

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA SCHOOL CERTIFICATE

2017

AGRICULTURAL SCIENCE

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 ½ Hours

INSTRUCTIONS:

1. Answer **ALL** questions.
2. This paper consists of **SIX QUESTIONS**.

QUESTION	Topics	Total Skill Level	Time (min)
ONE	AGRO-FORESTRY	11	24
TWO	SOIL	13	28
THREE	AGRICULTURAL TOOLS	11	24
FOUR	CROP PRODUCTION & PROTECTION	12	26
FIVE	ANIMAL PRODUCTION AND HEALTH	12	26
SIX	AGRICULTURAL INDUSTRY	11	24
	TOTAL	70	150

3. Write your **Student Enrolment Number** on the right hand.
4. Answer **ALL** questions in the spaces provide in this booklet
5. Use **BLUE** or **BLACK** ball point pen. **DO NOT** write in pencil.
6. If you need more space for any answer, ask the supervisor for extra paper.
7. Check that your paper consists of **19** pages and that pages 17-19 has been deliberately left blank.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

SHORT AND LONG ANSWER

QUESTION ONE: AGRO-FORESTRY

- a. Sandalwood is one of the biological aspects of Agri-forestry. Study the diagram below and answer the following questions.



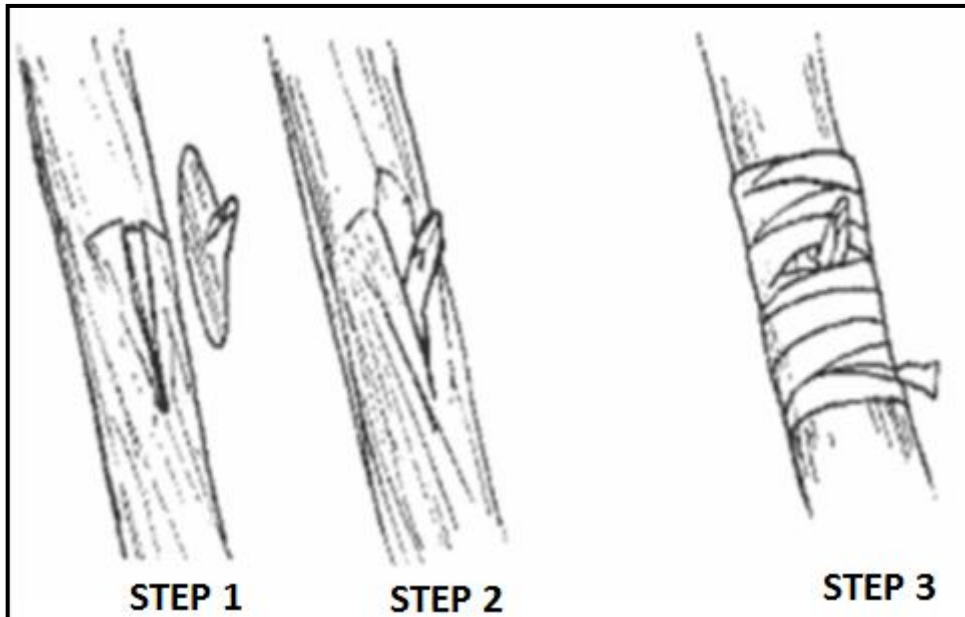
1. Identify the botanical name of sandalwood.

Skill level 1	
1	
0	
NR	

2. Describe **ONE** (1) importance of sandalwood.

Skill level 2	
2	
1	
0	
NR	

- b. Study the diagram and answer the following questions.



1. Explain how to conduct budding propagation as it is shown in the diagram above. Use correctly the terms **scion** and **root stock** in your explanation.

STEP 1

STEP 2

STEP 3

Skill level 3	
3	
2	
1	
0	
NR	

- c. Study the diagram below and then answer the questions that follow.



