

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE 2019 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 **SIX SECTIONS** and is out of 70 Weighted Scores.

SECTIONS	TOPICS	SKILL LEVEL
A	NATURAL AND AGRICULTURAL SYSTEM	10
B	SOILS	10
C	FARM POWER AND AGRICULTURAL MACHINERY	7
D	CROP PRODUCTION AND CROP PROTECTION	16
E	ANIMAL PRODUCTION AND HEALTH	16
F	AGRICULTURAL MANAGEMENT AND MARKETING	11
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 spaces 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 **2-23** in the correct order and that page 23 has been deliberately left blank.

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

SECTION A: NATURAL AND AGRICULTURAL SYSTEM

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

Study **Figure 1** and answer the following question.

Figure 1: Cassava Plantation



Source: flickr.com/photos/leogaggi/43410527841

1. Identify the major factor that can **limit the productivity** of cassava as seen in **Figure 1**.

- A. Insects
- B. Soils
- C. Weeds
- D. Pollution

Skill level 1	
1	
0	
NR	

Study **Figure 4** and answer the following question.

Figure 4: Natural and Agricultural Ecosystem.



Source: <http://www.en.wikipedia.org>

Source: <http://www.biologydictionary.net>

5. Compare **ONE** (1) character of **natural** and **agricultural ecosystem**.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

Skill level 2	
2	
1	
0	
NR	

4. Explain how earthworms can improve soil fertility.

Skill level 3	
3	
2	
1	
0	
NR	

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

Figure 5: Composting



Source: <http://cceniagaracounty.org>

5. Explain the importance of **Composting**, as shown in **Figure 5**.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION C: FARM POWER AND AGRICULTURAL MACHINERY

SHORT ANSWERS:

1. Name **TWO** (2) sources of **renewable power**.

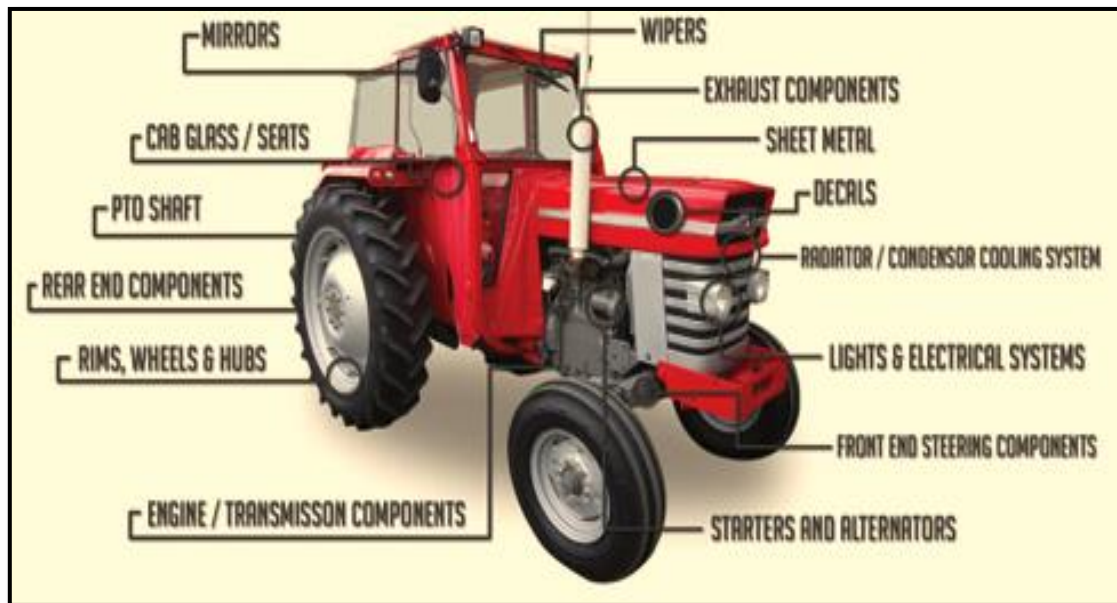
Skill level 1	
1	
0	
NR	

2. Describe the importance of **renewable power**.

Skill level 2	
2	
1	
0	
NR	

Study **Figure 6** below and answer the following questions.

