



DEPARTMENT OF  
EDUCATION

LOWER  
SECONDARY  
SCHOOL  
CERTIFICATE  
EXAMINATION  
(LSSCE)

AGRICULTURE

Thursday

02<sup>nd</sup> October 2014

Time allowed: 3 hours  
8:30 am – 11:30 am

Candidates are advised to  
fully use the time  
allocated



## 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.

Write your province code, school code, candidate number, name and school name in the space given on the **ANSWER SHEET**.

For each question in **PART A**, choose the correct answer by writing 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. Skip the question 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.

**Example**



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.**

**Penalty for cheating or assisting to cheat in national examinations is non-certification.**

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

**PART A: MULTIPLE CHOICE QUESTIONS****(QUESTIONS 1 to 25)****25 MARKS**

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

**QUESTION 1**

Organic farming has sustained Kongo Coffee Industry to continue its production for a longer period of time.

Which of the following practice is an example of an organic farming?

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| A. Mulching                           | B. Manual weeding                     |
| C. Using of artificial NPK fertilizer | D. Using of weevil to control insects |

**QUESTION 2**

The only activity that has a minimal effect on the environment is

- |                       |                          |
|-----------------------|--------------------------|
| A. cocoa farming.     | B. cattle farming.       |
| C. vegetable farming. | D. oil palm cultivation. |

**QUESTION 3**

When food security in PNG is poor, it will directly result in

- |                                  |                                |
|----------------------------------|--------------------------------|
| A. unavailable cash.             | B. bad transport management.   |
| C. unacceptable cultural values. | D. unhealthy human population. |

**QUESTION 4**

Which of the following is a factor of soil formation?

- |           |                     |
|-----------|---------------------|
| A. Light  | B. Animals          |
| C. Plants | D. Living organisms |

**QUESTION 5**

The following advantages below are provided by the agricultural industries in PNG.

Identify the one that benefits most of the population.

- |                                   |  |
|-----------------------------------|--|
| A. Food supply and Pests control  | B. Food supply and land royalty        |
| C. Income earning and Food supply | D. Income earning and sponsor students |

**QUESTION 6**

When raising chickens, chicks are provided with a source of heat. The source of heat can be built and placed inside a chicken house with a hurricane lamp or light bulb.

What is that source of heat called?

- |           |            |                |               |
|-----------|------------|----------------|---------------|
| A. Litter | B. Brooder | C. Ventilation | D. Quarantine |
|-----------|------------|----------------|---------------|

**QUESTION 7**

Which of the following is **NOT** an advantage of a hybrid species?

- A. Can produce high yield.
- B. Resistance to pests / disease.
- C. Help build up pathogenic microbes.
- D. Can adapt to various climatic conditions.

**QUESTION 8**

Identify one technology below that is appropriate for use when growing corn in soils that are **NOT** rich.

- A. Irrigation
- B. Fertilizer
- C. Herbicide
- D. Pesticide

**QUESTION 9**

Which list below contains all the technologies used in subsistence farming?

- A. computer, tractor, fertilizer
- B. fertilizer, spade, wheelbarrow
- C. tractor, fertilizer, machine harvester
- D. digging stick, machine harvester, plough

**QUESTION 10**

The most possible way in which nitrogen can be restored to the soil is by

- A. adding manure.
- B. planting beans.
- C. adding artificial fertilizer.
- D. adding organic fertilizer.

**QUESTION 11**

The activities taking place within agro-industries have a lot of impact on the natural environment.

Select the activity that destroys soil fertility.

- A. Planting legume crops.
- B. Constructing irrigation drains.
- C. Enriching the soil with chemical fertilizers.
- D. Using chemicals to kill weeds and insect pest.

**QUESTION 12**

Which of the agriculture farming system does the description below refer to?

“The planted corns are fed to the chickens; chicken manure is used as natural fertilizers for other crops or is directed into the ponds nearby as food for fish and ducks; water from the pond is then used to water crops.”

- A. Aquatic farming
- B. Pastoral farming
- C. Agroforestry farming
- D. Integrated farming

**QUESTION 13**

Which of these activities will improve the local economy?

- A. Exporting coffee beans.
- B. Drying cocoa beans in the sun.
- C. Farmer selling wet cocoa beans.
- D. Processing oil palm and export.

**QUESTION 14**

Select the option that best describes the mutual relationship between cattle and coconut trees.

