

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA SCHOOL 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 **SIX SECTIONS** and is out of 70 Weighted scores.

SECTION	TOPICS	TOTAL WEIGHT
1	SOILS	17
2	CROP PRODUCTION	7
3	CROP PROTECTION	6
4	ANIMAL PRODUCTION	24
5	ANIMAL PROTECTION	12
6	AGRICULTURAL INDUSTRY AND 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 are blank.

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

SHORT AND LONG ANSWERS

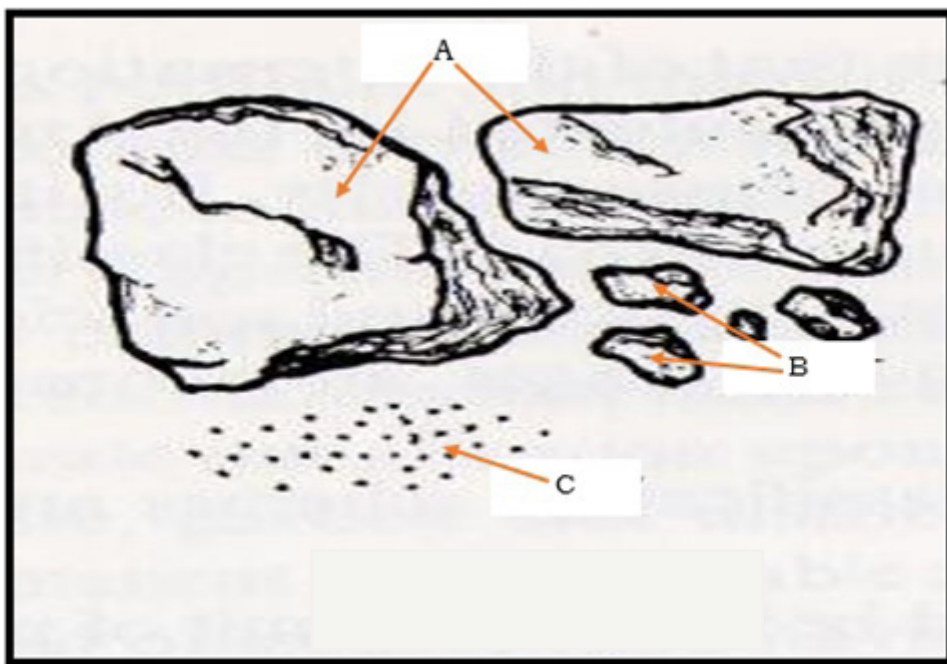
SECTION 1:

SOILS

A. Soil Nature and Properties

The picture below shows the textures of the soil. Use it to answer the questions that follow.

Figure 1: Texture of the soil



Source: agr.gc.ca

1. Name the texture labelled **C** in **Figure 1**.

2. Describe the chemical properties of the texture labelled **B** in **Figure 1**.

3. Differentiate between the water holding capacity of the texture labelled **A** and the texture labelled **C** in **Figure 1**.

Skill level 1	
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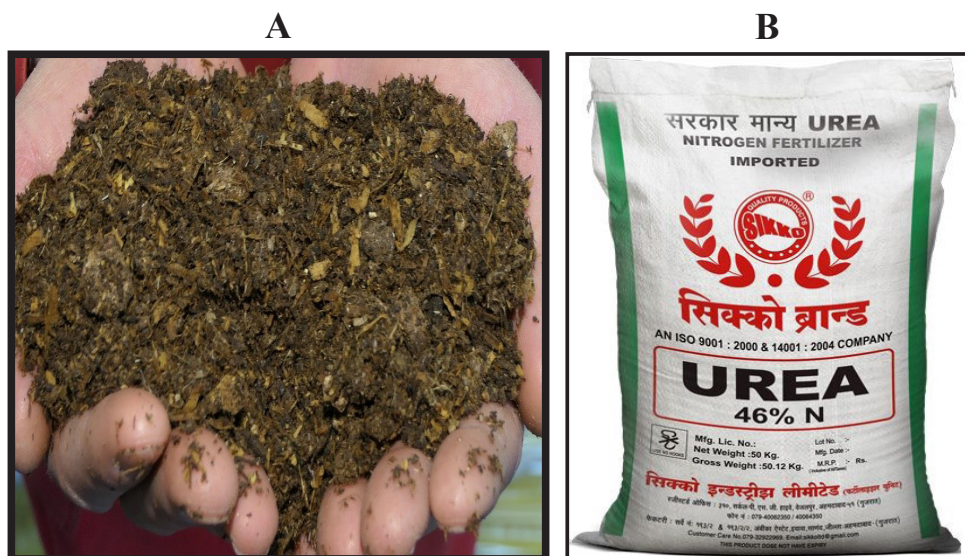
Skill level 2	
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Discuss the importance of soil texture.