Figure 6: Tractor Parts



Source: <http://www.raparts.net/>

3. Identify **ONE** (1) part of a tractor that should be **checked daily**.

Skill level 1	
1	
0	
NR	

4. Explain how to check the **cooling system** of a tractor.

Skill level 3	
3	
2	
1	
0	
NR	

SECTION D: CROP PRODUCTION AND CROP PROTECTION

Study **Figure 7** below and answer the following questions.

Figure 7: Seed Germination



Source: <http://sciencefun.info/>

1. Define **seed germination**.

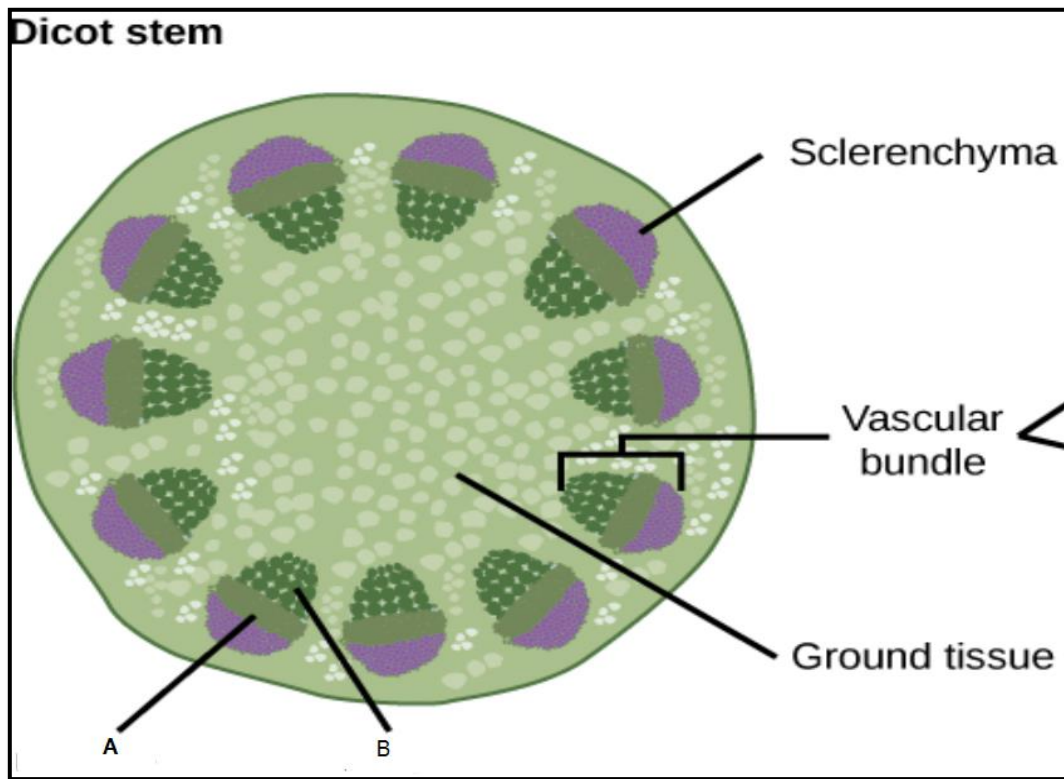
Skill level 1	
1	
0	
NR	

2. Identify **ONE** (1) advantage of **seed propagation**.

Skill level 1	
1	
0	
NR	

Study **Figure 8** and answer the following questions.

Figure 8: Cross-section of a Dicot stem



Source: bio1520.biology.gatech.edu/

From the diagram of a Dicot stem in **Figure 8**, label the **phloem** and **xylem** using the identified parts **A** and **B**.

3. **Part A:** _____

4. **Part B:** _____

Skill level 1	
1	
0	
NR	

Skill level 1	
1	
0	
NR	

Study **Figure 9** and answer the following questions.

Figure 9: Insect pollination.



Source: <https://phys.org/new/2014>.