Stage 2 – Sowing seeds

1. Define the following terms:

i. plant propagation

ii. nurse

iii. transplanting

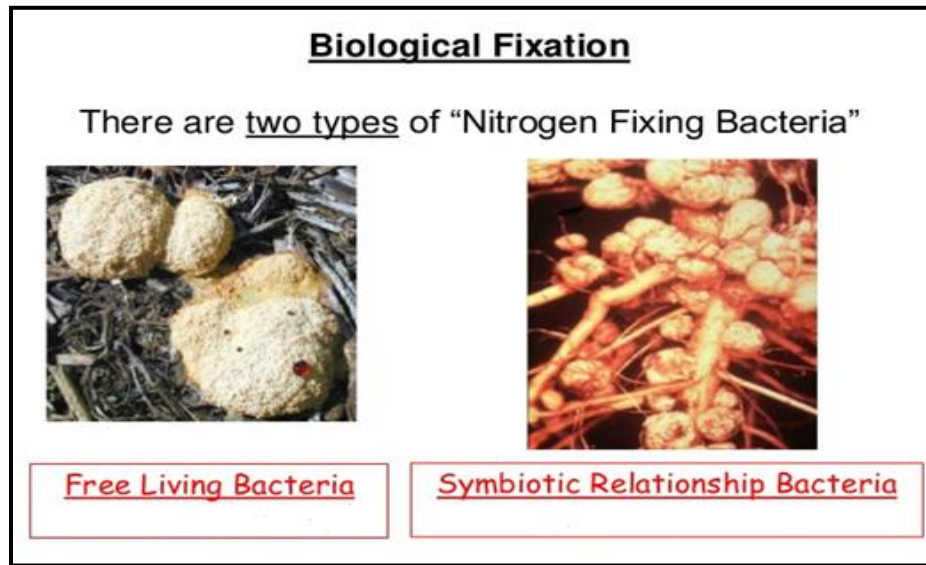
2. Describe **ONE** (1) characteristic of a good seed prior for sowing on the seedbed.

Skill level 1	i.	ii.	iii.
1			
0			
NR			

Skill level 2	
2	
1	
0	
NR	

QUESTION TWO: SOIL

- a. Study the diagrams below and then answer the following questions.



1. Explain the function of **symbiotic relationship bacteria** on the diagram above.

Skill level 3	
3	
2	
1	
0	
NR	

2. Describe the useful roles of **free living bacteria**.

Skill level 2	
2	
1	
0	
NR	

- b. Study the diagrams below and then answer the following question.



Identify the types of mulch used in **Diagram B**.

Skill level 1	
1	
0	
NR	

- c. Sione is a commercial squash grower and he mostly uses agricultural machinery unwisely in the way he is cultivating soil as shown in the diagrams below. Study the diagrams below and then answer the following question.



Diagram A



Diagram B

Choose **ONE** (1) diagram (from page 6) and analyse the appropriate methods of cultivating the soil that Sione should do.

Diagram: _____

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 4	
4	
3	
2	
1	
0	
NR	

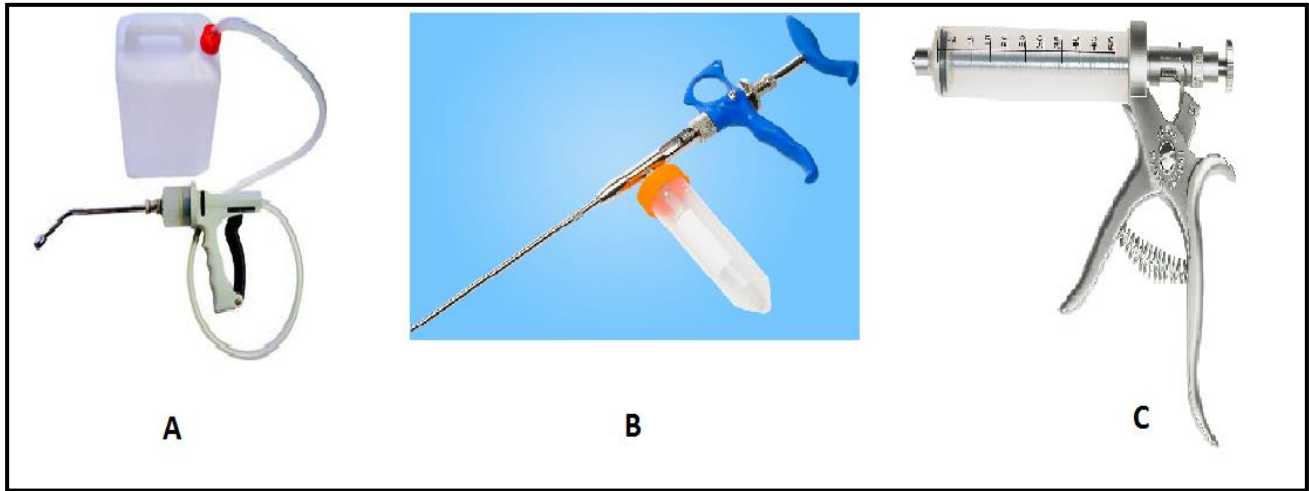
- d. ***Fertilizer provides nutrition for plants.***
Compare the manure fertilizer and Urea fertilizer.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION THREE: AGRICULTURAL TOOLS

Study the picture of animal production tools and equipment for animal management and answer the following questions.



a. Define the word **tool** and **equipment**.

i. Tool

Skill level 1	
1	
0	
NR	

ii. Equipment

Skill level 1	
1	
0	
NR	

b. Which of the pictures shown above is a **drenching gun**?

