

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE 2020

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	TOPICS	SKILL LEVEL
A	AGRICULTURAL ECOSYSTEM AND ENVIRONMENT	7
B	SOILS	11
C	CROP PRODUCTION	11
D	CROP 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 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.
- Check that this booklet contain pages **2-23** in the correct order and that pages 21-23 have been deliberately left blank.

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

SECTION A: AGRICULTURAL ECOSYSTEM AND ENVIRONMENT

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

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

Figure 1.



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

1. The characteristic of the farming system shown in **Figure 1** is _____ system.

- A. intercropping
- B. mixed farming
- C. mono cropping
- D. traditional farming

Skill level 1	
1	
0	
NR	

2. What is the **advantage** of the farming system shown in **Figure 1**?

- A. Improve soil tilth.
- B. Maintain pasture growth.
- C. Maintain soil organic matter.
- D. Maintain soil fertility and biodiversity of soil using manure.

Skill level 1	
1	
0	
NR	

3. Describe the advantages of **organic farming**.

[illegible]

Skill level 2	
2	
1	
0	
NR	

4. Explain the impact of **organic farming** in a natural ecosystem.

[illegible]

Skill level 3	
3	
2	
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SECTION B:**SOILS**

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

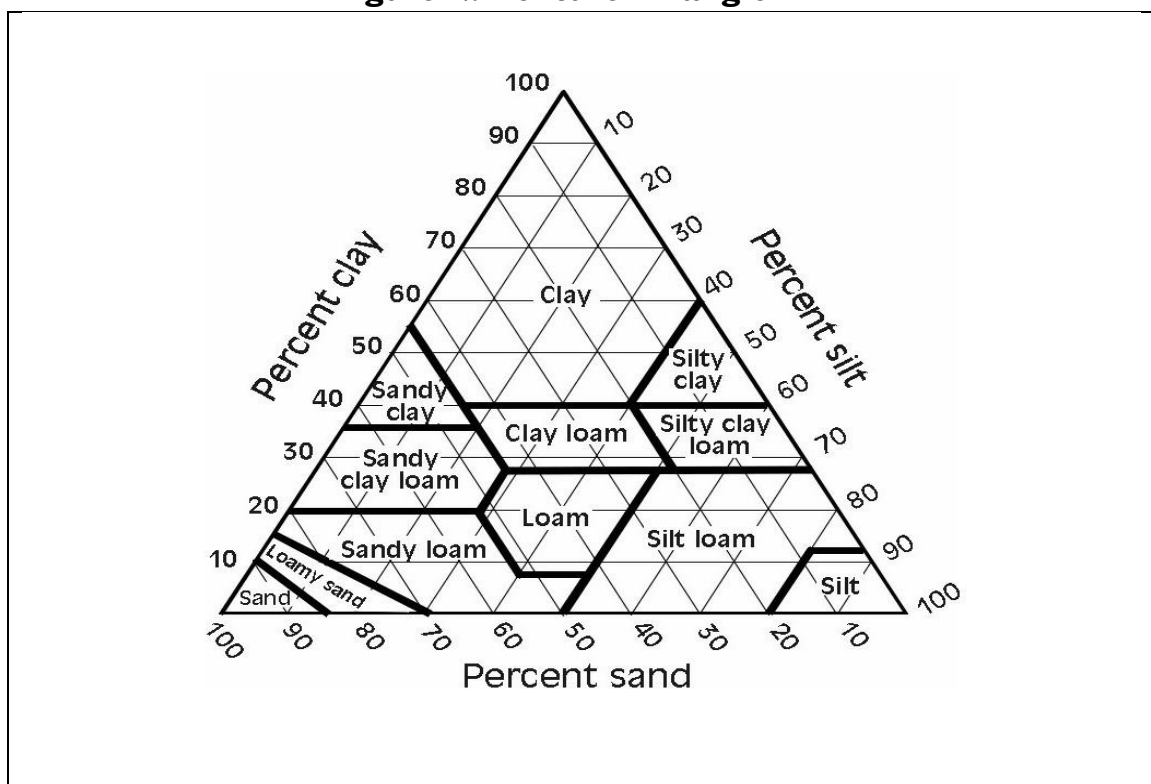
1. What is **soil texture**?

- A. A type of sand, silt and clay.
- B. The layers of sand silt and clay.
- C. The proportional amount of sand, silt, and clay.
- D. A mixture of sand silt, and clay.

