

**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

Wednesday, 07th May 2014 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

Answer at least **two (2)** questions from this section.

1. (a) Describe the mode of action of the six categories of insecticides. (8 marks)
 - (b) Outline twelve safety guidelines to be taken when spraying insecticides. (6 marks)
 - *(c) False codling moth and Blue bug are among the stubborn pests. For each,
 - (i) name one crop it attacks.
 - (ii) describe the type of damage it causes on the plant.
 - (iii) briefly describe two suitable methods of controlling the pest. (6 marks)
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2. ✓ (a) (i) Enumerate eight problems associated with the use of pesticides/insecticides when controlling pests. (8 marks)
 - (ii) Give two examples of successful biological control in agricultural fields basing on insects by insects. (2 marks)
 - (b) Differentiate the following terms as applied in the field of plant pathology.
 - (i) A sign and a symptoms
 - (ii) Chlorosis and wilting
 - (iii) Stunting and wilting (6 marks)
 - (c) In the following pathogens, state the disease transmitted and the type of crop affected.
 - (i) *Xanthomorias ampestris*
 - (ii) *Colletotrichum lindemuthianum*
 - (iii) *Phytophthora infestans*
 - (iv) *Helminthosporium maydis* (4 marks)
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3. ✗ (a) What is meant by the following terms?
 - (i) Noxious weed
 - (ii) Notorious weed (2 marks)
 - (b) (i) Elaborate five ways in which herbicides work in controlling weeds. (5 marks)
 - (ii) Briefly explain five environmental factors that affect the effectiveness of herbicides. (5 marks)
 - (iii) State three disadvantages of using herbicides in controlling weeds. (3 marks)
 - (c) Give the botanical name and life span of each of the following weeds:
 - (i) Crows foot grass
 - (ii) Double thorn
 - (iii) Nut grass
 - (iv) Wild finger millet

- (v) Sodom apple (5 marks)
4. (a) (i) What is 'Relative Fitness' as applied in the effect of selection on genetic variation? (2 marks)
- (ii) Examine four characteristics to be considered when developing new varieties for sustainable crop improvement. (4 marks)
- (b) Briefly describe the following methods of breeding self-pollinated crops.
- (i) Pure line selection
- (ii) Pedigree selection (8 marks)
- (c) (i) Outline two principles which rests on the concept of 'natural selection'. (2 marks)
- (ii) State three importance of natural selection. (3 marks)
- (iii) What is the effect of natural selection? (1 mark)
5. State the causative agent, two typical symptoms and suggest two methods which farmers may apply to control each of the following plant diseases.
- (a) Coffee berry
- (b) Covered kernel smut
- (c) Cassava mosaic
- (d) Charcoal rot (20 marks)

SECTION B

LIVESTOCK SCIENCE AND PRODUCTION

Answer at least **two (2)** questions from this section.

6. (a) Briefly explain the following threats to sustainable agricultural production.
- (i) Pesticides Threat
- (ii) Overgrazing Threat
- (iii) Deforestation Threat
- (iv) Fertilizer Threat (8 marks)
- (b) What do you understand by the term Genetic Modification (GM)? (2 marks)
- (c) (i) Suggest six key characteristics of Organic Farming. (6 marks)
- (ii) Briefly describe the principle of health as applied in Organic Farming. (4 marks)
7. (a) (i) Briefly describe the process of semen collection using artificial vagina in artificial insemination in cattle. (4 marks)
- (ii) Enumerate six advantages of frozen semen. (6 marks)
- (b) (i) Explain the term 'selection' as it is used in livestock breeding and improvement? (2 marks)

- (ii) Differentiate natural selection from artificial selection. (2 marks)
- (iii) Outline four genetic consequences of selection. (4 marks)
- (c) Briefly explain two advantages and two disadvantages of selection based on pedigrees. (2 marks)
- 8. (a) (i) Elaborate three physical appearance signs and two morphological conditions that show the animal is in a good health. (5 marks)
- (ii) Explain briefly five pre-disposing factors of livestock diseases. (5 marks)
- (b) (i) Give four importance of keeping animals healthy. (2 marks)
- (ii) Briefly explain five preventive measures and three routine management practices that are used to control livestock diseases. (8 marks)
- 9. (a) (i) State the sources of calcium in farm animals' feed. (1 mark)
- (ii) What would happen to the high milk producing cow if it relies on feeds containing insufficient amount of calcium? (1 mark)
- (iii) Why essential amino acids must be supplied in the animal's diet? (1 mark)
- (b) Point out two roles played by each of the following nutrients in farm animals:
 - (i) Phosphorus
 - (ii) Magnesium
 - (iii) Vitamin A(6 marks)
- (c) Examine six factors that have to be considered in formulating rations. (6 marks)
- ★ (d) Briefly explain five environmental factors affecting feed intake in ruminants. (5 marks)
- ✓ 10. (a) (i) Examine five advantages of establishing improved pastures. (5 marks)
- (ii) Account for four reasons that make natural grassland generally to be of low feeding value. (4 marks)
- (b) State six criteria to be used in selecting grasses for establishing pastures. (6 marks)
- (c) Briefly describe the following grazing methods as ways of managing pastures.
 - (i) Continuous grazing
 - (ii) Zero grazing
 - (iii) Deferred grazing
 - (iv) Rotational grazing
 - (iv) Strip grazing(5 marks)