

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE 2018

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 Skill Level.

SECTIONS	TOPICS	TOTAL SKILL LEVEL
A	AGRICULTURAL ECOSYSTEM AND ENVIRONMENT	7
B	SOILS	7
C	FARM POWER AND AGRICULTURAL MACHINERY	8
D	CROP PRODUCTION AND CROP PROTECTION	18
E	ANIMAL PRODUCTION AND HEALTH	18
F	AGRICULTURAL MANAGEMENT AND MARKETING	12

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 pages 22-23 has 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

For questions 1 and 2 circle the letter of the BEST answer. To change your answer, cross out your first answer and circle your final choice.

1. **Sustainable agriculture** can be defined as the _____.

- A. measure of the ratio of agriculture outputs to agriculture inputs.
- B. combination of planting methods in growing one crop alongside another.
- C. science of cultivating soil for growing crops and rearing animals to provide foods.
- D. integrated system of plant and animal production practices with specific application lasting over a long term.

Skill level 1	
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2. Choose a factor from the list below that **limits** the productivity of agriculture.

- A. Insect pest
- B. Seedling
- C. Vehicles
- D. Packing shed

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3. List the factors influencing the **development** of farming system.

Skill level 2	
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Study **Figure 1** and answer question 4.

Figure 1: Fertilizing Soil



4. Explain a way that fertilizing the soil pollutes the environment.

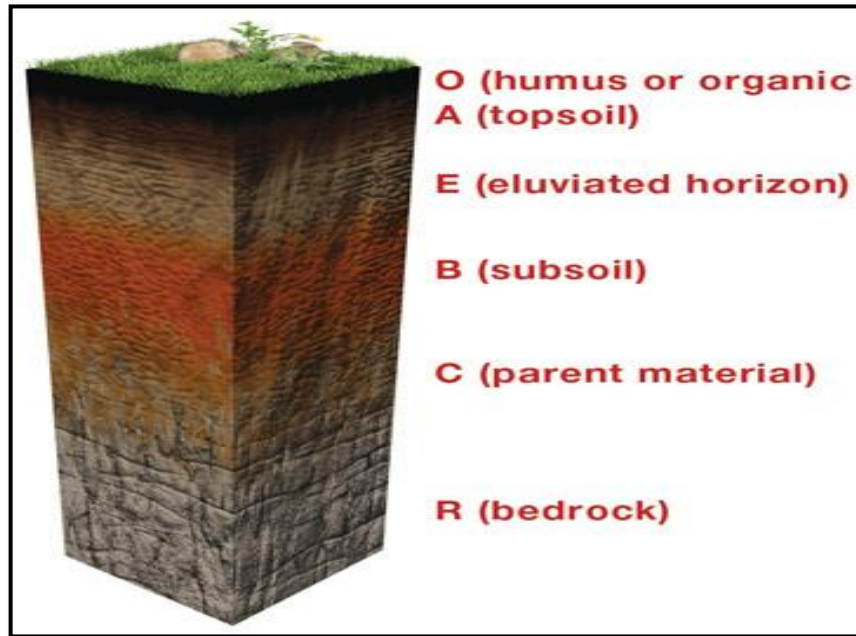
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SECTION B:**SOILS**

Study **Figure 2** and answer questions 1 and 2.

Figure 2: Soil Profile



1. Define **soil profile**.

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2. Identify the most **fertile horizon** in soil as labelled in the profile above.

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3. Describe the importance of **soil profile**.

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SECTION C: FARM POWER AND AGRICULTURAL MACHINERY

Study **Figure 4** and answer question 1.

Figure 4: Tractor Implement



1. The tractor implement in **Figure 4** is a _____.

- A. Sub-soiler
- B. Rotary
- C. Cultivator
- D. Disc harrow

Skill level 1	
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Study **Figure 5** and answer question 2.

Figure 5: Tractor Component



2. The tractor component in **Figure 5** show _____.

- A. a PTO
- B. Hydraulic Hoses
- C. a 3 – Point Linkage
- D. Hitching

Skill level 1	
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Study **Figure 6** and answer questions 3, 4 and 5.

