



DEPARTMENT OF
EDUCATION

LOWER SECONDARY
SCHOOL CERTIFICATE
EXAMINATIONS

AGRICULTURE

Thursday

03 October 2013

Time allowed:

3 hours

8:30 am – 11:30 am

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INSTRUCTIONS TO CANDIDATES:

(To be read out by the external invigilator before the start of the examination)

There are **46** questions in this paper worth **50** marks. Attempt **ALL** questions even if you are not so sure of some of the answers.

The Examination is divided into three parts:

PART A: Multiple-Choice (Questions 1 to 25)

PART B: Short-Answer (Questions 26 to 45)

PART C: Extended Response (Question 46)

The Answer Sheet is part of the Examination Booklet. Take out the middle pages and remove the Answer Sheet by tearing along the perforation. You may use the blank sheet for rough work.

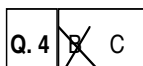
For each question in **PART A** choose the correct answer and write the letter A, B, C or D in the space provided on the **ANSWER SHEET**.

For each question in **PART B and PART C** work out the answer and write the answer in the space provided on the **ANSWER SHEET**.

If you find a question very difficult, do not spend too much time thinking about it. Leave the question out and go on with the rest of the paper. If you have time in the end, return to the difficult questions and think about them more carefully.

Write your answers in **BLUE** or **BLACK** ink (pen or biro).

If you decide to change an answer, make your correction as shown below so that it is clear to the markers what your final answer is. Do **NOT** use **correction fluid** on your answer sheet.



Hand in **BOTH** the Answer Sheet and the papers used for rough work at the end of the examination.

Extra time will NOT be allowed to complete the examination under any circumstances.

The penalty for cheating or assisting others to cheat in national examinations is non-certification.

**DO NOT TURN OVER THIS PAGE AND DO NOT WRITE UNTIL
YOU ARE TOLD TO START.**

QUESTION 7

It takes 16 weeks from conception to the time piglets are born.

This is called the _____ period.

- A. implantation B. gestation C. fertilisation D. ovulation

QUESTION 8

Which of the following is removed from a male piglet during castration?

- A. Urethra B. Scrotum C. Testicles D. Penis

QUESTION 9

There are a lot of activities that are involved in an agricultural industry. One particular industry involves many small farmers. They cultivate agricultural crop(s) in great areas of land. However, there is no processing required and the production is local.

The most appropriate industry that suits the above activity description is

- A. flora. B. coffee. C. oil palm. D. green vegetables.

QUESTION 10

Before an oil palm plantation is established, a huge area of forested land is cleared. The clearance of the forest leads to the destruction of biodiversity, which can never be replaced by the oil palm plantation.

What is this destruction called?

- A. Logging B. Deforestation C. Clear felling D. Land degradation

QUESTION 11

One of the disadvantages of monocropping concerns the increasing rate of pest and disease.

This increase is due to the fact that

- A. cultivation of monocrops often involves less competition between pests.
B. cultivation of monocrops often involves crops that are prone to diseases.
C. there is only one type of crop so the demand for the use of pesticide is huge.
D. there is only one type of crop so the chances of pest and disease build up are great.

QUESTION 12

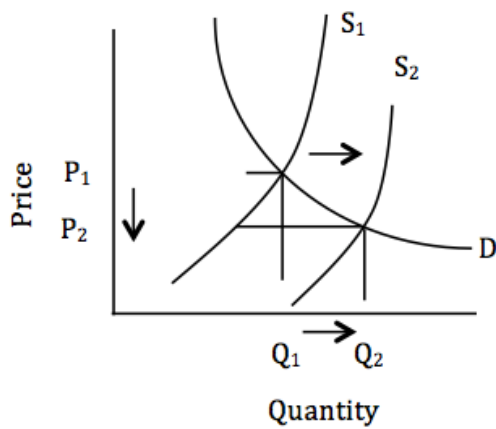
The produce of agricultural crops is achieved because the roots play a vital role in the whole production process.

Select the option that best describes one of the functions of plant roots.

	FUNCTION
A.	Absorption of water and mineral salts from the soil into the plant.
B.	Translocation of manufactured starches to other parts of the plant through the veins.
C.	Supports the plant, enabling the leaves and branches to be displayed and well positioned to trap sunlight.
D.	Transports water, mineral salts from the soil to the shoots and manufactured starches to other parts of the plant.

QUESTION 13

Below is a graph of sugar production. It shows that there was an increase in the sugar production, but the demand remained the same during the same year.