Coconut trees provide

- A. fruits for cattle and cattle keep the area clean.
- B. nutrients to soil for pasture and cattle control weeds.
- C. shade and cattle provide dung for soil nutrients for coconut trees.
- D. soil nutrients for pasture and cattle provide dung for soil nutrients for coconut trees.

**For questions 15 and 16, refer to the information below.**

Here is a list of plots showing crop rotation in the first planting.

<u>Plot A</u>	<u>Plot B</u>	<u>Plot C</u>	<u>Plot D</u>	<u>Plot E</u>
Corn	Peanut	Taro	Cabbage	Bean

**QUESTION 15**

In the second planting, where would corn be best planted?

- A. Plot A
- B. Plot B
- C. Plot C
- D. Plot D

**QUESTION 16**

In the fourth planting, where would taro be planted?

- A. Plot A
- B. Plot B
- C. Plot D
- D. Plot E

**QUESTION 17**

The use of chemicals, heavy machineries, cutting and burning of vegetation are some ways in which agro-industries are involved with which can affect the environment.

Which of the effects below is **NOT** associated with chemical usage?

- A. Causes erosion
- B. Kills microorganisms
- C. Increase the soil acidity level
- D. Destruction of soil fertility

**QUESTION 18**

Farmers pay levy to the Government and the government banks this levy in a special savings account. In the event that an emergency situation arises, the Government then helps the farmers with this money.

What is the name of this special savings account?

- A. Nasfund
- B. Emergency fund
- C. Stabilization fund
- D. Nambawan Super

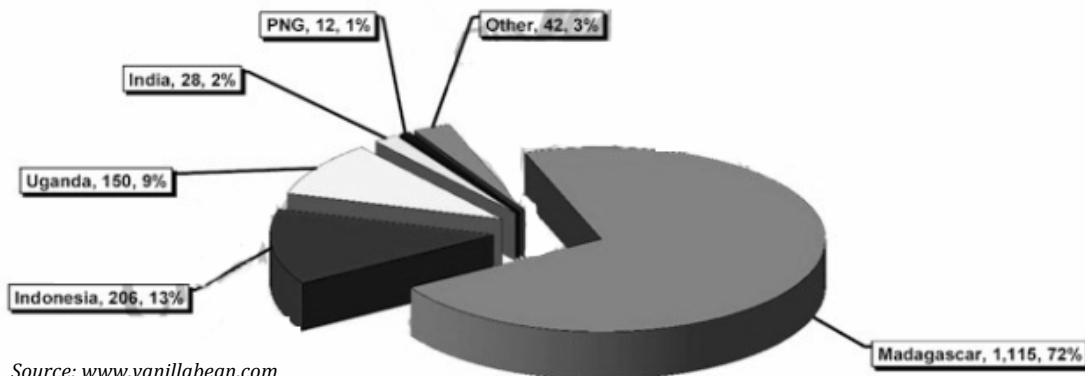
**QUESTION 19**

Some soils are red in colour because of \_\_\_\_\_, which is the dominant element present in there.

- A. iron
- B. zinc
- C. carbon
- D. calcium

**QUESTION 20**

Below is a graph of 2011 USA Vanilla Imports.



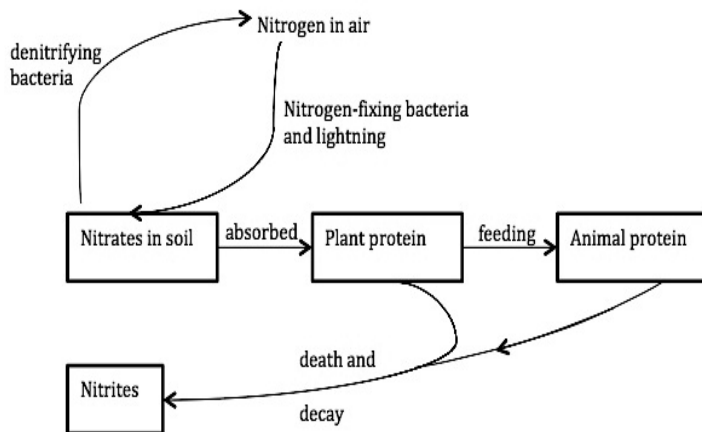
Source: www.vanillabean.com

Assuming that America still imports vanilla from those countries at the same percentage as 2011, which of the statement below would **NOT** be true?