Figure 6: Tractor Parts



3. The tractor part in **Figure 6** labelled **A** is _____.

- A. the Hydraulic
- B. a wheel
- C. a PTO
- D. the Hitching

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4. Describe the function of the electrical system.

Skill level 2	
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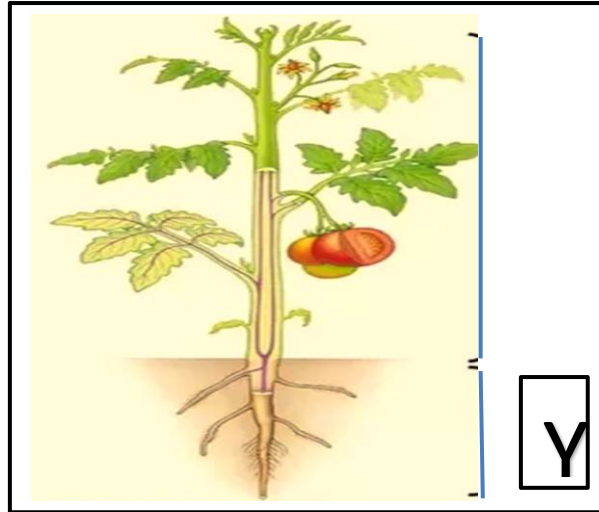
5. Explain the maintenance of the tractor implement.

Skill level 3	
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SECTION D: CROP PRODUCTION AND CROP PROTECTION

Study **Figure 7** and answer questions 1 and 2.

Figure 7: Plant Parts



1. The plant part in **Figure 7** labelled **Y** is a _____.

- A. Node
- B. Internode
- C. Shoot
- D. Root

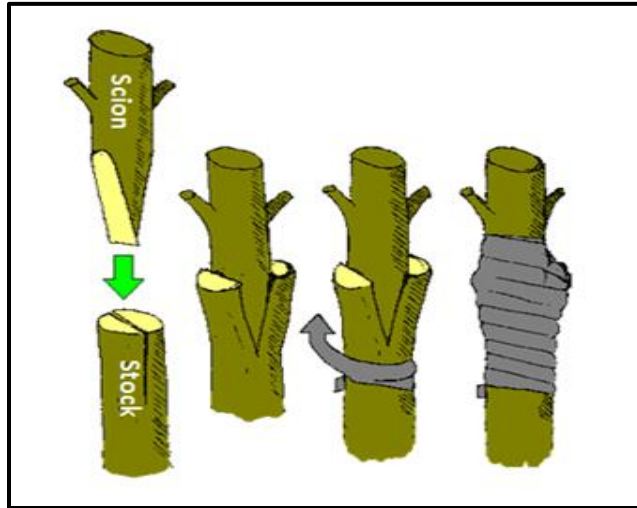
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2. Describe the function of the plant organ **Y** in **Figure 7**.

Skill level 2	
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Study **Figure 8** and answer question 3.

Figure 8: Vegetative Propagation



3. Name the vegetative propagation above in **Figure 8** _____.

- A. Corm
- B. Layering
- C. Grafting
- D. Budding

Skill level 1	
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4. Explain **ONE** (1) advantage of vegetative propagation.

Skill level 3	
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5. Explain **ONE** (1) advantages of seed propagation.

Skill level 3	
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Study **Figure 9** and answer question 6.

Figure 9: Banana Viral Disease



6. The Viral disease of a banana plant in **Figure 9** is _____.

- A. a Bunchy Top
- B. Anthracnose
- C. Black leaf streak
- D. Black sigatoka

Skill level 1	
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7. Describe how the viral disease of bananas is spread amongst the bananas.

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Study **Figure 10** and answer question 8.