KEY:
D - Demand
S - Supply

What happened to the price of the product at that time?

- A. Increased
- B. Decreased
- C. Remained the same
- D. Decreased then increased

QUESTION 14

Which of these four crops is a deep-rooted crop where it can also extract nutrients beneath the soil?

- A. Kaukau
- B. Bean
- C. Onion
- D. Corn

QUESTION 15

To correct the problem of nutrient depletion, _____ is planted to restore soil nutrients.

- A. kaukau
- B. bean
- C. onion
- D. corn

QUESTION 16

Sustainable agriculture is best described as the

- A. practice of subsistence agriculture.
- B. cultivation of cash crops for export market.
- C. use of resources faster than they can replace themselves.
- D. use of resources by farmers for their benefit now and in the future.

QUESTION 17

In agro-industries, science and technology is needed in the production of agricultural produce.

Which negative impact is a result of the use of science and technology?

- A. Expensive to manage
- B. Less manpower
- C. Less maturity period for the produce
- D. Increased price of garden foods

QUESTION 18

Agricultural produce can be affected when water is lost from the soil as a result of

- A. transpiration by the plants.
- B. water loss below the rooting zone.
- C. inorganic fertilizers being applied.
- D. evaporation from the soil surface.

QUESTION 19

Increased agricultural activities have many positive impacts on the provincial economic environment.

Which of these is not a positive impact?

- A. Decrease of food prices
- B. Increase of job opportunity
- C. Increase of better nutrition
- D. Increase of social problems

QUESTION 20

Below is a list of nursery techniques for seedlings. These techniques are not in correct order.

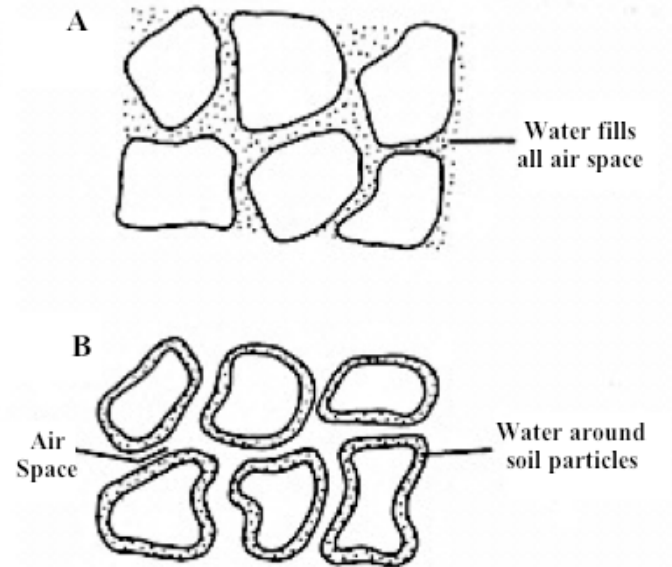
- i. Soil sterilization.
- ii. Seed preparation.
- iii. Seed selection.
- iv. Seed covering.
- v. Seed sowing.

Which of the list below contains the correct order of techniques?

- A. iii, i, v, iv, ii
- B. ii, i, v, iv, iii
- C. i, ii, iii, iv, v
- D. iii, ii, i, v, iv

For questions 21 and 22, refer to the diagrams and the conclusions below.

Soils with too much water and just enough water



Conclusions drawn from the soil types above:

- i. Crops can still grow in it.
- ii. Living things do not live in it.
- iii. It needs an adequate drainage and an application of organic matter.
- iv. Higher the amount of water in it, the larger the amount of air in it.
- v. Such soil will produce high yield.

QUESTION 21

Which of the conclusions are true about the soil in diagram A?

- A. i, ii, v B. i, iii, iv C. i and iii only D. ii and iv only

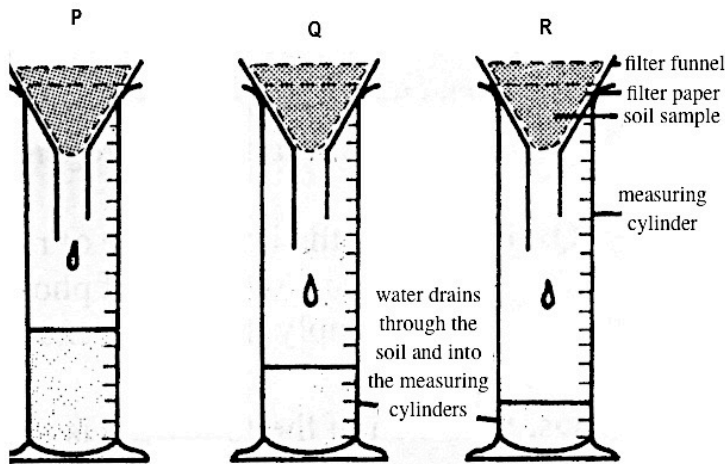
QUESTION 22

The description that can be given to the soil condition in diagram B is, soil _____.