B. Soil Management and Soil Fertility

Study the picture below and use it to answer the questions that follow.

Figure 2: Different types of fertilizers



Source: menafn.com

1. Name the type of fertilizer labelled **A** in **Figure 2**.

2. Identify the appropriate method of application for the type of fertilizer labelled **B** in **Figure 2**.

3. Describe the characteristics of the fertilizer labelled **B** in **Figure 2**.

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Skill level 1	
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Skill level 2	
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4.

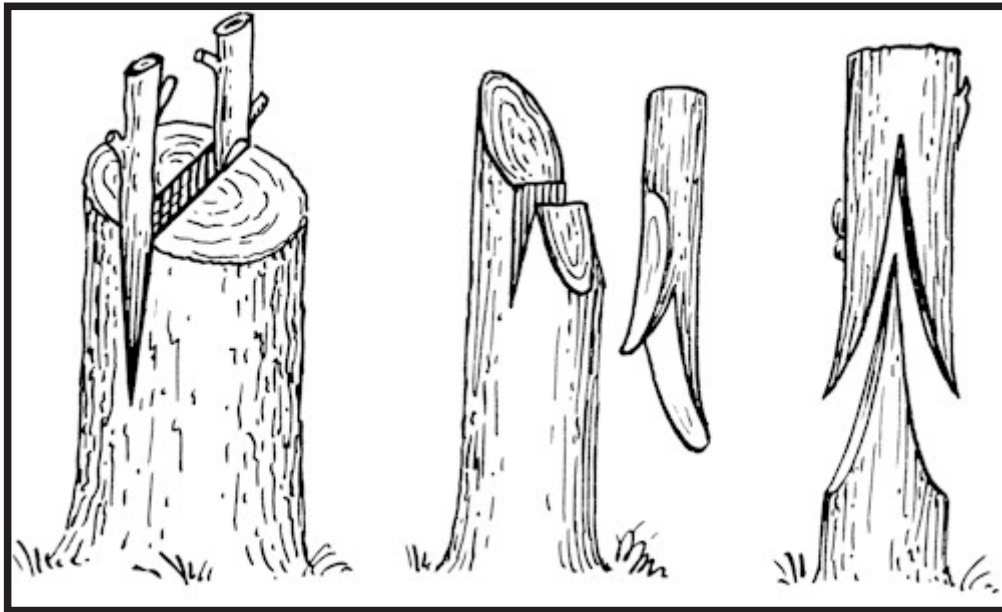
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Skill level 3	
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SECTION 2:**CROP PRODUCTION****Plant Propagations**

The picture below shows a type of vegetative propagation in plants. Use it to answer the questions that follow.

Figure 3: Vegetative propagation of plants



Source: ProsperRock.org

5. Identify the type of vegetative propagation shown in **Figure 3**.

6. Name a crop that can be asexually propagated using the method in **Figure 3**.

7. Describe the disadvantages of vegetative propagation.

Skill level 1	
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Skill level 1	
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Skill level 2	
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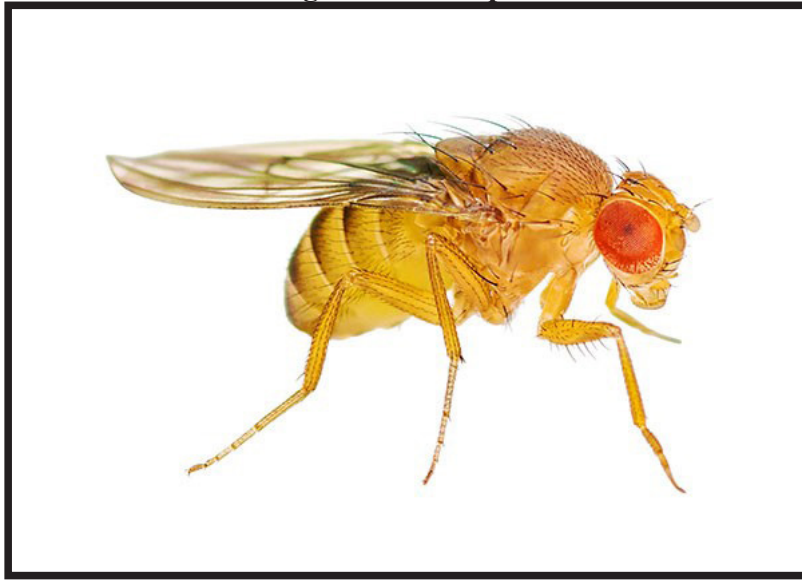
8. Explain the relationship between light and photosynthesis.