Figure 10: Yam Disease

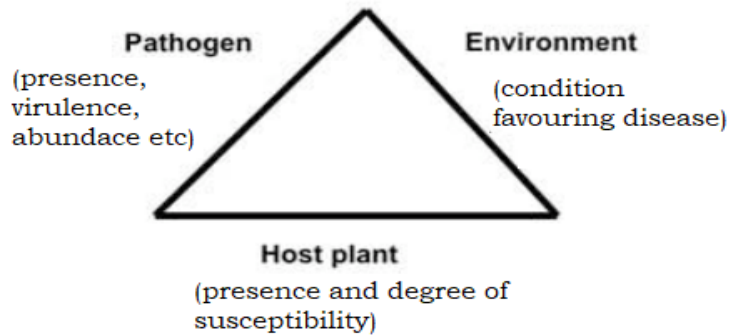


8. The yams shown in **Figure 10** is infected by _____.

- A. protozoa
- B. fungi
- C. bacteria
- D. nematodes

Skill level 1	
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9. Analyse the relationship of the **host plant** (yam above), **pathogen** (disease causing organisms) with the favorable environment in a plant disease triangle.

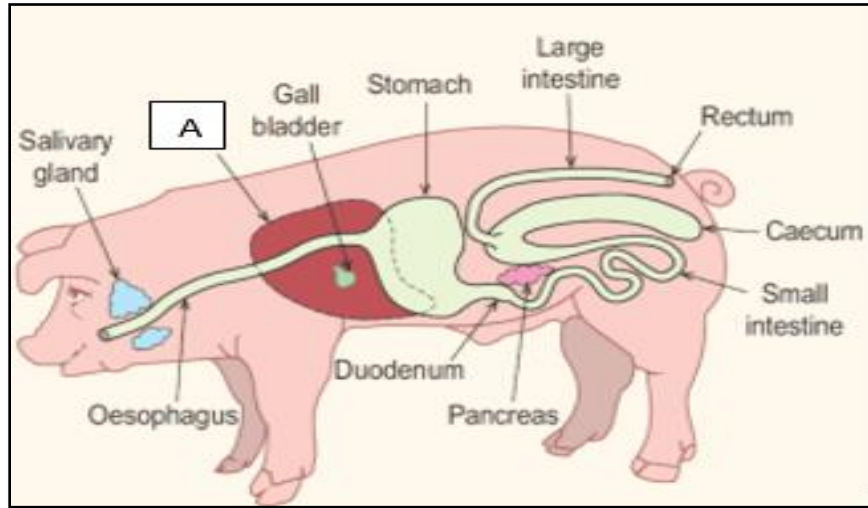


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SECTION E: ANIMAL PRODUCTION AND HEALTH

Study **Figure 11** and answer question 1.

Figure 11: Pig Digestive System



1. The organ labelled **A** as shown in **Figure 11** is the _____.

A. bile
B. liver
C. stomach
D. small intestine

Skill level 1	
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2. The gestation period of a **sow** (pig) is _____ days.

A. 114
B. 285
C. 150
D. 336

Skill level 1	
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Study **Figure 12** and answer question 3.

Figure 12: Chicken Diarrhea



Sione identified the following signs in the Tele'a Lakataha Poultry Farm at Mataliku.

- i. chickens were weak,
- ii. chickens did not move around,
- iii. chickens huddled together
- iv. loss of appetite,
- v. blood in poop,
- vi. have ruffled feather,
- and vii. weight loss