Diagram: _____

Skill level 1	
1	
0	
NR	

- c. Describe the use of drenching gun.

Skill level 2	
2	
1	
0	
NR	

- d. Describe the safety use of drenching gun.

Skill level 2	
2	
1	
0	
NR	

- e. Describe the care and maintenance of drenching gun

Skill level 2	
2	
1	
0	
NR	

- f. Name **FOUR** (4) garden tools.

- i. _____
- ii. _____
- ii. _____
- iv. _____

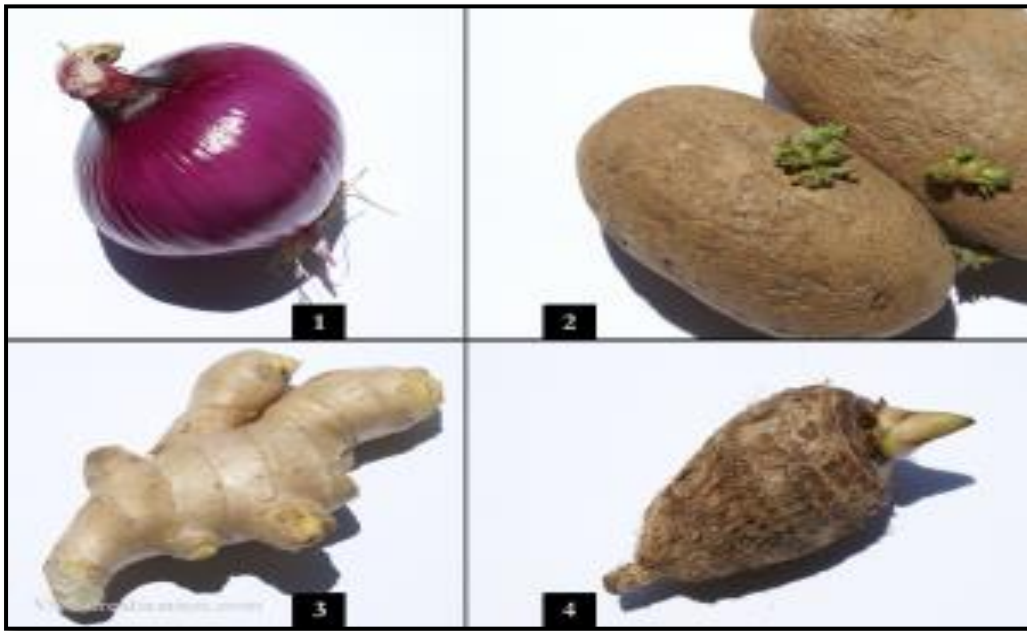
Skill level 1	
1	
0	
NR	

- g. Define dehorning.

Skill level 1	
1	
0	
NR	

QUESTION FOUR:**CROP PRODUCTION & PROTECTION**

- a. Study the diagrams below and then answer the following questions.



1. Identify the methods of vegetative propagation from the diagram.

i. Corm: _____

ii. Tuber: _____

iii. Rhizomes: _____

Skill level 1	i.	ii.	iii.
1			
0			
NR			

2. Explain **ONE** (1) advantage of vegetative propagation

Skill level 3	
3	
2	
1	
0	
NR	

- b. Study the diagrams of Dasheen mosaic virus disease of **taro tonga** (*Colocasia esculenta*) and **taro futuna** (*Colocasia xanthosoma*) below and then answer the following questions.



