

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE

2023

AGRICULTURAL SCIENCE

QUESTION AND ANSWER BOOKLET

Time allowed: 3 Hours

INSTRUCTIONS:

- Write your **Student Enrolment Number (SEN)** on the top right-hand corner of this page.
- This paper consists of **THREE SECTIONS** and is out of 70 weighted scores.

SECTION	STRANDS	TOTAL SKILL LEVEL
A	PRIMARY PRODUCTION	21
B	SUSTAINABLE PRIMARY PRODUCTION	25
C	PRODUCTION MANAGEMENT	24
TOTAL		70

- Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
- Use a **BLUE** or **BLACK** ball point pen only for writing. Use a pencil for drawing if required.
- If you need more space for answers, ask the supervisor for extra paper. Write your **Student Enrolment Number (SEN)** on each additional sheet, number the questions clearly and insert them in the appropriate places in this booklet.
- Check that this booklet contain pages **2-15** in the correct order and that none of the pages is blank.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR BEFORE YOU LEAVE THE EXAMINATION ROOM.

SECTION A: PRIMARY PRODUCTION

Question One: What is produced

Use the photographs below to answer a. and b.

Figure 1: Grading of vanilla in Tonga



Source: https://vivanicemk.live/product_details/22772008.html



Source: (Tukia, 2020)

a. Define Grading.

Skill level 1	
1	
0	
NR	

b. Describe the grading procedures of vanilla for the Local market.

Skill level 2	
2	
1	
0	
NR	

c. Describe the storage requirement of vanilla for the Local market.

Skill level 2	
2	
1	
0	
NR	

Question Two: Factor Influencing Primary Production

Choose **ONE (1)** factor from the list given below and use it to answer **a**.

Factors affecting Primary Production:

- i. Weather
- ii. Pest
- iii. Cost
- iv. Customer requirement

Chosen Factor: _____

a. Describe how your chosen factor affects the production of yam.

Skill level 2	
2	
1	
0	
NR	

b. Explain a way in which competition could affect the marketing of yam.

Skill level 3	
3	
2	
1	
0	
NR	

- ### Primary Products:

- Chosen Primary Product: _____

Marketing Plan: _____

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings on the paper.Page 4 of 15

Question Three: Effect of Market Control

You are required to choose a Primary Product from the list given below and use that Primary Product to answer **a.** to **c.**

List of Primary ProductS:

- i. Vanilla
- ii. Kava
- iii. Yam

Chosen Primary Product:

- a. Name a form of Political intervention that may affect your chosen product.

Skill level 1	
1	
0	
NR	

- b. Explain how marketing research, affects the success of your chosen product at the Local Market.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

- c. State possible ways an organization can manipulate the market of your chosen product.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION B: SUSTAINABLE PRIMARY PRODUCTION

Question One: Analysing Production Practices

Use the photographs below to answer a. and b.

Figure 2: Inter cropping of bean with corn



Source: <https://www.researchgate.net/figure/Maize-Zea-Mays>



Source: <https://www.fwi.co.uk/livestock/livestock-feed-nutrition>

a. Define sustainable agriculture.

Skill level 1	
1	
0	
NR	

b. Describe the advantages of the cropping system in **Figure 2**.

Skill level 2	
2	
1	
0	
NR	

c. Explain the impact of sustainable farming on the reduction of cost for production.

Skill level 3	
3	
2	
1	
0	
NR	

Use the photographs below to answer d.

Figure 3: Raising chicken.

Picture A



Source: <https://arealgreenlife.com/harvesting-everything-chick-chicken>

Picture B



Source: <https://chickenscage.com/news/three-ways-of->

d. Describe the system of raising poultry in **Picture A**.

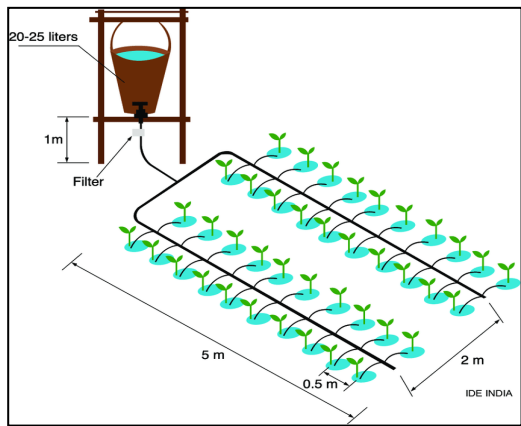
Skill level 2	
2	
1	
0	
NR	

Use the photograph below to answer e.

Figure 4: Bucket irrigation system.



Source: http://precision-farming-for-dummies.blogspot.com/2008/04_



Source: <https://www.researchgate.net/figure/A-simple-bucket-kit>

e. Discuss how the irrigation system in **Figure 4**, supports the idea of sustainable farming.

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Skill level 4	
4	
3	
2	
1	
0	
NR	

Question Two: Sustainable Agriculture Issue

Use the information from **Table 1**, to answer **a.** and **b.**

Table 1: Sales and expenses of a yam farmer for 2019-2022

EXPENSES	2019	2020	2021	2022
Fertilizer	\$1,000	\$1,500	\$1,800	\$4,000
Pest and disease control	\$4,300	\$7,200	\$5,100	\$8,500
Fuel	\$500	\$600	\$500	\$600
Planting material	\$1000	\$1000	\$1000	\$1000
TOTAL EXPENSES	\$6,800	\$10,300	\$8,400	\$14,100
SALES	\$210,000	\$212,000	\$211,000	\$213,000
Gross Margin	\$203,200	\$201,700	\$202,600	\$198,900

- a. Identify the main issue that causes the decline of profit for this squash farmer from 2019 to 2022.

