

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE

2024

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
ONE	AGRICULTURAL ECOSYSTEM AND AGRICULTURAL ENVIRONMENT	7
TWO	SOILS	11
THREE	CROP PRODUCTION	11
FOUR	PLANT PROTECTION	5
FIVE	ANIMAL PRODUCTION	11
SIX	ANIMAL PROTECTION	7
SEVEN	AGRICULTURAL MANAGEMENT	14
EIGHT	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 contain pages **2-19** in the correct order and that pages 18 and 19 have been deliberately left blank.

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

SECTION ONE: AGRICULTURAL ECOSYSTEM AND AGRICULTURAL ENVIRONMENT

Agricultural Management System

Read the text below, then use it to answer the following questions.

Tongan farmers often cultivate small plantations of giant taro and yams. The land is typically prepared by hand, using forks and hoes to loosen the soil and create planting beds. Once the beds are ready, farmers use their hoes and forks to dig holes for planting the taro and yam corms.

Weeding is a crucial part of farming in Tonga. Farmers regularly use their hoes to remove weeds from the plantations, ensuring that the plants have access to adequate sunlight and nutrients. This manual labour helps to maintain the health of the soil and promotes sustainable agriculture.

1. Name the type of farming system practiced by Tongan Farmers in the text above.

Skill level 1	
1	
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2. Identify **ONE (1)** of the characteristics of the farming system in the text above.

Skill level 1	
1	
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3. Describe the advantages of the farming system in the text above.

Skill level 2	
2	
1	
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4. Explain the impact of the farming system in the text above on the Natural Ecosystem.

Skill level 3	
3	
2	
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SECTION TWO:

SOILS

A. Origin of the Soil

The picture below shows how trees play a significant role in weathering when they grow on top of rocks. Use it to answer the questions that follow.

Figure 1: Trees growing on rocks



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

1. Define **Weathering**.

Skill level 1	
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2. Name the type of weathering shown in **Figure 1**.

Skill level 1	
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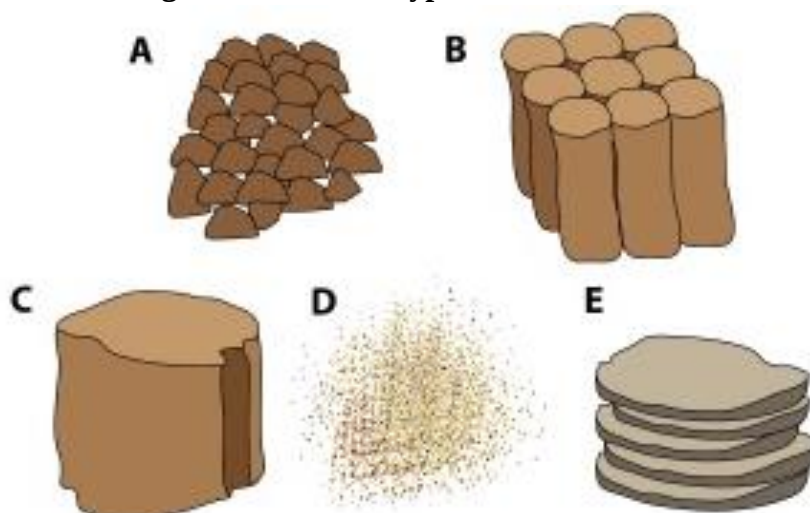
3. Explain the effect of the type of weathering shown in **Figure 1** on Soil Formation.

Skill level 3	
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B. Physical Properties of the soil

The picture below shows different types of soil structure. Use it to answer the following questions.

Figure 2: Different types of soil structure



Source: <https://www.qld.gov.au/environment>

1. Define **soil structure**.

Skill level 1	
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2. List the types of soil structures.

Skill level 2	
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3. Compare the properties of soil structure **A** with soil structure **E**.

Skill level 3	
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SECTION THREE:

CROP PRODUCTION

A. Factors influencing growth and development in plants.

The picture below shows one type of training in plants. Study the picture carefully, then use it to answer the following questions.