1. Describe how the viral diseases spread.

		Skill level 2	
		2	
		1	
		0	
		NR	

2. Describe the function of vector (carrier) in plant diseases.

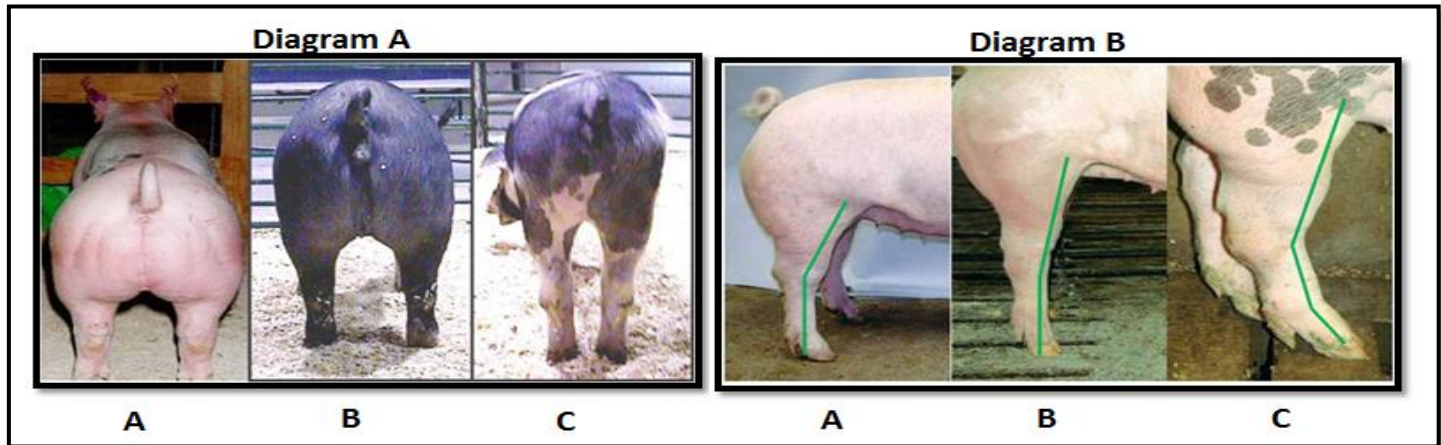
		Skill level 2	
		2	
		1	
		0	
		NR	

3. Describe how IPM control method can be used to control the viral disease.

		Skill level 2	
		2	
		1	
		0	
		NR	

QUESTION FIVE: ANIMAL PRODUCTION & HEALTH

- a. Study the diagrams below of how do you select a gilt/boar for breeding and then answer the following questions.



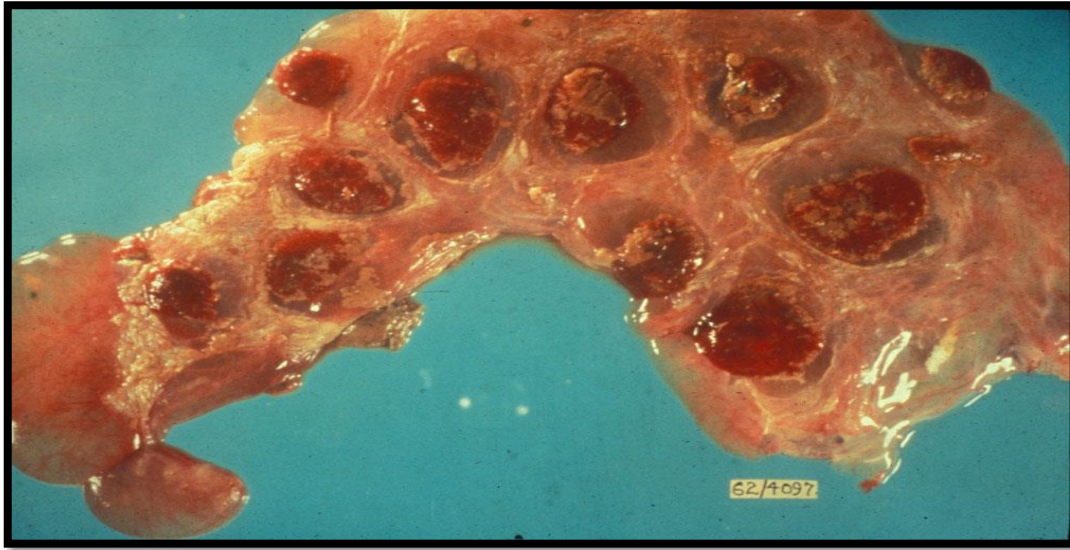
1. Explain **ONE** (1) major purpose of animal breeding.

Skill level 3	
3	
2	
1	
0	
NR	

2. Describe Inbreeding system.

Skill level 2	
2	
1	
0	
NR	

- b. Study the diagram of infected placenta of cattle and answer the following questions.



