

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

034/1

**AGRICULTURAL SCIENCE 1**  
(For School Candidates Only)

**Time: 2:30 Hours**

**Wednesday, 19<sup>th</sup> November 2014 p.m.**

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**Instructions**

1. This paper consists of sections A, B and C.
2. Answer **all** questions in sections A and B and **one (1)** question from section C.
3. Read the instructions under each section carefully.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

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## SECTION A (20 Marks)

Answer **all** questions in this section.

1. For each of the items (i) - (x), choose the correct answer among the given alternatives and write its letter beside the item number in the answer booklet provided.
- (i) The factors which are most advisable for the selection of dairy cattle are  
A Physical appearance and breed                      B Physical appearance and age  
C Colour and age    D Colour and breed  
E Age and breed.
- (ii) If a soil sample has a bulk density of  $1.3 \text{ g cm}^{-3}$  and a particle density of  $2.65 \text{ g cm}^{-3}$  then its pore space is  
A 31 %    B 41 %    C 51%  
D 61%    E 71%.
- (iii) A free market in agricultural production may arise as a result of  
A Monopoly    B Pure competition  
C Monopsony    D Oligopoly  
E Imperfect competition.
- (iv) The characteristic that innovations which are perceived by farmers to be consistent with their farming practices, objectives and level of technology is known as  
A Complexity    B Observability  
C Triability    D Oligopoly  
E Imperfect competition.
- (v) The most suitable method of irrigation in a levelled farm with highly permeable soil having source of plenty of water is  
A Overhead irrigation    B Furrow irrigation  
C Check irrigation    D Sub surface irrigation  
E Sprinkler irrigation.
- (vi) The plant which is an alternate host for cotton strainers is  
A Groundnut    B Kapok    C Sisal  
D Citrus    E Tomato
- (vii) Which of the following is **not** the function of the harrow?  
A Leveling the seed-bed    B Breaking the hard soil pans  
C Breaking the soil    D Stir the soil  
E Destroy weeds.
- (viii) The purpose of using smoke at a bee-hive is to  
A Catch bees    B Kill bees  
C Chase bees    D Make bees docile  
E Frighten bees.

- (ix) The type of erosion whereby small channels are observed on the soil surface after it has rained is called
- A Sheet erosion
  - B Splash erosion
  - C Gully erosion
  - D Surface erosion
  - E Rill erosion.
- (x) Given similar environmental conditions, which of the following poultry breeds can generally lay more eggs than the other breeds?
- A Rhode Island Red
  - B Light Sussex
  - C New Hampshire
  - D White Leghorn
  - E Black Australop.

2. Match the items in **List A** with the responses in **List B** by writing the letter of the correct response beside the item number in your answer booklet.

LIST A	LIST B
(i) Serves as guide for the pistons as they move up and down.	A Cylinder head
(ii) Changes reciprocating action of the pistons to rotating motion.	B Flywheel
(iii) Provides the place to mount the clutch.	C Crankcase
(iv) Provides eccentric action for opening the valves.	D Radiator
(v) Forms combustion chamber in the engine.	E Crankshaft
(vi) Provides the engine with the proper air-fuel ratio to meet demands of engine load and speed.	F Cam shaft
(vii) Transmits power to crankshaft	G Piston
(viii) Exposes heated water to air flow for cooling.	H Connecting rod
(ix) Confines the lubricating oil near the engine's moving parts.	I Carburetor
(x) Open and close the ports in the combustion chamber.	J Clutch plate
	K Bearing
	L Balve
	M Cylinder
	N Engine block
	O Piston ring

## SECTION B (60 Marks)

Answer **all** questions in this section.

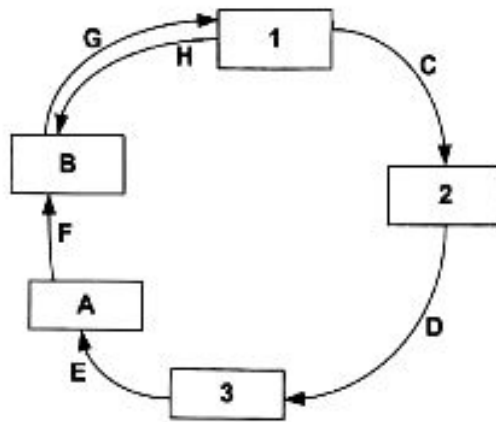
3. The following symptoms were observed in the school dairy farm:
- One milking cow had fever up to 42°C.
  - All lymph glands were swollen especially along the dewlap.
  - The animal was weak, it kept lying down, could not rise and eventually died.
- (a) (i) Identify the disease which caused the death of the cow.  
(ii) Name the causative agent and the vector for the disease in (a) (i) above. **(2 marks)**
- (b) (i) Briefly describe the life cycle of the vector in (a) (ii) above.  
(ii) Suggest three methods which can be used to control the vector. **(6 marks)**
4. (a) Define  
(i) Variable inputs  
(ii) Fixed inputs. **(1 mark)**
- (b) Briefly explain any four characteristics of variable inputs. **(4 marks)**
5. Study the diagram below and answer the questions that follow:



- (a) Name and briefly explain the agricultural practices in vegetable production shown by letter X and Y. **(3 marks)**
- (b) Give any four advantages and any three disadvantages of the practice shown by letter Y. **(7 marks)**
6. (a) Elaborate four conditions which must exist in order to undertake a successful oxenization. **(4 marks)**
- (b) Before an oxen is selected for training, several desirable characteristics are looked upon. Point out four of these characteristics. **(2 marks)**

7. (a) What is meant by adoption of an innovation? **(1 mark)**  
 (b) Account for five stages in the process of adoption of an innovation. **(5 marks)**
8. (a) Examine ten ways in which forests are beneficial to our daily life. **(5 marks)**  
 (b) (i) What is the difference between cropping and harvesting of fish?  
 (ii) Give three advantages of using seine nets over the hook and line in fishing. **(5 marks)**

9. The following figure represents the Nitrogen Cycle. Study it carefully and answer the questions that follow:



**Key:**

**1** = Nitrogen in the air  
**2** = Plant protein  
**3** = Ammonia compounds

- (a) (i) Name the compounds A and B. **(1 mark)**  
 (ii) Briefly explain the processes taking place at C and D. **(2 marks)**
- (b) (i) Name the species of bacteria involved in E and F and briefly explain their roles. **(2 marks)**  
 (ii) Account for what happens in G and H. **(2 marks)**
10. (a) What is digestibility of animal feeds? **(1 mark)**  
 (b) Assess seven factors which affect the digestibility of animal feeds. **(7 marks)**

### SECTION C (20 Marks)

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

11. Integrated Pest Management is the most effective and efficient way of controlling crop pests. Discuss.
12. Explain on bloat as one of the nutritional disorders in animals using the following guidelines:
  - (a) Meaning
  - (b) Animals affected
  - (c) Cause
  - (d) Symptoms
  - (e) Control and treatment.
13. Argue for the statement that ‘the effects of microbial activities in the soil are both beneficial and harmful’.