5. Describe how insects **pollinate** the squash flower.

Skill level 2	
2	
1	
0	
NR	

6. Compare **insect pollination** to **wind pollination**.

Skill level 3	
3	
2	
1	
0	
NR	

Skill level 3	
3	
2	
1	
0	
NR	

8. Discuss **ONE** (1) **effective control anthracnose** (fungal disease) in yams.

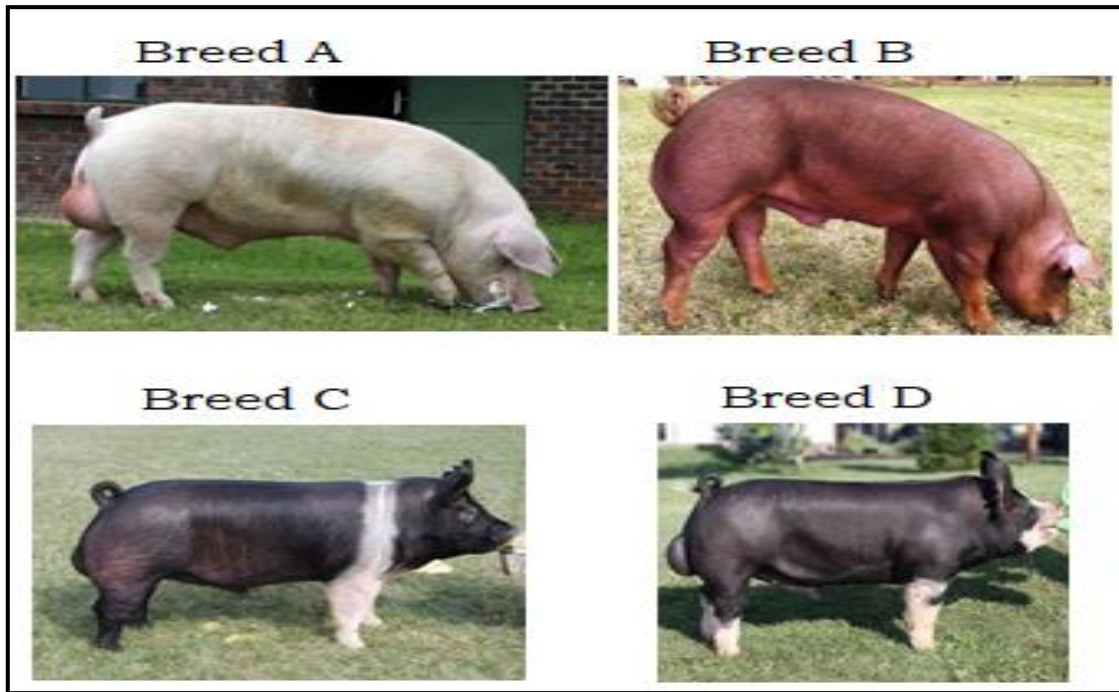
This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 4	
4	
3	
2	
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0	
NR	

SECTION E: ANIMAL PRODUCTION AND HEALTH

Study **Figure 11** and answer the following question.

Figure 11: Pig Breeds



Source: <http://www.agclassroom.org/tea>

Circle the **BEST** answer.

- Identify the **Duroc** Breed from the different Breeds in **Figure 11** above.

- A. Breed A
- B. Breed B
- C. Breed C
- D. Breed D

Skill level 1	
1	
0	
NR	

Skill level 1	
1	
0	
NR	

4. Describe **ONE** (1) advantage of **artificial insemination**.

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Skill level 2	
2	
1	
0	
NR	

Study **Figure 13** and answer the following questions.

Figure 13: Brucellosis disease in cattle



A cow aborted calf on her 7 months pregnancy.

Source: <https://www.researchgate.net/figure/>.