1. Identify the causes of Brucellosis.

Skill level 1	
1	
0	
NR	

2. Describe internal clinical signs of Brucellosis as it is shown in the diagram.

Skill level 2	
2	
1	
0	
NR	

- c. Study the diagram below and answer the following questions.



1. Define the following terms

i. Boar

Skill level 1	
1	
0	
NR	

ii. Castration

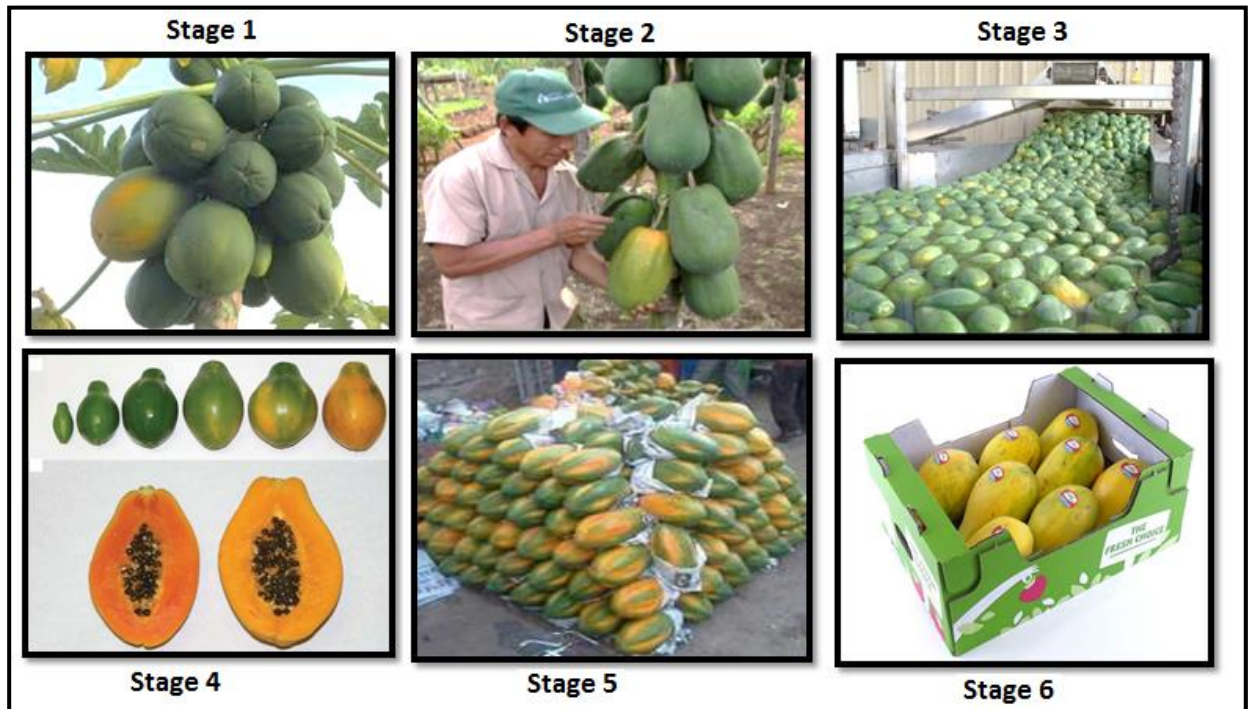
Skill level 1	
1	
0	
NR	

2. Describe **ONE** (1) purpose of castration.

Skill level 2	
2	
1	
0	
NR	

QUESTION SIX: AGRICULTURAL INDUSTRY

a. Study the diagrams below and then answer the following questions.



1. Define the following.

i. Food loss

Skill level 1	
1	
0	
NR	

ii. Market Supply

Skill level 1	
1	
0	
NR	

iii. Equilibrium price

Skill level 1	
1	
0	
NR	

2. Describe the importance of post-harvest.

Skill level 2	
2	
1	
0	
NR	

3. Identify the factor affecting the quality of farm produce.

Skill level 1	
1	
0	
NR	

4. Describe **TWO** (2) quality standards of papaya required by the market.

i.

ii.

Skill level 2	
2	
1	
0	
NR	

- b. The price of kava has recently increased in the years 2012-2017. The increase of price of 1kg of kava per year is shown in the table below.

Years	Price per 1kg
2012	\$50
2013	\$70
2014	\$80
2015	\$100
2016	\$120
2017	\$150

Explain the **law of supply** and give an example from the data in the table above.

Skill level 3	
3	
2	
1	
0	
NR	

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