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The picture below shows a Plant pest. Use it to answer the questions that follow.

Figure 4: Plant pest



Source: Plunketts.net

9. Name the Plant pest shown in **Figure 4**.

10. Describe the symptoms of this pest in **Figure 4** if it feeds on tomato fruits.

[illegible]

Skill level 1	
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Skill level 2	
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11. Explain the effect of chemical control on the Plant pests shown in **Figure 4**.

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Skill level 3	
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The picture below shows different types of animal feeds. Use it to answer the questions that follow.

The image displays three distinct types of animal feed. On the left is a pile of brown, granular feed labeled 'Soybean meal'. In the center is a pile of yellow corn kernels labeled 'Grains'. On the right is a pile of green and yellow corn stalks labeled 'Corn Forage'.

Skill level 1	
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- [illegible]

Skill level 2	
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3. Discuss the advantages of local foodstuff for feeding livestock animals.

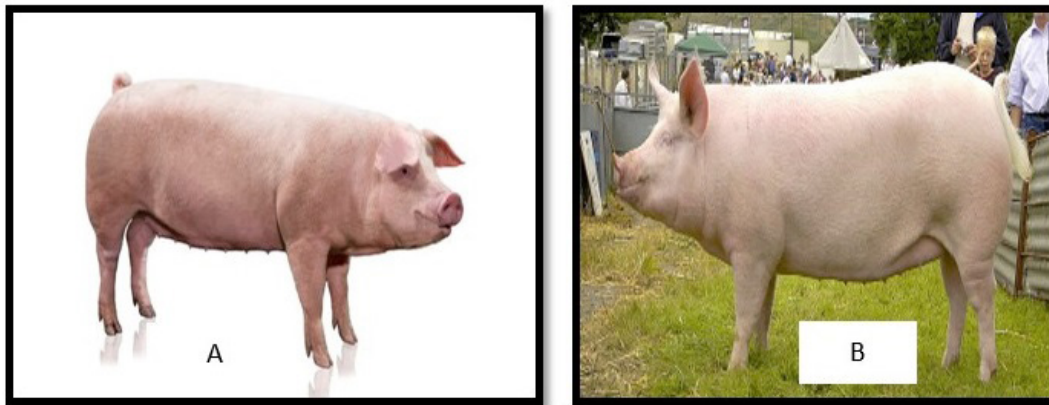
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Skill level 4	
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B. Breeds and Breeding

The picture below shows two types of Pig breeds. Use it to answer the questions that follow.