- A. Madagascar leads in vanilla import.
- B. PNG is the least vanilla producing country in the world.
- C. America imports vanilla from other countries three (3) times more than PNG.
- D. The export of vanilla from Indonesia to America alone beats that of Uganda and India when combine together.

**QUESTION 21**

Below is a diagram showing the recycling of nitrogen.



Why is nitrogen important in agriculture productions?

Because it

- A. helps the decayed organisms.
- B. provides fat for plants and animals.
- C. helps the bacteria to feed on plants.
- D. builds protein in plants and animals.

**QUESTION 22**

Trobriand Islanders produce a lot of yams and they supply the whole province with that food.

They are simply doing local \_\_\_\_\_.

- A. promotion
- B. exporting
- C. distribution
- D. advertisement

**QUESTION 23**

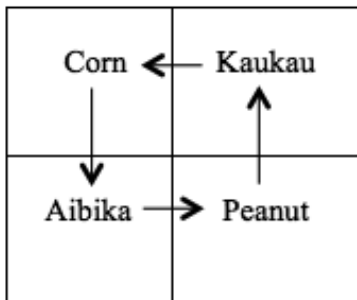
After planting aibika, care must be given until they are harvested and used.

Which technology is used in the caring stage?

- A. Axe                                      B. Spade                                      C. Pesticide                                      D. Irrigation

**QUESTION 24**

Below is a type of cropping system used by Mr. Bee in his garden.



Plots of different crops were planted and rotated after several harvests in a year and the following results were noticed.

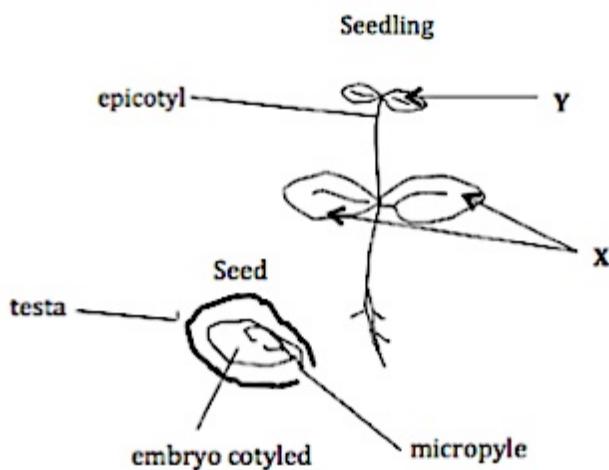
- i. Reduced build up of pests
- ii. Improved soil colour
- iii. Controlled soil erosion
- iv. Maintained soil fertility

From the results, which ones did Mr. Bee benefit from this gardening practice?

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

**QUESTION 25**

Below is a diagram of a seedling.



Select the option that best fits the parts labelled X and Y.

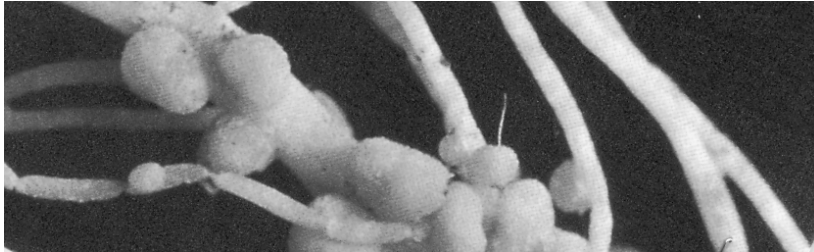
- A. X - Radicle and Y - Plumule  
B. X - Radicle and Y - Cotyledon  
C. X - Cotyledon and Y - Plumule  
D. X - Cotyledon and Y - Hypocotyl

**PART B: SHORT ANSWERS****(QUESTIONS 26 to 45)****20 MARKS**

For each question, work out the answer and write the answer in the space provided on the ANSWER SHEET.

**QUESTION 26**

What is the name of the group of microbes that live everywhere on earth and most helpful to plants and animals especially in the recycling of soil nutrients?

**QUESTION 27**

What is the name given to the small round particles attached to the roots in the opposite picture?

**QUESTION 28**

PNG Government is always concern about its people by making sure there is enough food supply to meet the demand. They government ensures that the foods are healthy and safely stored for long periods of time.

The correct term used to describe this is food \_\_\_\_\_.