- A. acidity B. fertility. C. porosity D. organisms

For questions 23 and 24, refer to the information below.

To compare the water holding capacity of soils **P**, **Q** and **R** in the identical measuring cylinders shown below, Pete poured the same amount of water into each of them.



Holding Capacity of Soils in Measuring Cylinders

QUESTION 23

What type of soil is **R** representing?

- A. Sand
- B. Clay
- C. Loam
- D. Gravel

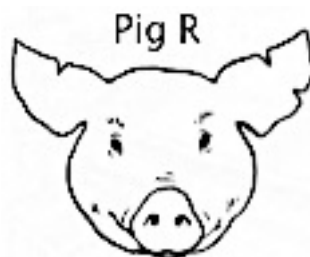
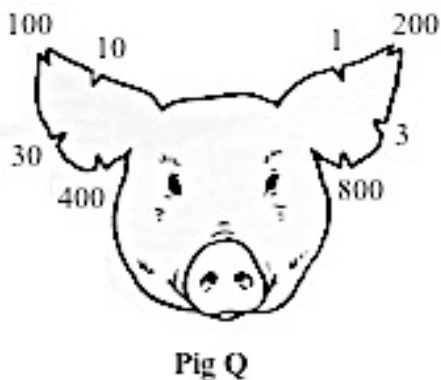
QUESTION 24

Which of the following is a factor involved in determining the comparison of water holding capacity of **P**, **Q** and **R** soils in the experiment?

- A. Amount of water poured
- B. Soil types with their particles sizes
- C. Shaping of the measuring cylinders
- D. Diameter of the measuring cylinders

QUESTION 25

Ear notching is a practice used as an identification tool on pigs. This practice involves using a special pair of pliers to remove pieces of the pig's ear. Each notch on different locations on the ear represents a number, as shown in **Pig Q** below.



What is the identification number of **Pig R**?

- A. 4
- B. 14
- C. 114
- D. 814

PART B: SHORT ANSWERS

20 MARKS

For each question, write the correct answer in the space provided on the ANSWER SHEET.

QUESTION 26

What is the scientific name for oil palm?

QUESTION 27

What is the name of a matured male cattle?

QUESTION 28

Arachis hypogaea is the scientific name for which plant?

QUESTION 29

The general name given to fertilizers that are manufactured is _____ fertilizers.

QUESTION 30

What is the term given when government ensures all individuals in a country have sufficient food to avoid starvation and keep them healthy?

For questions 31 and 32, refer to the information below.

Many things including bacteria, animals, temperature and soil structure affect agricultural productivity in significant ways.

QUESTION 31

Name one **abiotic** factor that influences plant growth.

QUESTION 32

Soil structure is an example of a / an _____ factor.

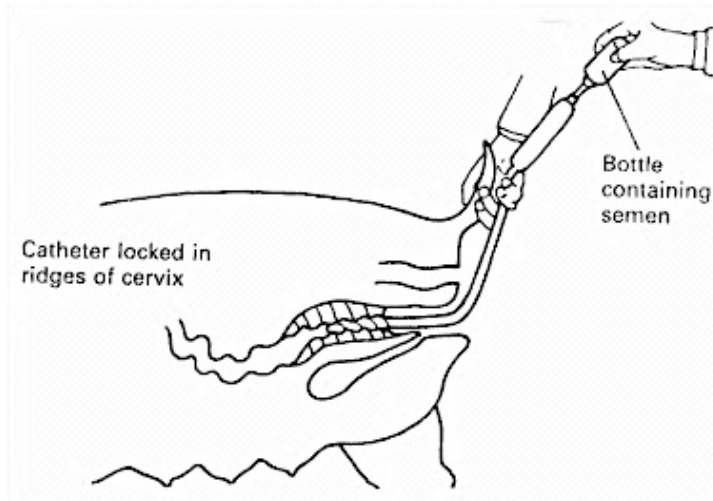
QUESTION 33

Mary wants to determine her garden soil type. She collects a handful of soil and adds a small amount of water to it. She then takes a small amount of the soil between her thumb and two fingers and tries to make a small ball. However, the particles are gritty and she cannot make a ball.