5. Identify the **causes of aborted** calf as seen in **Figure 13** above.

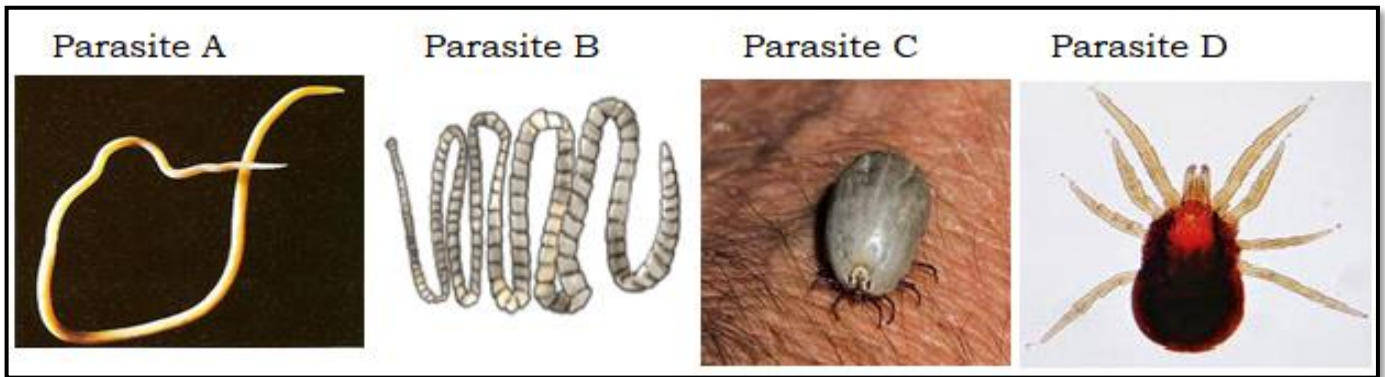
Skill level 1	
1	
0	
NR	

6. Explain how to effectively control **Brucellosis** in cows.

Skill level 3	
3	
2	
1	
0	
NR	

Study **Figure 14** and answer the following questions.

Figure 14: Parasites



Source: <https://me.me/1/.different-types-of-parasite>

Circle the **BEST** answer.

7. Identify **Nematode/round worm** from the Parasites in **Figure 14** above.

- A. Parasite **A**
- B. Parasite **B**
- C. Parasite **C**
- D. Parasite **D**

Skill level 1	
1	
0	
NR	

8. Discuss **ONE** (1) method that can be used to control **roundworms** in pigs.

Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION F: AGRICULTURAL MANAGEMENT AND MARKETING

SHORT ANSWERS:

1. Define **farm manager**.

Skill level 1	
1	
0	
NR	

2. Describe the **role of a farm manger** in an agricultural enterprise.

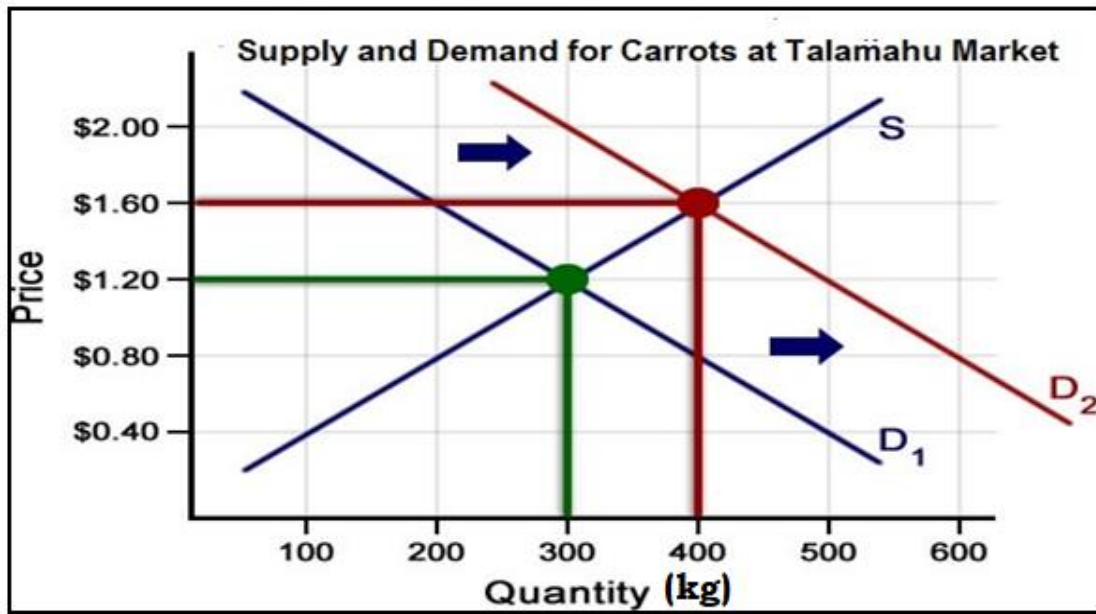
Skill level 2	
2	
1	
0	
NR	

3. In agricultural trading, explain the roles of the **WTO (World Trade Organization)**.

Skill level 3	
3	
2	
1	
0	
NR	

Study **Figure 15** and answer the following questions.

Figure 15: Demand for Carrots at Talamahu Market.



4. Discuss **ONE** (1) factor that can causes the **rise in price** of carrots sold at the Talamahu Market.

Skill level 4	
4	
3	
2	
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NR	

5. Identify **ONE** (1) importance of **Plant Quarantine** in Agricultural Trade.

Skill level 1	
1	
0	
NR	

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