3. Identify the problem of the chickens at the Tele'a Lakataha Poultry Farm.

- A. Coccidiosis
- B. Brucellosis
- C. Tuberculosis
- D. Foot and Mouth Disease

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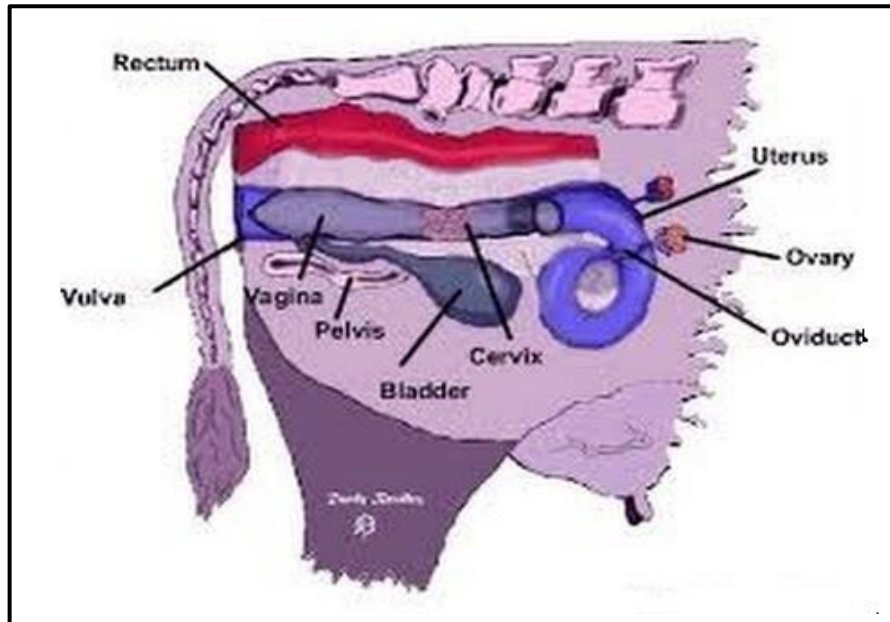
4. The definition of Passive Immunity is _____.

- A. a disease which can be transmitted to humans from animals
- B. disorders caused by organisms such as bacteria, viruses, fungi or parasites
- C. immunity from production of antibodies by the immune system in response to the presence of an antigen
- D. immunity which results from the introduction of antibodies from another person or animal such as colostrum

Skill level 1	
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Study **Figure 13** and answer question 5.

Figure 13: Cow's Reproductive Organs



5. Describe the function of the ovary.

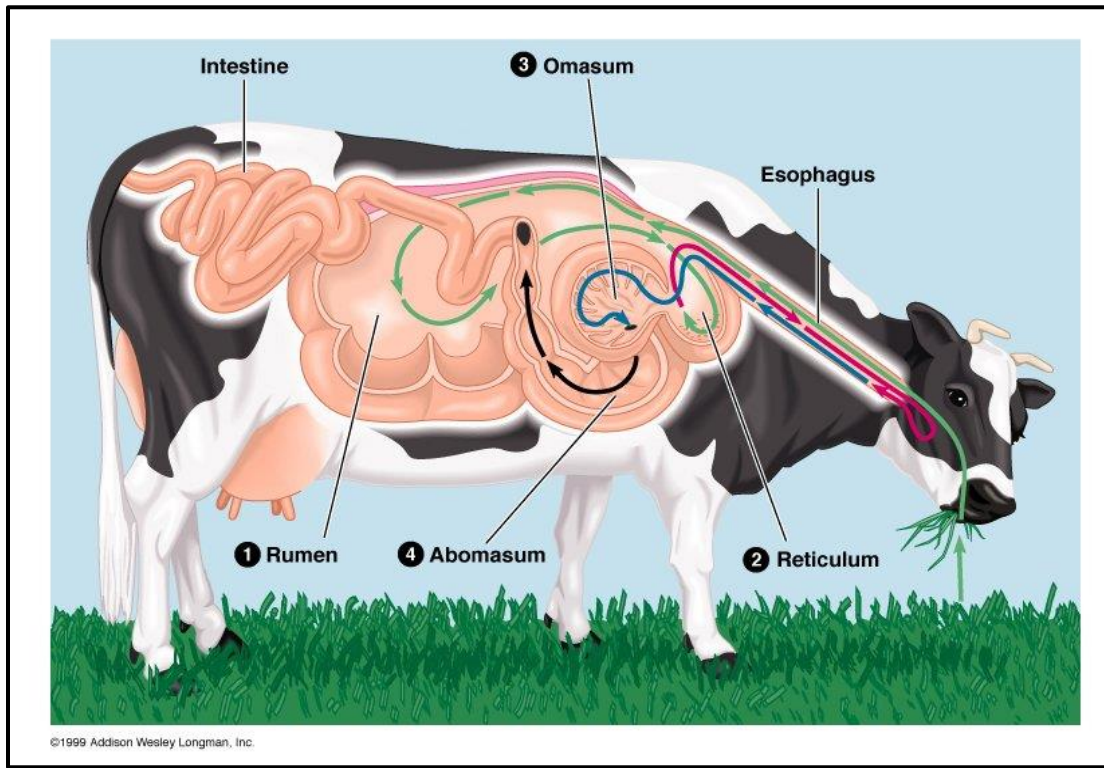
Skill level 2	
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6. Describe the signs of estrus in cows.

