beans, he chose round and wrinkled seeds with yellow and green colours respectively. **R** is a gene for round and **r** is a gene for wrinkled whereby **Y** is a gene for yellow and **y** is a gene for green. When homozygous round and yellow seeds were crossed to wrinkled green seeds, the resulting F_1 generation were all heterozygous round yellow seeds. Use punnett square to determine the phenotype in F_2 generation when F_1 individuals will breed among themselves. **(9 marks)**

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(d) Bemisia tabei is the vector of several crop diseases in Tanzania. Name two diseases that are transmitted by the vector and suggest three control measures for the vector. **(4 marks)**

SECTION B

LIVESTOCK SCIENCE AND PRODUCTION

6. (a) Explain the meaning of each of the following terms as used in animal nutrition:
   (i) Heat increment.
   (ii) Digestible energy.
   (iii) Biological value of protein. **(6 marks)**

   (b) (i) Briefly explain why gross energy of a feed is of little importance to the farmer. **(2 marks)**
   (ii) A goat ate 3kg of grass containing 0.6kg DM and excreted 0.5 kg of faeces containing 0.2kg DM. Calculate the digestibility coefficient of the grass DM. **(3 marks)**

   (c) (i) Palatability of a feed depends on several factors. Explain briefly three factors that affect palatability of a feed. **(3 marks)**
   (ii) Propose six factors to be considered when formulating ration for livestock. **(6 marks)**

7. (a) Management of pastures involves weeding:
   (i) Briefly explain five effects of weeds on pastures. **(5 marks)**
   (ii) Explain briefly four effective weed control methods on pastures. **(4 marks)**

   (b) (i) What do you understand by the term rotational grazing? **(2 marks)**
   (ii) State six advantages of rotational grazing. **(6 marks)**

   (c) Paddocking as one of the grazing systems has its advantages and limitation. Explain two advantages and one limitation of paddocking. **(3 marks)**

8. (a) What do you understand by the following terms as used in animal health?
   (i) Epidemiology.
   (ii) Notifiable disease.
   (iii) Zoonotic disease.
   (iv) Etiology. **(4 marks)**

   (b) The following parasites are causative agents of various diseases in livestock. Suggest two control measures for each parasite.
   (i) Fasciola gigantica
   (ii) Taenia saginata
   (iii) Ascaris lubricoides **(6 marks)**

   (c) Explain briefly on the following methods used to control livestock diseases.
   (i) Vaccination.
   (ii) Good management of livestock. **(10 marks)**

9. (a) Explain briefly the roles of the five hormones responsible in oestus cycle of a cow. **(5 marks)**

   (b) (i) State three signs that may indicate that a given cow is not fertile. **(3 marks)**
   (ii) Describe briefly three ways of carrying out pregnancy diagnosis in cows. **(3 marks)**

(c) (i) Account for five disadnatages of natural mating in cattle. **(5 marks)**
(ii) Briefly explain four functions of cow's reproductive system. **(4 marks)**

10. (a) Differentiate between carrying capacity and stocking rate **(4 marks)**

(b) (i) Examine three effects of overstocking in a given area of pasture. **(3 marks)**

(ii) Explain briefly four advantages and three disadvantages of zero grazing (stall feeding) system. **(7 marks)**

(c) Briefly explain six ways in which grass-legume mixture is important in a pasture. **(6 marks)**