



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

134/1

AGRICULTURE 1
(For Both School and Private Candidates)

Time: 3 Hours

Wednesday, 03rd May 2017 a.m.

Instructions

1. This paper consists of **nine (9)** questions in sections A, B and C.
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 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) Briefly describe six criteria which are essential for selecting appropriate source of farm power to use. (6 marks)
- (b) The tractor engine is a four-stroke cycle engine. Enumerate four advantages of a four-stroke cycle engine. (4 marks)
- (c) Briefly explain the functions of the ten essential components of an Internal Combustion Engine. (10 marks)
- ✓ 2. (a) What is meant by a farm workshop? (1 mark)
- (b) Outline the safety measures in the farm workshop concerning the following aspects:
 - (i) House keeping - (4 marks)
 - (ii) Personal protection against injury - (5 marks)
 - (iii) Protection against fire hazards - (3 marks)
- (c) What does the statement 'appropriate use of farm workshop tools' means? (1 mark)
- (d) Give the function(s) of each of the following workshop tools.
 - (i) Hack saw -
 - (ii) Jack plane -
 - (iii) Claw hammer -
 - (iv) Cold chisel -(6 marks)
3. (a) (i) Define a word roof. (1 mark)
- (ii) Enumerate seven roofing materials which are used in farm buildings. (3.5 marks)
- (iii) List nine types of roofs that are found in farm buildings. (4.5 marks)
- (b) Briefly describe six types of fences. *wood, stone, wire, concrete* (6 marks)
- (c) Suggest ten functional requirements for the improved animal building. (5 marks)
4. (a) Give the meaning of primary tillage implements. (2 marks)
- (b) Account for the following primary tillage implements:
 - (i) Power tiller
 - (ii) Chisel plough
 - (iii) Disc plough
 - (iv) Ox - drawn mouldboard plough
 - (v) Tractor operated mouldboard plough(10 marks)

- X (c) Analyse six steps in the process of discs orientation in disc plough as a primary tillage implement. (6 marks)
- ✱ (d) How does the top link on a three point linkage affect the penetration depth of a disc plough? (2 marks)
5. (a) What do you understand by the term 'irrigation'? (2 marks)
- (b) Outline five maintenance actions for surface irrigation system. (5 marks)
- (c) Identify three management practices for trickle irrigation system. (3 marks)
- (d) Point out four merits and three demerits of drip irrigation system. (7 marks)
- (e) Under which three conditions would irrigation be recommended? (3 marks)

SECTION B (20 Marks)

SOIL SCIENCE

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

- ✓ 6. (a) Briefly explain the following terms:
- (i) Bulk density
 - (ii) Particle density
 - (iii) Porosity
 - (iv) Soil texture
- (4 marks)
- (b) Derive the relationship between porosity, bulky density and particle density. (4 marks)
- (c) A certain soil sample was analyzed for some soil physical parameters at Mlingano Soil Science Laboratory. The following data were recorded:
- (i) Weight of wet soil = 250 g
 - (ii) Volume of soil = 200 cm³
 - (iii) Weight of oven dry soil = 200 g
 - (iv) Volume of pore space = 20 cm³
- OCW 200g*

Calculate the following soil physical parameters. Limit your answer into two decimal places.

- (i) Bulk density of the soil
(ii) Particle density of the soil
(iii) Percentage pore space of the soil (6 marks)
- (d) Examine four factors affecting soil bulk density. (6 marks)
7. (a) Briefly describe each of the following as applied in soil science:
(i) Saline-alkali soil
(ii) Salt affected soil
(iii) Saline soil
(iv) Alkali soil (8 marks)
- (b) Account for three methods of controlling salt affected soils. (8 marks)
- (c) Assess any two detrimental effects associated by each of the following in crop production.
(i) Saline soil
(ii) Alkali soil (4 marks)

SECTION C (20 Marks)

RURAL ECONOMY

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

8. (a) (i) What is the meaning of agricultural marketing? (2 marks)
(ii) Name eight functions of marketing. (4 marks)
- (b) Elaborate six characteristics of pure or perfect market competition. (6 marks)
- (c) Evaluate eight benefits of agricultural marketing cooperatives to farmers in Tanzania. (8 marks)
9. (a) Define the term 'price'. (1 mark)
- (b) (i) What does price control and stabilization imply? (2 marks)
(ii) Analyse three importance of price control and stabilization. (3 marks)
(iii) Suggest six suitable ways for managing price fluctuations in Tanzania. (6 marks)
- (c) Enumerate four factors that cause change of each of the following.
(i) Demand of an agricultural good
(ii) Supply of an agricultural good

*- change in government policy
- change in population
- change in prices of other commodities
- change in prices of other commodities*