What kind of soil does she have?

QUESTION 34

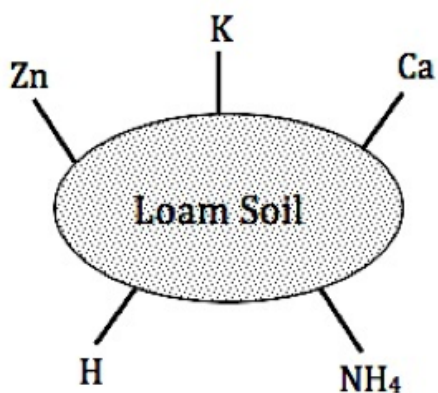
The diagram below shows one of the introduced methods of science and technology on how semen collected from a boar can be inserted into a sow or gilt for breeding purposes.



What is this technique called?

For questions 35 and 36, refer to the diagram of a loam soil composition below.

Diagram of loam soil composition

**QUESTION 35**

Write down one macronutrient found in this soil?

QUESTION 36

Write down one micronutrient found in this soil?

QUESTION 37

Apart from producing refined white sugar, Ramu Agri-Industries also produces two (2) byproducts. One of them is called molasses.

Name the other product.

QUESTION 38

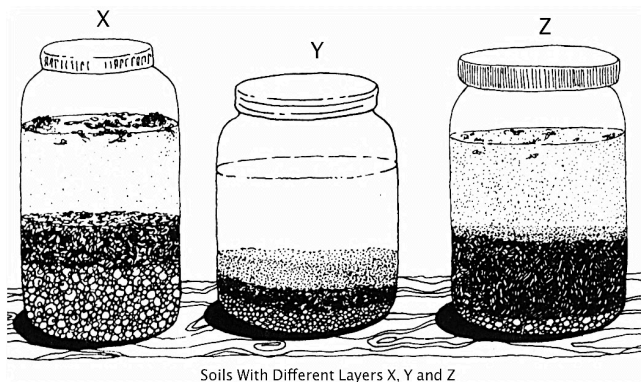
What is the name of the method used to kill soil microorganisms in a drum by burning the soil before using it in a seed box?

QUESTION 39

The general name of the chemical that is used to control weeds is called _____.

For questions 40 and 41, refer to the information below.

An experiment was set up as displayed. After a week of observation, results were collected.



QUESTION 40

This experiment was purposely set up to find out about the solid _____ of the soil.

QUESTION 41

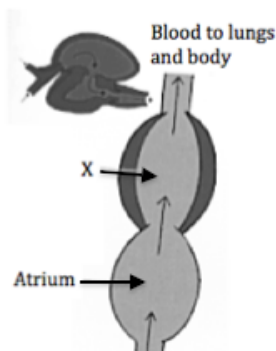
Which of these shows that water was mixed with clay?

QUESTION 42

Solarisation method is used to kill which group of organisms?

QUESTION 43

The diagram below shows a two-chambered heart of a fish.



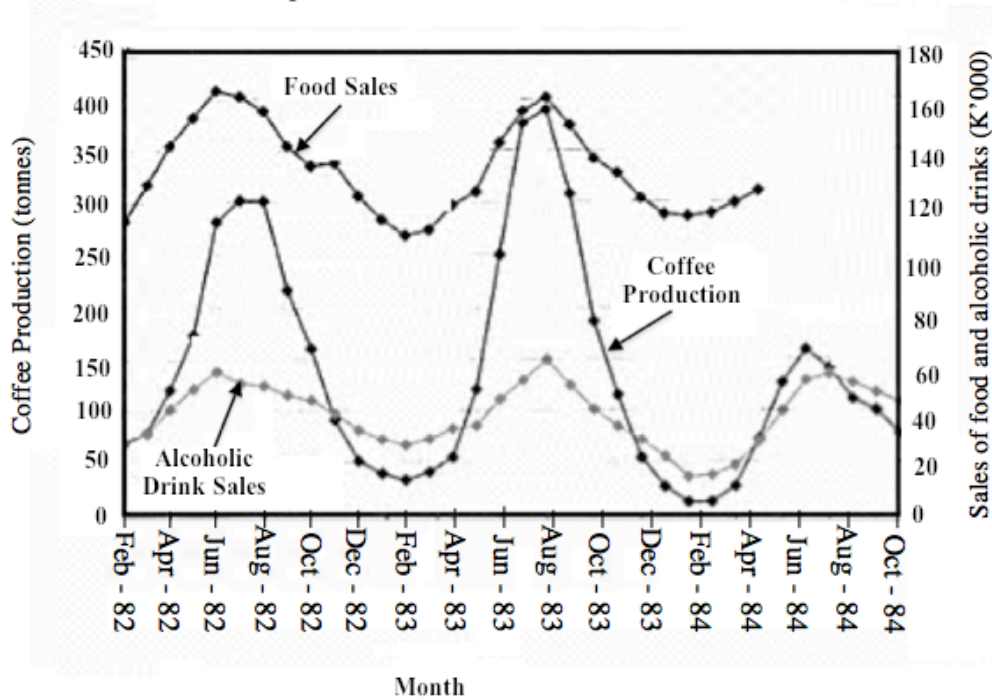
Name the part labelled X.

