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

134/1

AGRICULTURE 1
(For Both School and Private Candidates)

Time: 3 Hours **Thursday, 10th May 2018 a.m.**

Instructions

1. This paper consists of in sections A, B and C with a total of **nine (9)** questions.
2. Answer **five (5)** questions choosing **three (3)** questions from section A and **one (1)** question from each of sections B and C.
3. Each question carries **twenty (20)** marks.
4. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

SECTION A (60 Marks)

AGRICULTURAL ENGINEERING AND LAND PLANNING

Answer **three (3)** questions from this section.

1. (a) Identify the following types of oils based on US Society of Automotive Engineers:
   (i) Four engine oils
   (ii) Four gear and transmission oils
   (iii) Two multigrade oils. **(5 marks)**

   (b) Briefly explain five functions of lubrication system. **(5 marks)**

   (c) Briefly describe three types of lubrication systems. **(6 marks)**

   (d) Differentiate between detergent oils and grease. **(4 marks)**

2. (a) What are the functions of each of the following workshop tools?
   (i) Wood float
   (ii) Bolster
   (iii) Rasps
   (iv) Bastard file
   (v) Hand drill **(5 marks)**

   (b) (i) Suggest four measures to be taken in order to increase life span of files. **(2 marks)**

   (ii) Outline ten safety rules to be adhered when working in a farm workshop. **(5 marks)**

   (c) Write the functions of four types of saws used in farm workshop. **(8 marks)**

3. (a) Classify two types of wood. **(2 marks)**

   (b) Account for four uses of timber as a building material. **(4 marks)**

   (c) Give four merits and five demerits of timber as a building material. **(9 marks)**

   (d) Identify five advantages of using concrete in farm building. **(5 marks)**

4. (a) What do you understand by land clearing? **(2 marks)**

   (b) Elaborate four principles of chaining as a land clearing method. **(4 marks)**

   (c) Propose three methods that can be used to dispose the vegetation removed from land clearing. **(6 marks)**

   (d) What are the eight important questions to be considered when selecting machine model to be purchased? **(8 marks)**

5. (a) Briefly describe furrow irrigation system. **(3 marks)**

(b) Outline three advantages and four disadvantages of furrow irrigation system. **(7 marks)**

(c) Suggest four necessary conditions for surface irrigation system to take place. **(4 marks)**

(d) Briefly explain six importance of drainage in the irrigated farm. **(6 marks)**

SECTION B (20 Marks)

SOIL SCIENCE

Answer **one (1)** question from this section.

6. (a) Give five ways employed in soil air management. **(5 marks)**

(b) Briefly explain four factors affecting the composition of soil air. **(8 marks)**

(c) Analyse the effects of the following physical properties of soil on soil temperature:

(i) Soil colour

(ii) Soil moisture **(4 marks)**

(d) Describe the following terminologies as used in soil science:

(i) Infiltration

(ii) Percolation

(iii) Permeability. **(3 marks)**

7. (a) (i) "Presence of high aluminium ions ($Al3^{+}$) in soils is known to contribute to soil acidity". By using well-balanced equations, justify this statement. **(4 marks)**

(ii) Differentiate between active and potential acidity. **(2 marks)**

(b) (i) What is meant by liming as used in management of acid soils? **(2 marks)**

(ii) By using at least one chemical equation in each case, examine four liming materials commonly used in agriculture. **(8 marks)**

(c) Make a clear distinction between the following pairs:

(i) Organic fertilizers and inorganic fertilizer.

(ii) Complex/compound fertilizes and straight fertilizers. **(4 marks)**

SECTION C (20 Marks)

RURAL ECONOMY

Answer **one (1)** question from this section.

8. (a) What is an international trade? **(2 marks)**

(b) Briefly explain the significance of international trade. Give five points. **(5 marks)**

(c) The following table shows production of two crops by two countries, A and B. Study it carefully and then answer the questions that follow:

Country	Crop	
	Maize (Bags/Ha)	Paddy (Bags/Ha)
A	8	60
B	30	12

(i) Use the law of comparative advantage to describe the production of crops in both countries. **(4 marks)**

(ii) Justify how the principle of opportunity cost works in both countries. **(4 marks)**

(iii) Use the law of comparative advantage and principle of opportunity cost to briefly explain the possible trade between the two countries. **(5 marks)**

9. (a) Why is it necessary to plan the farming activities? **(2 marks)**

(b) (i) Differentiate between gross margin and partial budget as used in farm planning. **(2 marks)**

(ii) Site two situations where partial budget can be applied in a farm. **(2 marks)**

(c) Suggest four main ways in which profit on the farm can be raised using Gross Margin planning. **(4 marks)**

(d) A farmer wants to change over from growing his normal 20 hectares of maize to growing 20 hectares of haricot beans. Both crops are grown in the same season in that particular area. Maize yield was 400kg per ha selling price Tshs.400per kg and costs stood at 10kg seed per ha at 4,000/= a kg, 4 tonnes of fertilizer at Tshs.1,000,000 per ton, harvesting and picking costs are Tshs. 10,000 per hectare. 5 tractor hours at Tshs.50,000/= per hour. Expected yield for harricot beans is 1800kg per ha at Tshs. 1,200/= per kg using 4kg seeds per ha at Tshs.2,000/= per kg, 3 tonnes of fertilizer at Tshs. 1,000,000/= per ton, harvesting costs at Tshs.9,000 per hectare, 4 tractor hours at Tshs 50,000/= per hour. Use this information to prepare a partial budget and advice the farmer whether the change is worthwhile or not. **(10 marks)**