**QUESTION 29**

Name one commercial crop in PNG that is mostly harvested using a machine harvester.

**For questions 30 and 31, refer to the statement below.**

The table shows the mean difference between nutrient removal and nutrient input in kilograms per hectare at Ramu Agri-Industries from 1991 – 1995.

YEAR	NITROGEN	PHOSPHORUS	POTASSIUM
1991	-8	-1	-84
1992	+63	-12	-104
1993	+62	-12	-87
1994	+27	-16	-109
1995	+28	-13	-110

**QUESTION 30**

Which nutrient needs a lot of input?

**QUESTION 31**

In what year was phosphorus most deficient?

**QUESTION 32**

What is the term given when the soil is steamed in the drum by a fire to kill harmful organisms before it is being used for nursery of small seeds?

**QUESTION 33**

What is another word for poverty?

**QUESTION 34**

The two major tissues in plants are the xylem and phloem tissues.

Which tissue is responsible for the movement of sugar in plants?

**QUESTION 35**

A farmer uses all his land for planting cash crops. This means that the farmer will depend a lot on \_\_\_\_\_ coming from his cash crops.

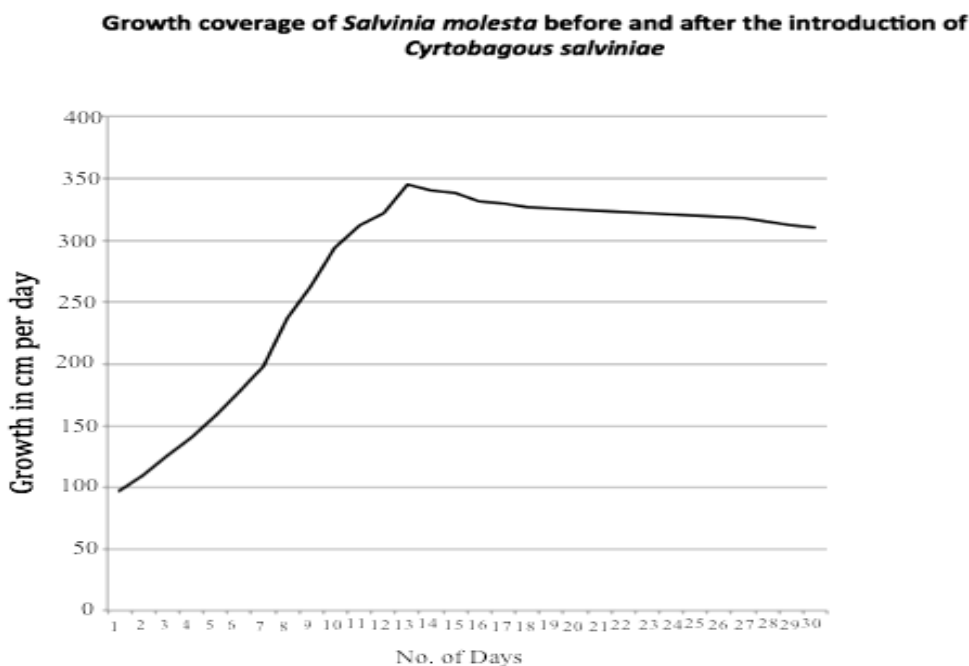
What is the missing word?

**For questions 36 and 37, refer to the statement below.**

A water plant *Salvinia molesta* was introduced into Sepik River and it grew very quickly to form a thick mat on the river. This reduced oxygen in the water, killed fish and made canoeing difficult.

Later, a weevil *Cyrtobagous salviniae* (an insect) was introduced and it killed and controlled the *Salvinia molesta* plant.

The graph below shows the growth coverage of the plant before and after the introduction of the insect during a one-month monitoring exercise.

**QUESTION 36**

The introduction of *Cyrtobagous salviniae* to control the growth of *Salvinia molesta* is an example of \_\_\_\_\_ control.

**QUESTION 37**

On what day was the insect introduced?



For questions 38 and 39, refer to the table of soil classification below. One has been done for you.

Diameter of soil particles	Name of soil particle
Over 2.00 mm	<b>P</b>
0.20 – 2.00 mm	<b>Q</b>
0.02 – 0.20 mm	Loam
0.002 – 0.02 mm	<b>R</b>
Below 0.002 mm	<b>S</b>

### QUESTION 38

Soil particle **P** is classified as \_\_\_\_\_.