Figure 3: Training in plants



Source: <https://realenglishfruit.co.uk>

1. Name the type of training shown in **Figure 3**.

Skill level 1	
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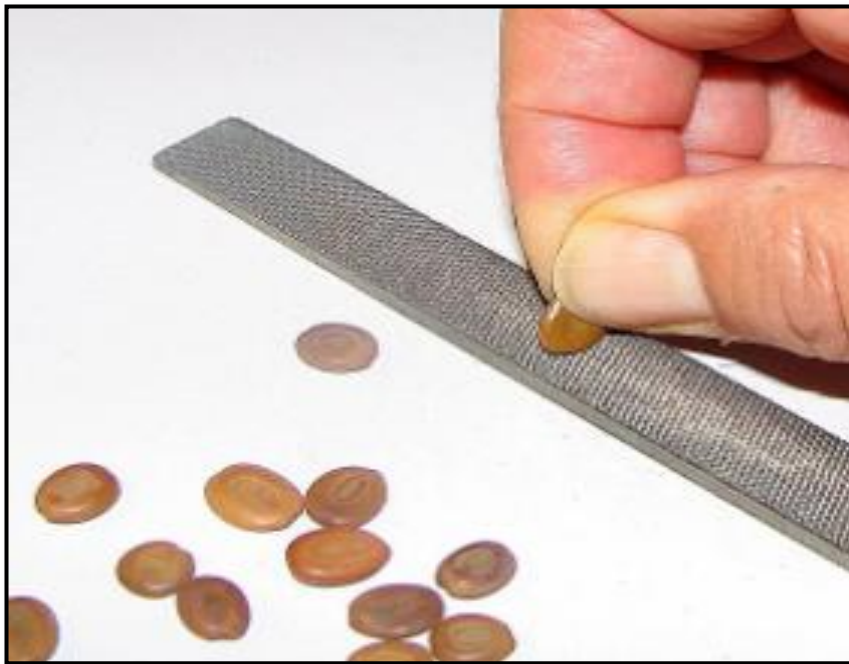
2. Describe the effect of the training in **Figure 3** on plants.

Skill level 2	
2	
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B. Factors affecting seed germination.

The picture below shows one of the methods that can be used to break the dormancy period in seeds. Use it to answer the following questions.

Figure 4: Breaking seed dormancy



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

1. Name the method of breaking seed dormancy shown in **Figure 4**.

2. Explain how the method of breaking seed dormancy shown in **Figure 4** helps in breaking seed dormancy.

Skill level 1	
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Skill level 3	
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3. Discuss the importance of breaking seed dormancy.

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Skill level 4	
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SECTION FOUR:

PLANT PROTECTION

Main groups of Pests and Diseases

The picture below shows infected yam leaves. Use it to answer the following questions.

Figure 5: Infected Yam Leaves



Source: <https://www.flickr.com/photos>

1. Name the disease that affects the yam leaves in **Figure 5**.

Skill level 1	
1	
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NR	

2. Identify the mode of infections of the disease shown in **Figure 5**.

Skill level 1	
1	
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3. Explain the effects of the disease shown in **Figure 5** on yam plants.

Skill level 3	
3	
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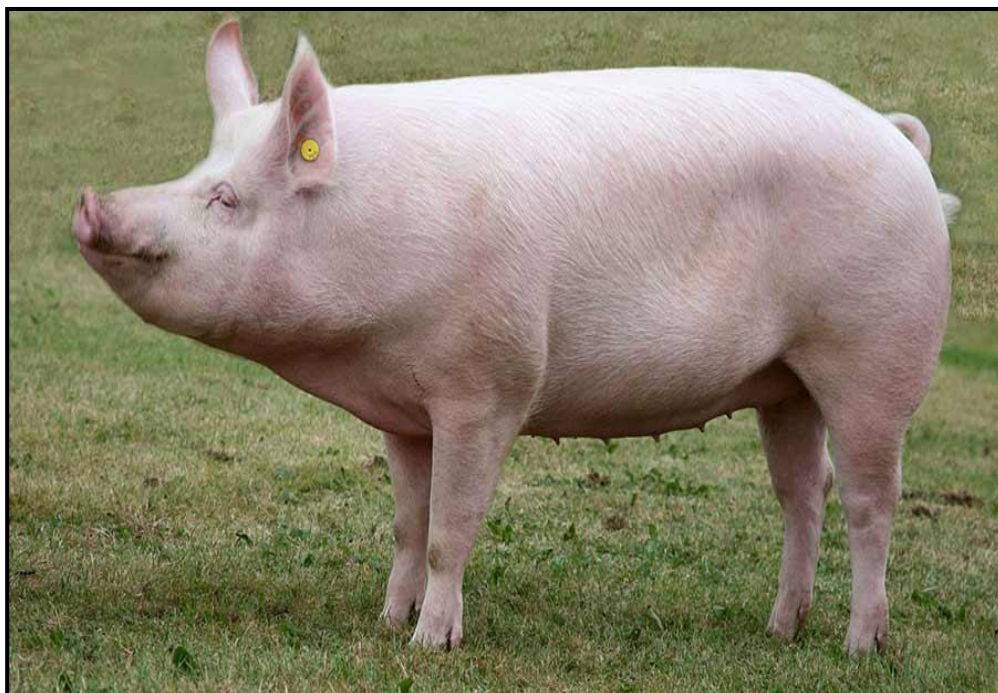
SECTION FIVE:

ANIMAL PRODUCTION

A. Characteristics of Local and Commercial Animal Breeds

The picture below shows one of the common breeds of pigs. Use it to answer the following questions.

Figure 6: Pig Breed



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

1. Name the breed of the pig shown in **Figure 6**.

2. Describe the characteristics of this breed of pig in **Figure 6**.

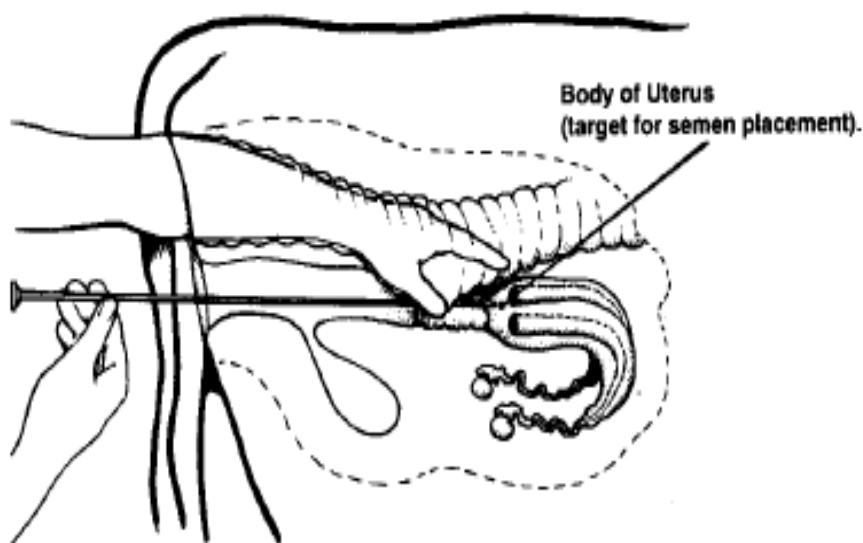
Skill level 1	
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Skill level 2	
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B. Animal Strategies in maintaining purity of line and increase of productivity

The picture below shows one of the breeding systems that is maintaining the purity of line and increase of productivity of animals. Use it to answer the following questions.

Figure 7: Breeding System in Cattle



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

1. Name the management practice shown in **Figure 7**.

2. Explain how the effect of the Breeding System in **Figure 7** in increasing the productivity of livestock animals.

Skill level 1	
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Skill level 3	
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SECTION SIX:

ANIMAL PROTECTION

A. Main groups of pests and diseases, and disorders, and their effects on animals

The picture below shows one of the major diseases of cattle affecting daily productions. Use it to answer the questions that follow.

Figure 9: Diseases of Cattle



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

1. Name the disease shown in **Figure 9**.

Skill level 1	
1	
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2. Identify the major cause of the disease shown in **Figure 9**.

Skill level 1	
1	
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3. Describe how a farmer should carry out a treatment for a cattle that suffers from the disease shown in **Figure 9**.

Skill level 2	
2	
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4. Explain the effect of any treatment used by farmers to treat the disease shown in the picture above.