Skill level 1	
1	
0	
NR	

Use **Figure 2 and 3** to answer the questions that follow.

Figure 2: Texture Triangle



Source: USDA Soil Texture Triangle

2. The mineral fraction of a soil is composed of 40% Sand, 30% Clay, and 30% Silt. What is its **textural class**?

- A. Clay
- B. Clay loam
- C. Silty clay loam
- D. Sandy clay loam

Skill level 1	
1	
0	
NR	

Figure 3: *Mucuna pruriens* beans used as a Green Manure.



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

3. Identify the effect of ***Mucuna pruriens*** beans in the nutrient status of the soil.

- A. Adds more N to the environment.
- B. Accelerates the leach of N underground.
- C. Increases inorganic chemical input in agriculture.
- D. Enables the trapping of residual Nitrate and reduces leaching of N₂ underground.

Skill level 1	
1	
0	
NR	

4. Describe the importance of **soil texture**.

Skill level 2	
2	
1	
0	
NR	

5. Explain the relationship of **legumes** with **nitrogen fixing bacteria**.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

6. Compare the effect of **organic** and **inorganic fertiliser** on crop growth.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION C: CROP PRODUCTION

Circle the letter of the **BEST** answer

1. Which of the following is a **macro-nutrient**?

- A. Iron
- B. Copper
- C. Chlorine
- D. Nitrogen

Skill level 1	
1	
0	
NR	

2. Define **seed dormancy**.

Skill level 1	
1	
0	
NR	

3. Describe the functions of **macro-nutrient** chosen in question 1.

Skill level 2	
2	
1	
0	
NR	

4. Auxin, Cytokinins, Gibberellin, and Ethylene are all plant hormones. Explain the effect of **Auxin hormone** on the growth and development of plants.

Skill level 3	
3	
2	
1	
0	
NR	

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

Figure 4: Training Cucumber



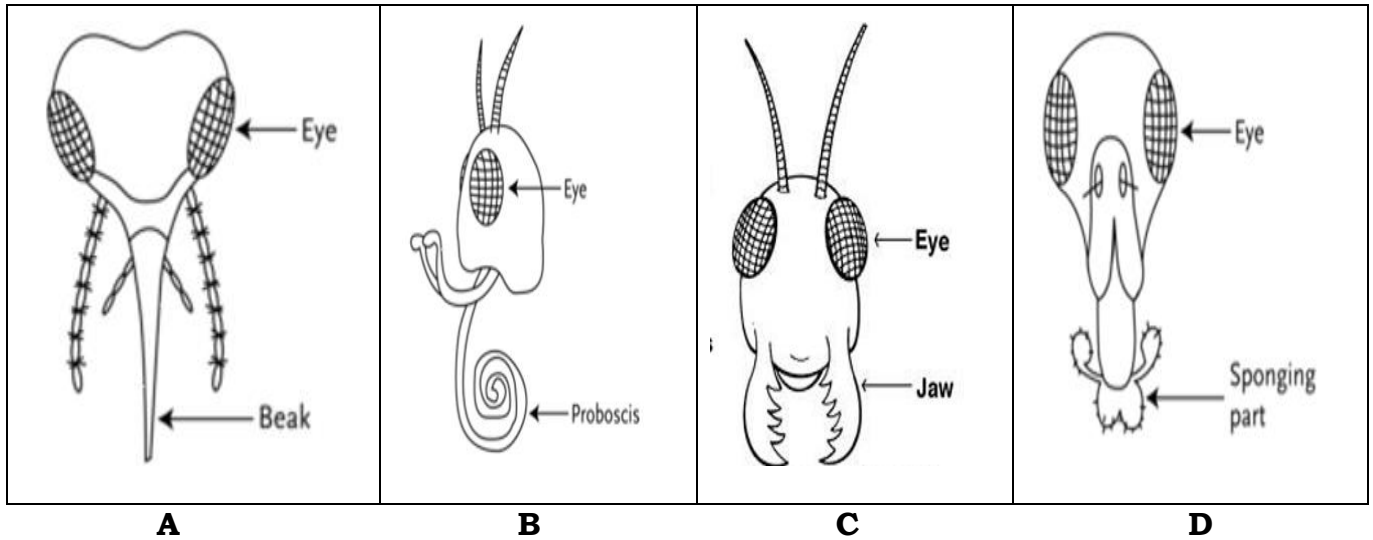
Source: <https://www.bakhabarkissan.com>

Figure 4: For the standard, long cucumber, only one fruit should be allowed to develop per leaf axil at a time.

