

MARKER CODE

STUDENT ENROLMENT NUMBER (SEN)

TONGA NATIONAL FORM SEVEN CERTIFICATE

2021

AGRICULTURAL SCIENCE

QUESTION AND ANSWER BOOKLET

Time allowed: 3 Hours

INSTRUCTIONS:

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

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

3. Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
4. Use a **BLUE** or **BLACK** ball point pen only for writing. Use a pencil for drawing if required.
5. 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.
6. Check that this booklet contains pages **2 - 19** in the correct order and that pages **17 - 19** have been deliberately left blank.

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

Select **ONE** local primary product from the list below and use this product to answer question **a.** to **c.**

- Name of chosen Primary Product: _____

a. Name an export market for your chosen primary product.

-
-
-
-
-
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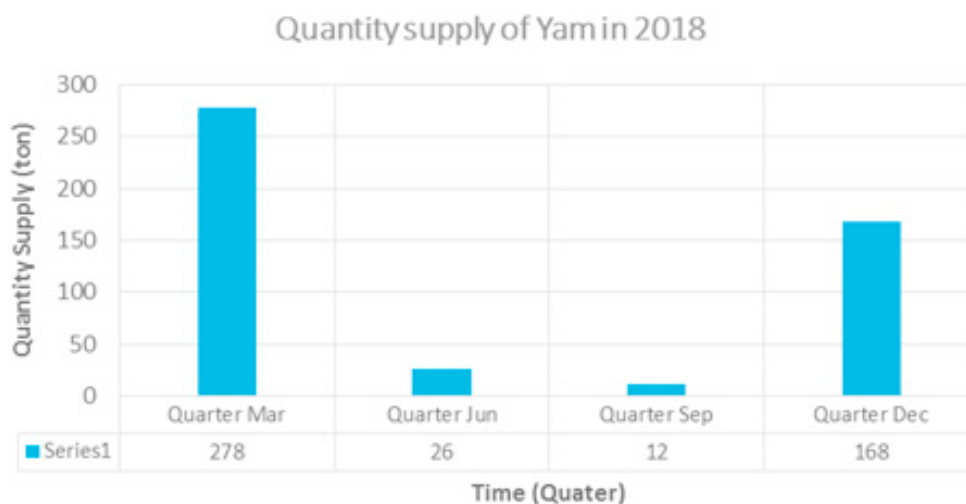
c. Analyse how your chosen primary product reveals the attribute that is required by the export market with regard to its shelf life.

[illegible]

Skill level 3	
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Question Two: Factor Influencing primary production

Figure 1: The graph represents the supply of yams from Quarter March to Quarter December 2018. Use **Figure 1** to answer question **a**.



- a. In 2018 the supply of yams was at its peak in Quarter March which meant that the supply of yams were flooded in the local market. If you are a farmer, describe the best way to promote your yam produce in order to increase your sales.

Skill level 2	
2	
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- b. Choose **ONE** factor from the list below and explain how your chosen factor affect yam production.

1. Size of market
2. Substitute products
3. Price vs quantity available

Name of chosen factor: _____

Explanation: _____

Skill level 3

3

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- c. Discuss the **effect of competition** in the marketing of your yam produce.

Skill level 4

4

3

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1

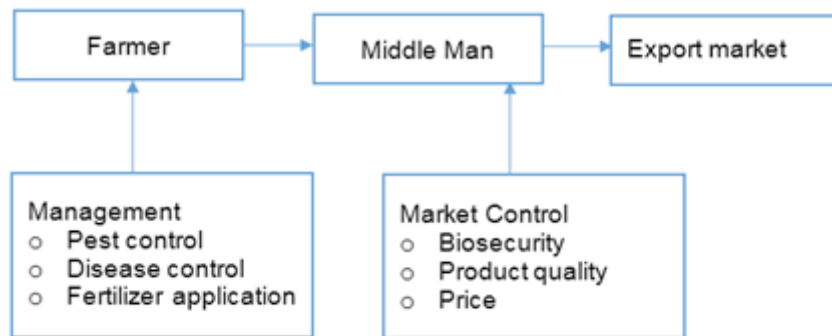
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Question Three: Effect of Market Control

Figure 2: The flow chart represents the marketing channel for most primary product and the stages where market control and government intervention is implement. Use **Figure 2** to answer questions **a.** to **c.**

Figure 2



a. Define **Biosecurity**.

