

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE

2021

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 **EIGHT SECTIONS** and is out of 70 weighted scores.

SECTION	STRANDS	TOTAL SKILL LEVEL
A	Agricultural Ecosystem and Environment	7
B	Soils	11
C	Crop Production	11
D	Plant Protection	5
E	Animal Production	11
F	Animal Protection	7
G	Agricultural Management	14
H	Agricultural Marketing	4
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 contains pages **2 - 19** 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: AGRICULTURAL ECOSYSTEM AND ENVIRONMENT

Study **Figure 1** and answer the questions that follow.

Figure 1: Mixed Farming



Source: <https://encrypted-tbn0.gstatic.com>

Circle the letter of the **BEST** answer.

1. Which of the following is an advantage of Mixed Farming?

- A. Decreases soil fertility
- B. Pest infestation of crops is greatly increased.
- C. It enhances the productivity of the farm land.
- D. It increases dependency on external inputs and costs.

Skill level 1	
1	
0	
NR	

2. Describe the disadvantages of **Mixed Farming**.

Skill level 2	
2	
1	
0	
NR	

Use **Figure 2** to answer questions **3** and **4**.

Figure 2: Deforestation in 'Eua



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

3. Define **deforestation**.

Skill level 1	
1	
0	
NR	

4. Explain the impact of **deforestation** on the **Natural Ecosystem**.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SOILS

1. Identify the definition of **Soil Weathering**.

- | Skill level 1 | |
|---------------|--|
| 1 | |
| 0 | |
| NR | |

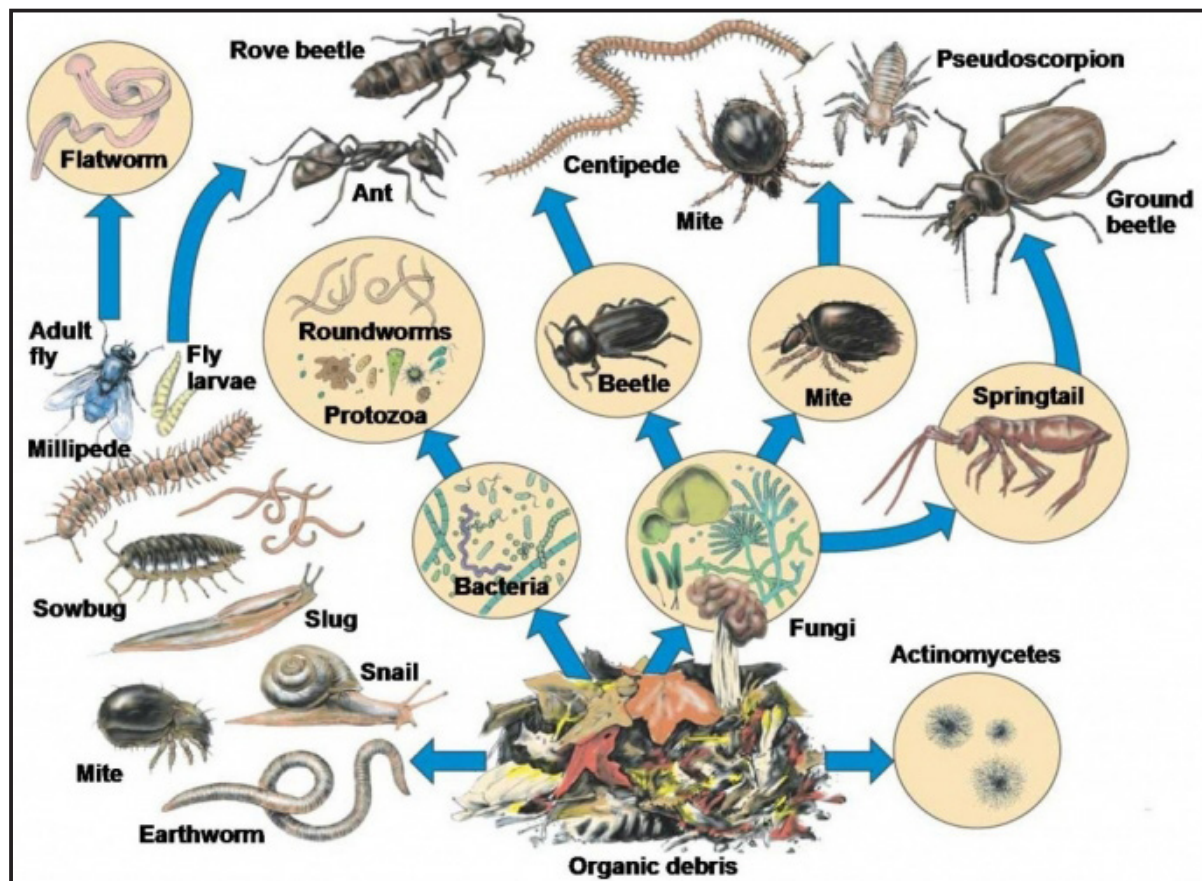
Skill level 1	
1	
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NR	