Figure 6: Pig breeds



Source: mindenpictures.com

1. Name the breed labelled **A** in **Figure 6**.

2. Name the breed labelled **B** in **Figure 6**.

3. Describe the production characteristics of the breed labelled **A** in **Figure 6**.

Skill level 1	
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Skill level 1	
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Skill level 2	
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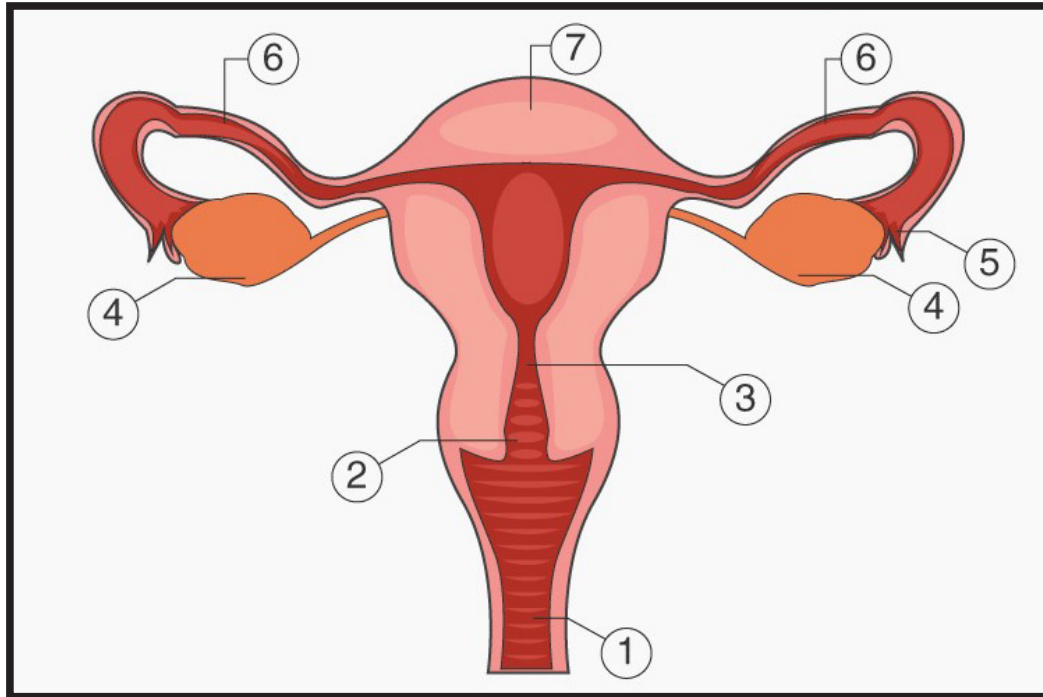
4. Differentiate between sexual and asexual reproduction in livestock animals.

[illegible]

Skill level 3	
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The picture below shows the female reproductive system of a livestock animal. Use it to answer the questions that follow.

Figure 7: Female animal reproductive system



Source: byjus.com

1. Name the organ numbered **1** in **Figure 7**.

2. Describe the function of the organ numbered **4** in **Figure 7**.

Skill level 1	
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Skill level 2	
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3. Explain the process of oestrus cycle in relation to the mating process.

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4. Discuss the importance of Colostrum.

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Skill level 4	
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The picture below shows a chicken that has been affected by a disease. Use it to answer the questions that follow.

A photograph of a white bird, likely a cockatiel, lying on its side on a light-colored, sandy or gravelly surface. The bird's head is turned to the right, and its body is oriented towards the left. A small, dark, irregular pool of red blood is visible on the ground just behind the bird's head. The bird's feathers appear somewhat ruffled and its legs are tucked under its body. The overall scene suggests a fatal incident, possibly related to the ingestion of a toxic substance as mentioned in the text.

- [illegible]

Skill level 3	
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SECTION 6:

AGRICULTURAL INDUSTRY AND MARKETING

Record Keeping

Below is a type of farm record commonly used by commercial farmers. Use it to answer the questions that follow.

Figure 10: Farm Records

INCOME STATEMENT			
All Organic G.M.O. Farm, San Idefonso, Bul.			
January 1, 2010 to December 31, 2010			
FARM RECEIPTS		FARM OPERATING EXPENSES	
Crop Products sold	41,000.00	Organic GMO Seeds	1,800.00
Organic GMO Cows sold	15,000.00	Feeds	16,000.00
Machinery income	30,000.00	Labor	5,000.00
Misc. income	2,000.00	Repairs & Maintenance	3,500.00
Organic GMO Pigs sold	12,000.00	Property taxes	900.00
Gross Farm Receipts	100,000.00 (1)	Insurance	650.00
		Supplies	2,000.00
		Chemicals	3,000.00
		Fuel (Gas, Diesel & Oil)	5,500.00
		Waste disposal & Compost	1,200.00
		Miscellaneous	650.00
		Interests	2,100.00
		Total Farm Cash Operating Expenses	42,300.00 (2)
		Net Cash Operating Income (1-2)	57,700.00 (3)

Source: slideshare.net

4. Name the type of farm records shown in **Figure 10**.

5. Define the term **record keeping**.

6. Describe the importance of record keeping.

Skill level 1	
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Skill level 1	
1	
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Skill level 2	
2	
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