5. Discuss the effect of **training** cucumber on the production of quality products.

SECTION D:**CROP PROTECTION**

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

Figure 5: Insect Mouthparts

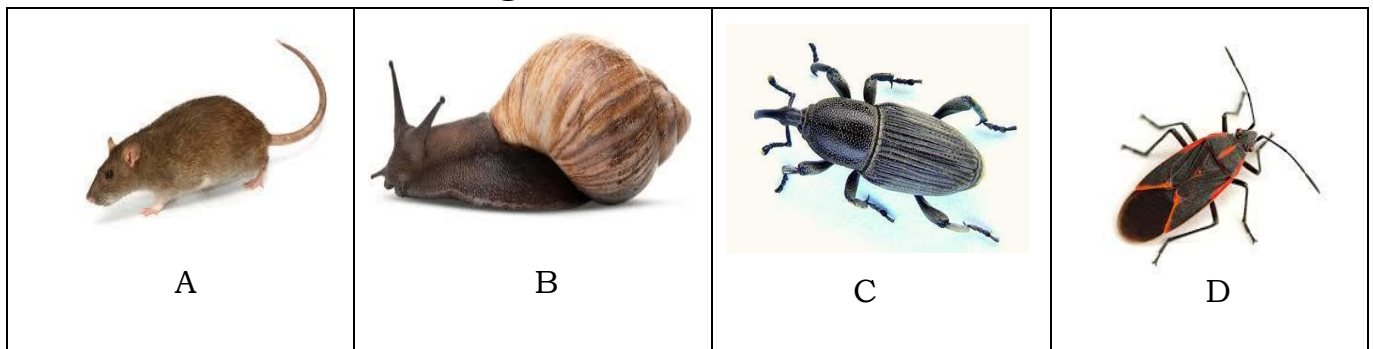
Source: <https://www.google.com>

1. Identify insects that have **chewing mouthparts**.

- A. Moth
- B. Mosquito
- C. Rose beetle
- D. House flies

Skill level 1	
1	
0	
NR	

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

Figure 6: Plant Pest

2. Identify **vertebrate's pest**.

- A. Rat
- B. African Snail
- C. Weevil borer
- D. Box elder bug

Skill level 1	
1	
0	
NR	

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

Figure 7: Root Knot Nematodes



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

3. Explain the effect of **Nematodes** on carrot plants.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION E: ANIMAL PRODUCTION

Study and use **Figure 8** to answer question one.

Figure 8: Beef cow



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

1. The **name** of the beef cow above is _____.

- A. Angus
- B. Friesian
- C. Hereford
- D. Charolaise

Skill level 1	
1	
0	
NR	

2. Identify the appropriate **tool** required for the castration of piglets.

- A. Burdizzo
- B. Elastrator
- C. Rubber ring
- D. Scalpel handle and blade

Skill level 1	
1	
0	
NR	

3. Describe the characteristics of **Large White pig**.

Skill level 2	
2	
1	
0	
NR	

4. Compare the digestive system of **monogastric animals** and **ruminant animals**.

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Skill level 3	
3	
2	
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NR	

5. Discuss methods of selecting the right pigs for **breeding stock**.

3. The **life cycle of a Fluke** need a _____ to complete it.

- A. dog
B. snail
C. man
D. bug

Skill level 1	
1	
0	
NR	

4. Explain the effects of **Mastitis** on Dairy cows.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION G: AGRICULTURAL MANAGEMENT

1. Define **human resources** in agricultural management.

Skill level 1	
1	
0	
NR	

2. Identify the **roles** of human resources in agricultural enterprises.

Skill level 1	
1	
0	
NR	

3. Describe the **storage requirements** for agricultural chemicals.

Skill level 2	
2	
1	
0	
NR	

4. Explain the effect of **quarantine** on agricultural trade.

Explain the appropriate **maintenance** required for farm implements.

Discuss the roles of **human resources** in agricultural enterprises.

6. Discuss the roles of **human resources** in agricultural enterprises.

SECTION H: AGRICULTURAL MARKETING

1. Identify **packaging methods** of Kumara products in your local market.

Skill level 1	
1	
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NR	

2. Explain the significance of **processing** primary products in relation to its marketing value.

Skill level 3	
3	
2	
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NR	

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