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Skill level 3	
3	
2	
1	
0	
NR	

Study **Figure 3** and answer the questions that follow.

Figure 3: Soil organisms



Source: <https://nicolasvlgd.wixsite.com>

4. Describe the useful roles of **soil micro-organisms** in soil formation.

Skill level 2	
2	
1	
0	
NR	

5. What are the harmful effects of **soil micro-organisms**?

Skill level 1	
1	
0	
NR	

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Skill level 3	
3	
2	
1	
0	
NR	

SECTION C:**CROP PRODUCTION**

1. Define **macro-nutrients**.

Skill level 1	
1	
0	
NR	

2. Describe the functions of **Phosphorus** nutrients in plants.

Skill level 2	
2	
1	
0	
NR	

3. Explain the role of **Nitrogen** in the growth and development of plants.

Skill level 3	
3	
2	
1	
0	
NR	

4. Define **weeds**.

Skill level 1	
1	
0	
NR	

5. Discuss the effect of **weeds** on the **growth and development of plants**.

[illegible]

Skill level 4	
4	
3	
2	
1	
0	
NR	

PLANT PROTECTION

3. Identify **ONE (1) economic reason** for controlling disease.

Skill level 1	
1	
0	
NR	

SECTION E:**ANIMAL PRODUCTION**

Study **Figure 5** to answer the following question.

Figure 5: Tropical Cattle Breed



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

Circle the letter of the **BEST** answer.

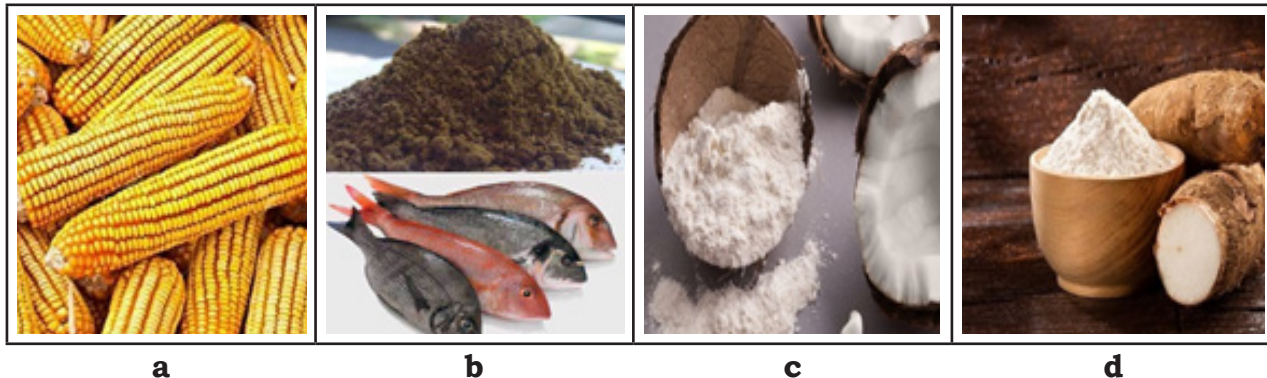
1. The cattle breed above is _____.