Skill level 2	
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Study **Figure 14** and answer question 7.

Figure 14: Cud Chewing



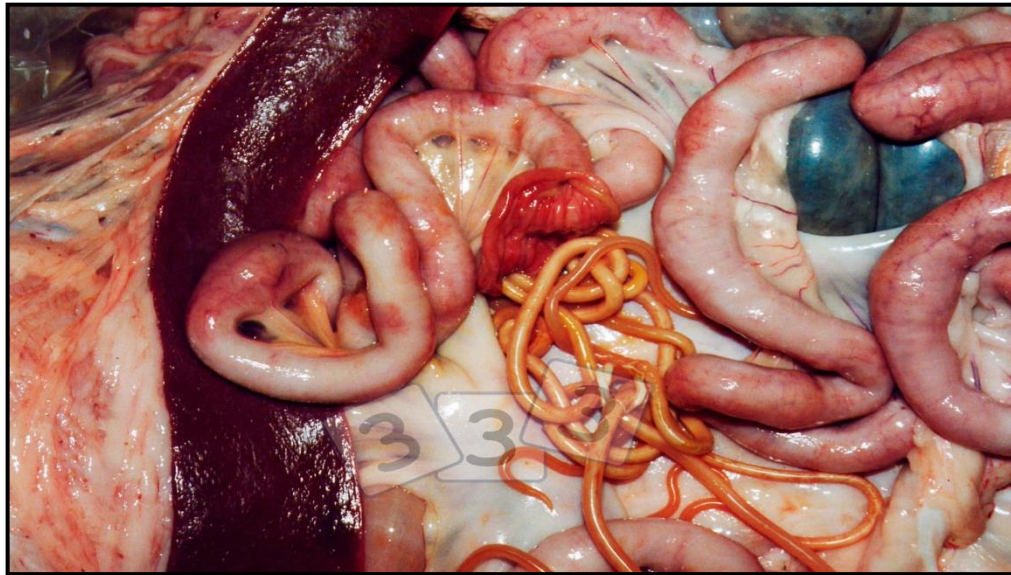
7. Discuss cud chewing in ruminant.

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Study **Figure 15** and answer question 8.

Figure 15: Roundworm Parasites in Pigs (*Ascaris suum*)



8. Explain the **lifecycle** of roundworm parasites in pigs.

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Study **Figure 16** and answer question 9.