### QUESTION 39

Which letter in the above table represents clay?

### QUESTION 40

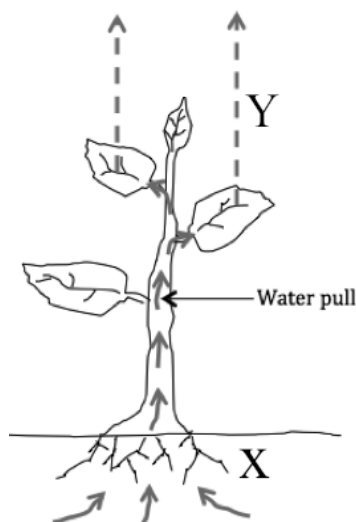
When raising chickens or other farm animals for money, you must have basic knowledge about profitability and markets.

What is the missing word in the formula given below about profit?

Profit = \_\_\_\_\_ - Costs

For questions 41 and 42, refer to the information below.

Water is absorbed at the roots by the process called **X**. A force that acts like a suction pressure then sucks and pulls water up through the plant, which then escapes in a process called **Y** into the atmosphere through small openings in the leaves called stomata.



### QUESTION 41

Process **X** is called \_\_\_\_\_.

### QUESTION 42

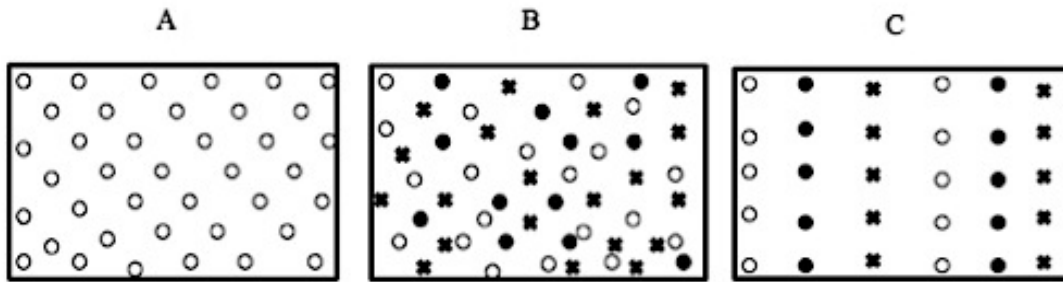
What is the name of Process **Y**?

**QUESTION 43**

Cows, goats and sheep have four-chambered stomach. \_\_\_\_\_ **X** \_\_\_\_\_ receives the first lots of grass they eat. After swallowing, the chewed grass is brought out and eaten for the second time where it then goes directly to the true stomach called abomasum.

Write the name of the first chamber labelled **X**.

For questions 44 and 45, refer to the information below about the different types of cropping systems. System **B** represents mixed cropping.



Key: ○ - Peanut, ● - Corn, ✖ - Banana

**QUESTION 44**

What is the name of System A?

**QUESTION 45**

System C is called \_\_\_\_\_.

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

Sustainable, in agriculture, means to have the agricultural produce last over time, or continue indefinitely without stopping while at the same time, the agricultural activity does not affect the environment.

Consider the five (5) agricultural activities below and state whether they are **SUSTAINABLE** or **NOT SUSTAINABLE**.

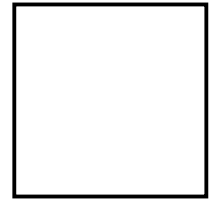
- |       |   |       |
|-------|---|-------|
| (i)   | Harvesting of fish using fishing nets                 | _____ |
| (ii)  | Conversion of wastes from sugar into biofuel          | _____ |
| (iii) | Application of artificial fertilizer on cabbage plots | _____ |
| (iv)  | Planting beans on the same piece of land annually     | _____ |
| (v)   | Raising pigs in an extensive farming system           | _____ |

**END OF EXAMINATION**

LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATION – 2014

**AGRICULTURE – ANSWER SHEET**

YEAR		PROV.		SCHOOL			CAND No.		
1	4								
NAME									
SCHOOL									



**MARKER 1**

**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		31		36	
27		32	Soil	37	Day No.
28		33		38	
29		34		39	
30		35		40	

**PART C** (Question 46)

Write your answer next to each question below.

41		<b>46</b>	(i)		<b>MARKER 2</b>
42			(ii)		
43			(iii)		
44	cropping		(iv)		
45	cropping		(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**