Skill level 1	
1	
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b. Describe the role of the **Quarantine Department** in the process given in **Figure 2**.

Skill level 2	
2	
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c. Choose **ONE** market control from the box in **Figure 2** (apart from biosecurity) and explain its effect on any primary product for the export market.

Skill level 3	
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SECTION B: SUSTAINABLE PRIMARY PRODUCTION

Question One: Analysing production practices

Use the **Figure 3** below to answer questions a. to c.

Figure 3: Pesticide spraying



Source: <https://www.agrigem.co.uk/decis-protect-1/>

- a. Identify one disadvantage of the farming practice shown in **Figure 3**.

- b. List the sustainable methods of controlling the diamond back moth in this garden.

Skill level 1	
1	
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- c. Describe the importance of controlling the diamond back moth in a sustainable way.

Skill level 2	
2	
1	
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- d. Compare **organic farming** and **sustainable farming**.

Skill level 3

3

2

1

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NR

- e. Discuss the contribution of crop diversity on sustainable farming.

Skill level 4

4

3

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Question Two: Sustainable agriculture issue

Mr. 'Etimoni a farmer from Navutoka has a pig farm. One day he noticed the following unusual features from two of his piglets.

- i. Loss of appetite
- ii. Loss of weight
- iii. White diarrhoea from one piglet.
- iv. Bot belly
- v. Larva is spotted in the piglets faeces.

Mr. 'Etimoni reports the problem to the Ministry of Agriculture. An officer diagnoses the problem as the existence of a parasite. Use this information to answer question **a.** to **c.**

Skill level 1	
1	
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- a. Name the parasite that affected Mr. 'Etimoni's pig farm.

- b. Describe the proper way of controlling the parasite that affected Mr. 'Etimoni's pig farm.

[illegible]

Skill level 2	
2	
1	
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- c. Explain the importance of addressing the issue in Mr. “Etimoni’s pig’s farm in the right way and in the right time.

[illegible]

Apart from the parasite, explain the major issue related to sustainable development of a poultry farm.

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Skill level 3	
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e. Discuss the effects of pollution on the establishment of a livestock farm.

[illegible]

Skill level 4	
4	
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SECTION C: PRODUCTION MANAGEMENT

Question One: Schedule of operation

Use the information in **Figure 4** to answer questions **a.** and **b.**

Figure 4: Schedule of operation for pig production.

Management	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
i. Mating		←→										
ii. Fallowing								←→				
iii. Supplementary feeding												
iv. Disease control												

- a. Draw an arrow (←→) on the chart in **Figure 4** to indicate the proper time to apply supplementary feeding when preparing the piglet for weaning.

Skill level 1	
1	
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- b. Describe the process of disease control in pig production.

Skill level 2	
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c. Explain the proper biological manipulation for pig production in relation to profit maximization.

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Skill level 3	
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Select **ONE** local primary product from the list below and use this product to answer questions **a.** to **c.**

Yam, Squash pumpkin, Vanilla, Poultry, Beef, Pork.

Name of chosen primary product: _____

- a. Identify the consumer preference of your chosen product.

Skill level 1	
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NR	

- b. List the market opportunities for your chosen product.

- i. _____

- ii. _____

Skill level 2	
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- c. Compare the attribute of any two cultivar or breed of your chosen product.

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Skill level 3	
3	
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- d. Evaluate the influence of technology as a step in the schedule of operation for your chosen product.

[illegible]

Skill level 4	
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Question Three: Manipulation of the schedule of operation

Use the information in **Figure 5** to answer question a. and b.

Figure 5: Artificial insemination of a cow.



Source: <https://beefbreeding.com.au/semen-collection-processing/>.

- a. Identify the attribute affected by the manipulation shown in **Figure 5**.

Skill level 1	
1	
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NR	

- b. Describe how the manipulation shown in **Figure 5** maximizes the farmer's production.

Skill level 2	
2	
1	
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- c. Describe the concept of profit maximization in this product manipulation.

Skill level 2	
2	
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d. Explain the concept of yield maximization.

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