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).

SECTION A

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 castanea 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 castanea. **(2 marks)**

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

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Blight

Environment

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RR α YY.

RY RY α ry.

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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)**