- A. Brahman
- B. Bra-angus
- C. Shorthorn
- D. Simmental

Skill level 1	
1	
0	
NR	

Study **Figure 6** to answer questions **2** and **3**.

Figure 6: Pig diet ingredients



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

Circle the letter of the **BEST** answer.

2. Identify the source of **protein** from the feed ingredients above.

- A. Corn
- B. Fish
- C. Coconut
- D. Cassava

Skill level 1	
1	
0	
NR	

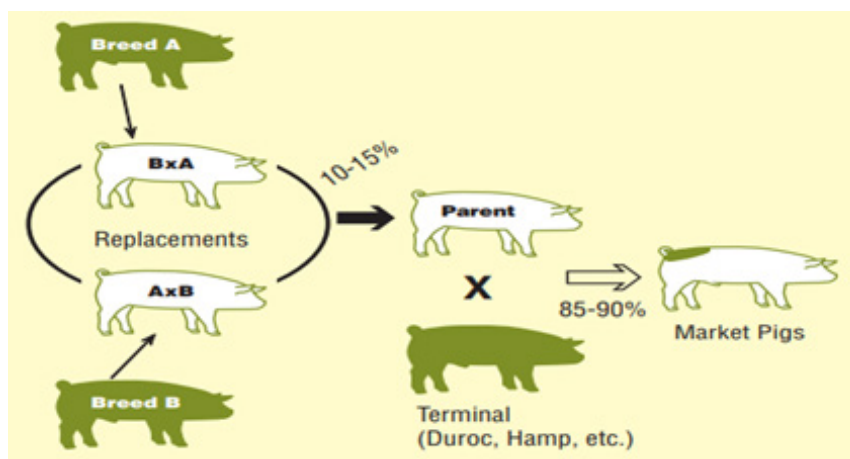
3. Discuss the importance of **protein** provided in the pig diet shown in **Figure 6** on page 11.

This image shows a single 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	

Study **Figure 7** to answer the questions that follow.

Figure 7: Outbreeding System



Source: https://www.canr.msu.edu/resources/swine_breeding_systems

4. Describe the importance of the **Out-Breeding** system shown in **Figure 7** above.

Skill level 2	
2	
1	
0	
NR	

5. Explain the effects of **outbreeding** in maintaining the purity of line in pigs as shown in **Figure 7** above.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION F:**ANIMAL PROTECTION**

1. Define **Integrated Pest Management**.

Skill level 1	
1	
0	
NR	

2. Describe the economic importance of **pest, disease** and **disorder** in livestock industry.

Skill level 2	
2	
1	
0	
NR	

3. Define **rotational grazing**.

Skill level 1	
1	
0	
NR	

4. Explain the impact of **rotational grazing** on roundworm parasites in cattle.

Skill level 3	
3	
2	
1	
0	
NR	

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[illegible]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 3	
3	
2	
1	
0	
NR	

4. Define **market opportunities**.

Skill level 1	
1	
0	
NR	

5. Discuss the importance of **market opportunities** in any agricultural enterprise.

[illegible]

Skill level 4	
4	
3	
2	
1	
0	
NR	

6. Explain the impact of **tariff** on agricultural trade.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION H:**AGRICULTURAL MARKETING**

Study **Figure 8** to answer the question that follow.

Figure 8: Exporting watermelon to New Zealand Market



Source: <https://matangitonga.to>

Circle the letter of the **BEST** answer.

1. The **post-harvest** handling above is _____.

- A. Grading
- B. Packing
- C. Labelling
- D. Disinfecting

Skill level 1	
1	
0	
NR	