Skill level 1	
1	
0	
NR	

- b. Describe the best way to address this issue named in **a.**

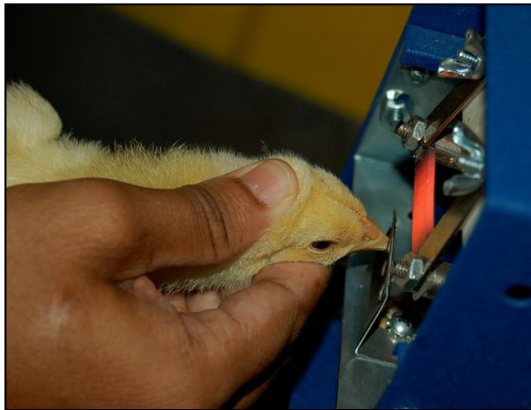
Skill level 2	
2	
1	
0	
NR	

- c. Explain the effect of **pestilence** to the production of yam.

Skill level 3	
3	
2	
1	
0	
NR	

Use the photographs below to answer d.

Figure 5: husbandry practice for young chick



Source: <https://www.hightoppoultry.com/>



Source: <https://www.thepoultrysite.com/articles/>

d. Explain the reason that the farmer should adopt this husbandry practice.

Skill level 3	
3	
2	
1	
0	
NR	

e. Discuss the importance of **conservation of indigenous** breeds of pigs.

Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION C:

PRODUCTION MANAGEMENT

Question One: Schedule of Operation

Select **ONE** (1) local primary product from the list given below and use this product to answer **a.** to **c.**

Chicken Poultry Beef Pork

Name of chosen Primary Product: _____

- a. Identify the **best establishment times** for your chosen animal product to meet seasonal demand.

Skill level 1	
1	
0	
NR	

- b. Describe the **process of disease control** in your chosen animal.

Skill level 2	
2	
1	
0	
NR	

- c. Analyze the manipulation that can be made at establishment to produce quality product.

Skill level 3	
3	
2	
1	
0	
NR	

Question Two: Factor affecting Schedule of Operation Marketing Process

Select **ONE** (1) local primary product from the list given below and use this product to answer **a.** to part **c.**

Local Primary Product:

- i. Yam
- ii. Kava
- iii. Vanilla
- iv. Squash pumpkin

Name of chosen Primary Product: _____

- a. Identify the **consumer preference** from a specify market to your chosen primary product.

Skill level 1	
1	
0	
NR	

- b. Describe the **production process** for your chosen primary product.

Skill level 2	
2	
1	
0	
NR	

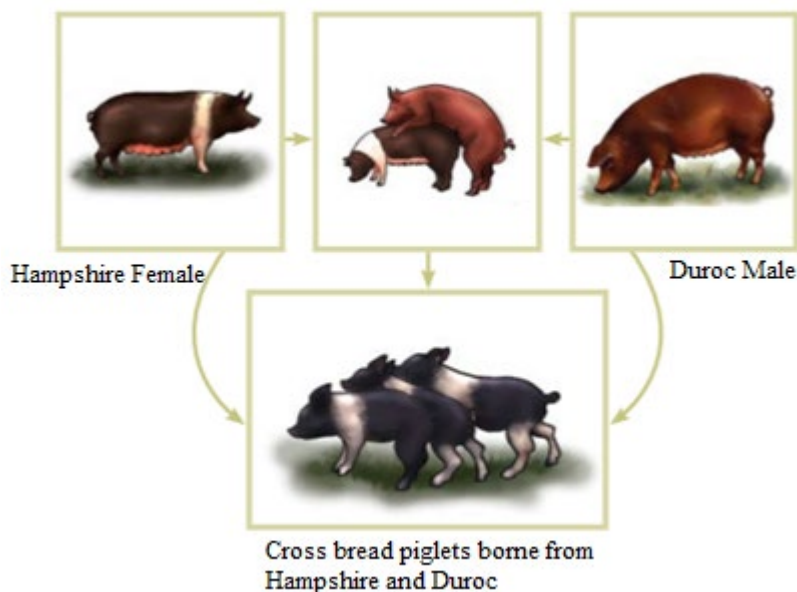
- c. Relate the **establishment** of your chosen product to the **market demand** in order to **get the maximum sales**. In your explanation indicate the time of establishment and the justification in relation to the time of market demand.

Skill level 3	
3	
2	
1	
0	
NR	

Question Three: Manipulation of the schedule of operation

Use **Figure 6** to answer the a. and b.

Figure 6: breeding of pig



Source: <https://www.thepigsite.com/news/2020/08/how-to-farm-pigs-breeding>

- a. Identify the **attribute** of the product that is affected by the manipulation technique in **Figure 6**.

Skill level 1	
1	
0	
NR	

- b. Describe how the **manipulation technique** in **Figure 6** affects the **maximization of yield**.

Skill level 2	
2	
1	
0	
NR	

- c. Describe the concept of profit maximization.

Skill level 2	
2	
1	
0	
NR	

- d. Explain the importance of the manipulation technique in **Figure 6**, in relation to a requirement of a market opportunity.

Skill level 3	
3	
2	
1	
0	
NR	