Figure 16: Tick Parasites



9. Explain the clinical signs of tick damage.

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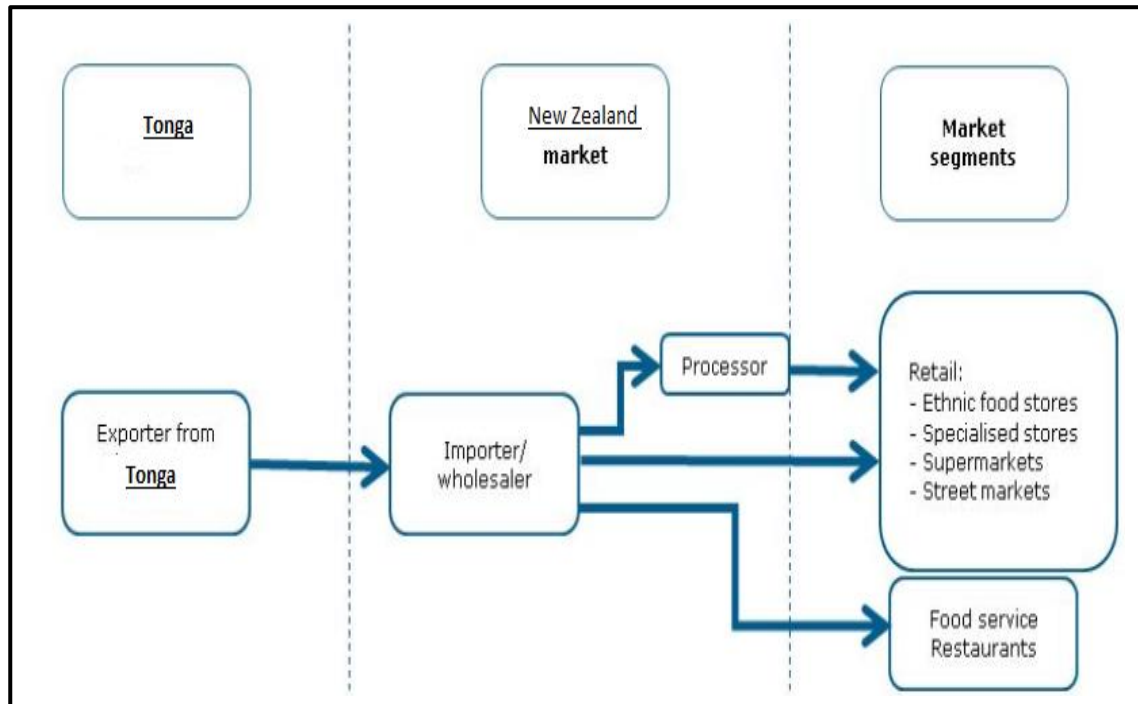
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Study **Figure 17** and answer questions 3 and 4.

Figure 17: Market Channel for Yams in the New Zealand Market.



3. Identify the market for yams in this market channel.

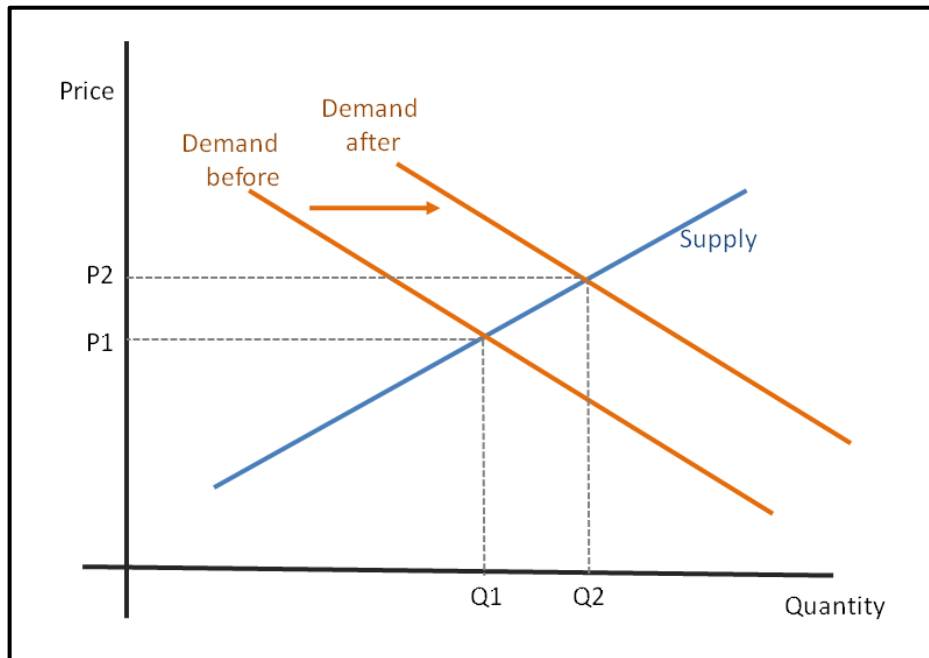
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4. Define market.

Skill level 1	
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Study **Figure 18** and answer questions 5 and 6.

Figure 18: Demand Curve of Watermelon



5. Describe the importance of **Promotion** to the demand watermelon as shown in **Figure 18**.

Skill level 2	
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6. Analyse the factors that cause the **shifts** on the demand curve.

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