Skill level 3	
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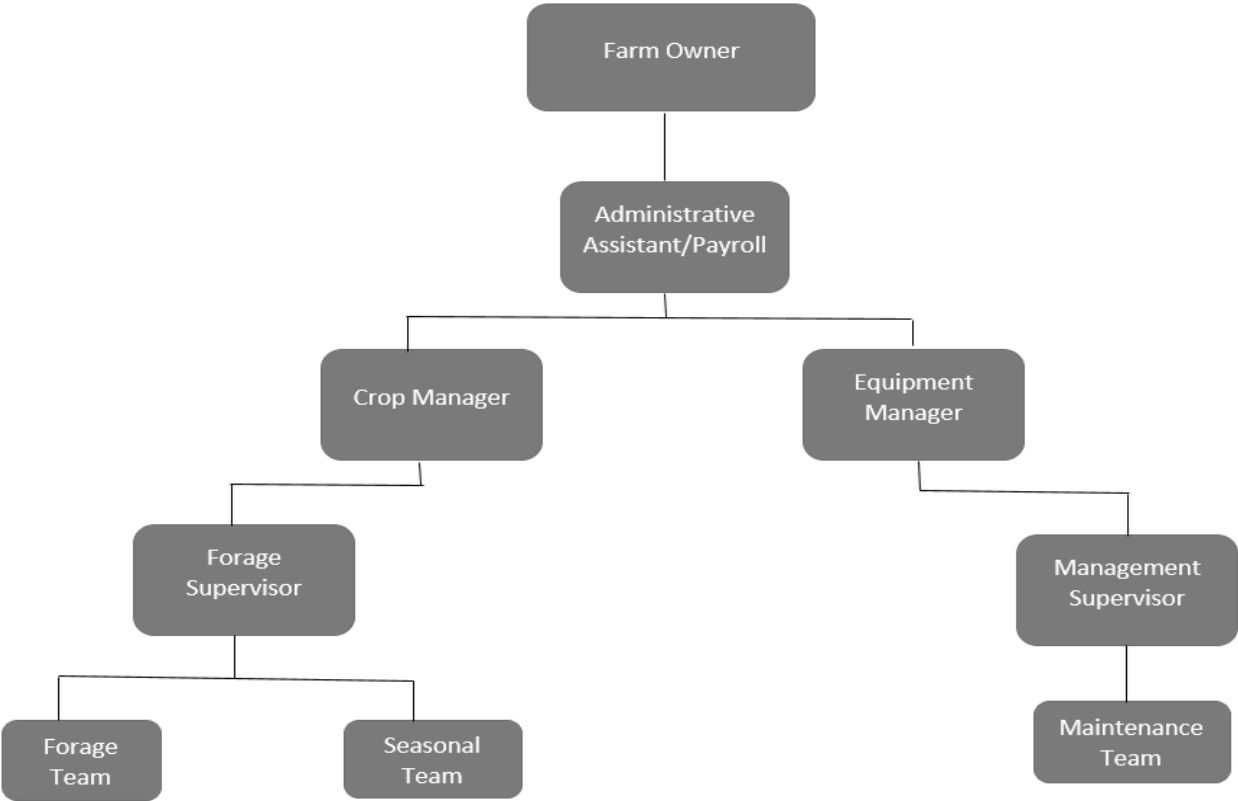
SECTION SEVEN:

AGRICULTURAL MANAGEMENT

A. Management

The diagram below shows a Farm organization management chart. Use it to answer the questions that follow.

Figure 10: Farm Organization Management Chart



Source: <https://farms.extension.wisc.edu>

1. Define the word **Management**.

Skill level 1	
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2. Describe the role of a Manager as shown in **Figure 10**.

Skill level 2	
2	
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3. Explain the influence of the goals of the Manager on management decisions.

[illegible]

Skill level 3	
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4. Discuss the roles of Human Resource in Agricultural Enterprises.

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Skill level 4	
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B: Safety procedure relating to the use of Agricultural Equipment and Chemicals

The picture below shows one of the Agricultural equipment. Use it to answer the questions that follow.

Figure 11: Agricultural Equipment



Source: <https://www.trialsupplies.com.au>

1. Name the Agricultural equipment shown in **Figure 11**.

2. Explain the importance of using the appropriate equipment when applying agricultural chemicals.

Skill level 1	
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Skill level 3	
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AGRICULTURAL MARKETING

The picture below shows a kava plant. Use it to answer the following questions.

Figure 12: Kava



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

1. Name the market opportunities available for kava plants.

2. Explain the significance of processing in relation to adding value to local primary products such as kava.

Explain the significance of processing in relation to adding value to local primary products such as kava.

Skill level 1	
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Skill level 3	
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