

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

134/1

AGRICULTURE I
(For Both School and Private Candidates)

Time: 3 Hours

Tuesday, 03rd May 2016 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) Differentiate:
- (i) Dry air cleaner from wet air cleaner.
 - (ii) Camshaft from crank shaft.
 - (iii) Bottom dead centre from top dead centre. (6 marks)
- (b) A given tractor engine has six cylinders with the bore of 150 mm, the stroke is 120 mm while the crank shaft speed is 1500 rpm. Calculate total air displacement of the engine per minute. (6 marks)
- (c) Three gear wheels A, B and C are in three parallel shafts. Gear A has 14 teeth, meshes with B which has 37 teeth, and meshes with C which has 49 teeth. If the speed of gear wheel A is 1300 rpm, Calculate the speed of gear wheel C. (8 marks)
2. (a) What is Farm Structure? (1 mark)
- (b) Briefly explain seven factors to be considered when selecting a site for Farm Structure. (7 marks)
- (c) State six factors which are used to determine the type of materials used for wall construction. (3 marks)
- (d) Briefly describe the following methods of timber treatment by chemicals:
- (i) Sap Displacement Method.
 - (ii) Pressure or Vacuum Treatment.
 - (iii) Hot and Cold Soaking. (6 marks)
- (e) Briefly explain three structural requirements of farm stores (3 marks)
3. (a) Analyse five importance of irrigation. (5 marks)
- (b) Outline eight uses of water on the farm. (4 marks)
- (c) State six disadvantages of overhead irrigation. (3 marks)
- (d) Briefly explain four conditions necessary for surface irrigation. (4 marks)
- (e) Explain four agricultural practices that lead to pollution of water sources for irrigation. (4 marks)
4. (a) Give three reasons on why farmers use tools and equipment. (3 marks)
- (b) Define the following terms:
- (i) Riveting
 - (ii) Soldering

- (iii) Welding
- (iv) Hacksawing

(4 marks)

- (c) Differentiate the uses of:
- (i) Riveting machines from hand drills and bit.
 - (ii) Spoke shave from files.
 - (iii) Wood chisel from cold chisel.
 - (iv) Try square from Mason's square.
 - (v) Pipe cutter from pipe wrench.

(10 marks)

- (d) (i) What is the importance of forging?
(ii) Name four equipments which assist forging.

(1 mark)

(2 marks)

5. (a) (i) Briefly explain two categories of the implements drawn by the tractor depending on the attachment method.
(ii) What is meant by primary tillage?
(iii) Briefly describe the functions of the five primary tillage implements.

(2 marks)

(1 mark)

(5 marks)

- (b) Briefly describe five areas where agricultural mechanization can be applied.

(5 marks)

- (c) Explain four factors which limit the effectiveness of mechanization in agricultural production.

(4 marks)

- (d) Examine three factors that might influence the method used to clear land and the type of equipment that might be used.

(3 marks)

SECTION B (20 Marks)

SOIL SCIENCE

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

6. (a) (i) A cubic shaped oven dried soil sample of 14 g came up with a 2 cm side after measurement. If its particle density is 2.65 g/cm. Determine its percentage pore space.
(ii) With a reason, suggest the type of the soil in (a) (i).

(5 marks)

- (b) (i) Give a brief account on soil structure as it is used in soil studies.
(ii) Briefly explain four points on the importance of soil texture.

(3 marks)

(4 marks)

- (c) Enumerate five benefits of phosphorus application in plant growth and development.

(5 marks)

- (d) Given the following plant symptom(s), state the nutrient deficiency in each case:
- (i) Purplish coloration of foliage.
 - (ii) Abnormally dark green of foliage and pre-mature shedding of blossoms and floral buds.
 - (iii) Slow growth, stunted growth and chlorosis of leaves in the middle near the midrib.
 - (iv) Poor grain, fruits and seed development.

(v) Wilting of the entire plant

(vi) Stunted growth, leaf chlorosis, thin stems and reduced nodulation in legumes.

(3 marks)

7. (a) Define the following terms as used in soil chemical properties:

(i) Primary minerals

(ii) Secondary minerals

(2 marks)

(b) Explain the importance of secondary minerals in agricultural production.

(4 marks)

(c) Outline three ways in which charges present in soil colloidal particles originate.

(3 marks)

(d) (i) Briefly explain six significance of soil pH.

(6 marks)

(ii) Point out three detrimental effects of overliming in plant growth.

(3 marks)

(iii) Enumerate four important soil characteristics which influence the efficiency of a liming material.

(2 marks)

SECTION C (20 Marks)

RURAL ECONOMY

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

8. (a) Write a concise account on the meaning and importance of International Trade.

(10 marks)

(b) State four means of reducing marketing costs.

(2 marks)

(c) Briefly explain two requirements which make a market purely competitive.

(4 marks)

(d) State four factors influencing the farmers' share of the final consumer price.

(4 marks)

9. (a) Briefly explain the following terms as used in valuation of farm assets:

(i) Inventory

(ii) Salvage value

(iii) Depreciation

(iv) Valuation.

(4 marks)

(b) Give three methods of calculating depreciation with their appropriate formulae.

(3 marks)

(c) The initial cost of acquiring a tractor was found to be Tsh.4,000,000/=. Its written off value was found to be Tsh.1,000,000/= after five years of its useful life. By using straight line method, calculate yearly depreciation and find the value of the tractor on 31st December on the fourth year.

(5 marks)

(d) Briefly describe four Product-Product Relationships.

(8 marks)