For questions 44 and 45, refer to the information below.

The coffee industry in the Kainantu area of Eastern Highlands Province has an economic value with a boomerang effect. Not only does it contribute to the income of this nation in terms of exports but it also brings income to local sellers of foods and drinks because people have money to spend during the coffee season.

The graph shows the close relationship between the quantity of coffee sold by villagers and the sales of food and alcoholic drinks.

Small holder coffee production and sales of food in Kainantu, 1982 - 1984



QUESTION 44

In the early months towards mid-1982, the income received from food sales increased dramatically and then dropped when the production of coffee levelled off.

How much in tonnes was the coffee production at that time?

QUESTION 45

Which month saw the lowest amount of money received from the sale of food?

PART C: EXTENDED RESPONSE**5 MARKS****QUESTION 46**

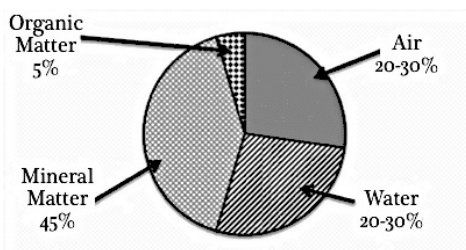
If 400mL of water were added to 400mL of soil in a measuring cylinder, you would expect to find 800mL of water and soil in the jar. However, it will be less because the water will fill up the air spaces in the soil. For instance, if the level is only 720mL, it means that the soil you used had 80mL of air space in it (that is: $800\text{mL} - 720\text{mL} = 80\text{mL}$)

John did an experiment and recorded the amount of air space in each soil sample in the table below. He used 300mL of water and 300mL of soil for each sample.

Soil Type	Expected mL (Soil mL + Water mL) 300mL + 300mL	Real mL (Water mL after filling up air spaces in the soil)	Results (Air spaces) (Expected mL – Real mL)
Sandy (S)	600	320	?
Loam (L)	600	?	90
Clay (C)	600	580	?

Use the information in the table above to answer the questions that follow.

- (i) Work out and write the result (air space) for Soil S. (1 mark)
- (ii) Work out and write the real mL for Soil L. (1 mark)
- (iii) A good soil has the following composition as shown by the pie graph.



$$\text{Formula: } \frac{\text{Result mL}}{\text{Original mL}} \times 100$$

$$\text{For example: } \frac{80}{400} \times 100 = 20\%$$

Which soil sample in the table had about the same amount of air space or nearest as the average soil shown in the pie graph, which is 20 – 30%? (Use the formula and the example provided in the box above to help you answer this question). (1 mark)

- (iv) Which soil has most air space? (1 mark)
- (v) Which soil is good to cultivate crops? (1 mark)

END OF EXAMINATION

AGRICULTURE - ANSWER SHEET



MARKER 1

YEAR		PROV.		SCHOOL			CAND No.		
1	3								
NAME									
SCHOOL									

PART A: (Questions 1 to 25)

Write the letter of your answer next to each question below.

1		6		11		16		21	
2		7		12		17		22	
3		8		13		18		23	
4		9		14		19		24	
5		10		15		20		25	

PART B (Questions 26 to 45)

Write your answer next to each question below.

26	<i>Elaeis</i>	31		36	
27		32		37	
28		33	soil	38	
29		34	Artificial	39	
30	Food	35		40	

PART C (Questions 46 to 50)

Write your answer next to each question below.

41		46	(i)		mL	 MARKER 2
42			(ii)		mL	
43			(iii)			
44	tonnes		(iv)			
45			(v)			

DO NOT WRITE ON THIS PAGE

YOU MAY DO YOUR ROUGH WORK ON THIS PAGE

CAREFULLY TEAR ALONG THIS PERFORATION

YOU MAY DO YOUR ROUGH WORK ON THIS PAGE