1. This paper has **TWO Sections** and is out of **100 MARKS**.

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>MULTIPLE CHOICE</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>SHORT ANSWER</td>
<td>70</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Crop Production</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Animal Production</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Agricultural Industry</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

2. Write your **Student Personal Identification Number (SPIN)** on the top right hand corner of this page and on page 31.

3. Answer ALL questions in the space provided in this booklet.

4. Use **BLUE** or **BLACK** ball point pen. DO NOT write in pencil.

5. If you need more space for any answer, ask the supervisor for extra paper.

6. Check that your paper consists of 31 pages.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**TOTAL MARKS**

100
SECTION A
MULTIPLE CHOICE (30 Marks)

Answer ALL THIRTY questions. Each question is worth 1 mark
Circle the letter in front of the BEST answer for each question

Use the information below to answer Questions 1.

Sione is a Soil Scientist who tried to find out the texture of the soil sample shown by the diagram.

1. What is the soil arrangement shown by the diagram above?

<table>
<thead>
<tr>
<th>SOIL CHART</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

Use the information below to answer Questions 2 and 3.

The graph shows the effects of soil depth on organic matter levels.
2. From the graph we can conclude that the breakdown of soil organic matter is ________________.

A. constant at increasing soil depth  
B. slower at decreasing soil depth  
C. slower at increasing soil depth  
D. faster at increasing soil depth

3. Adding organic matter to soil will result in a / an__________________________.

A. change in its soil texture  
B. increase in its pH value  
C. increase in its nutrient content  
D. decrease in its water holding capacity

Lime is used by hoticulturalists for the reason indicated in the diagram.

4. Which two uses of lime make it a suitable substance to add to a compost heap?

1. L and M  
2. M and N  
3. N and O  
4. L and O
5. Synthetic mulching uses now a day in modern agricultural. Name the type of mulching shown on the diagram above.

A. Fabric mulch
B. Wooden mulch
C. Polyethylene mulch
D. Black filament mulch

6. What will happen to the following soil properties if you apply the type of mulch shown above?

<table>
<thead>
<tr>
<th></th>
<th>Soil organic matter content</th>
<th>Soil structure</th>
<th>Soil moisture</th>
<th>Soil temperature</th>
<th>Nutrient status</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Increased</td>
<td>Destroyed</td>
<td>Improved</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>B</td>
<td>Increased</td>
<td>Improved</td>
<td>Decreased</td>
<td>Improved</td>
<td>Increased</td>
</tr>
<tr>
<td>C</td>
<td>Decreased</td>
<td>Not improved</td>
<td>Improved</td>
<td>Improved</td>
<td>Decreased</td>
</tr>
<tr>
<td>D</td>
<td>decreased</td>
<td>Destroyed</td>
<td>Improved</td>
<td>Decreased</td>
<td>Destroyed</td>
</tr>
</tbody>
</table>
The data in the table below show the effects of different forms of NPK fertilizer on the growth of tomato plants.

<table>
<thead>
<tr>
<th>Collected data</th>
<th>Form of NPK fertilizer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid</td>
<td>Liquid</td>
</tr>
<tr>
<td>Number of leaves</td>
<td>21</td>
<td>48</td>
</tr>
<tr>
<td>Number of fruits produced</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>Plant height (cm)</td>
<td>38</td>
<td>47</td>
</tr>
</tbody>
</table>

7. In what form would NPK fertilizer have the best effect on the growth of tomato plants?
   A. Gas.
   B. Solid.
   C. Liquid.
   D. Powder.

Study the diagram below and then answer the Question 8 and 9

8. A heavy plant giver improves soil ________________.
   A. moisture
   B. structure
   C. nutrient
   D. texture
9. Which of these crop rotations would provide the best crop rotation scheme shown on the diagram on page 5?

<table>
<thead>
<tr>
<th>SITE 1</th>
<th>SITE 2</th>
<th>SITE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Maize</td>
<td>Maize</td>
</tr>
<tr>
<td>B</td>
<td>Bean</td>
<td>Sorghum</td>
</tr>
<tr>
<td>C</td>
<td>Melon</td>
<td>Bean</td>
</tr>
<tr>
<td>D</td>
<td>Lettuce</td>
<td>Carrot</td>
</tr>
</tbody>
</table>

Study the diagram given below and use it to answer question 10 and 11.

10. Name the crop that uses the method of pre-sprouting of planting material shown above?

   A. Kava
   B. Hiapo
   C. Vanilla
   D. Cassava

11. What is the advantage of using the propagation method shown in the diagram above?

   A. True to type.
   B. Cross pollinating two different plants.
   C. Cutting material is often bulky and perishable.
   D. Transmission of identical characteristics from offspring to parents.
Study the picture given below and use it to answer Question 12 to 14.

12. What does it causes the changes in colour of leaves in Picture B and C?
   A. Salinity.
   B. Plant wilt.
   C. Damping off.
   D. Nutrient deficiency.

13. Which of the following nutrient deficiency shown in Picture B and C?
   A. Nitrogen and Sulphur.
   B. Nitrogen and Potassium.
   C. Phosphorus and Nitrogen.
   D. Phosphorus and Potassium.

14. How could you overcome the problem in Picture C? Adding ________________.
   A. muriate of potash
   B. ammonium nitrate
   C. triple superphosphate
   D. ammonium phosphate
The interrelationship shown by the diagram indicates how diseases start to develop.

15. What does X in the diagram above represents?
   A. Host plant.
   B. Insect pest.
   C. Pest control.
   D. Disease control.

Study the diagram below and then answer Questions 16-17.

16. Eggs hatches into form of maggots and start tunnelling fruits of tomato. What type of insect pest which maggots belong to?
   A. Fruit fly.
   B. Rose beetle.
   C. Rhinoceros beetle.
   D. Diamond back moth.
17. A tomato farmer collects rotting fruits from the ground, feeds them to animals and sometimes bury them at least half a metre underground. This management practice is referred to as ________________________.

A. cultural control  
B. physical control  
C. chemical control  
D. biological control

**Study the diagram below and then answer Question 18.**

![Diagram of soil degradation](image)

18. The side effect of mono cropping system on the environment, causes soil degradation. Which of the following farming activities help to reduce the effect of soil erosion?

A. Add lime  
B. Apply mulch  
C. Add fertilizer  
D. Add irrigation
The table shows the amount of nutrients that different types of pigs need in their feed.

![Table showing the amount of nutrients needed by different types of pigs](image)

Use the information in the table and your own knowledge to answer Questions 19 and 20.

19. Which of the following types of pigs need the highest amount of protein, vitamins and minerals in their feeds?

A. Finishers.
B. Growing pigs.
C. Pregnant sows.
D. Lactating sows.

20. Which of the following is true about pregnant sows? Pregnant sows need

A. less water after pregnancy.
B. less protein after pregnancy.
C. more minerals before pregnancy.
D. more vitamins before pregnancy.

21. Which of the following graphs best represents the relationship between growth of pasture and stocking rate?
22. The two most common dairy breeds that produce higher milk and butter fat are ________________.

A. Jersey and Guernsey  
B. Guernsey and Illawara  
C. Jersey and Holstein Friesian  
D. Holstein Friesian and Guernsey

23. Hybrid vigour can be defined as ____________.

A. breeding of distant related family  
B. breeding of closely related family  
C. offspring of breeding related family  
D. characteristic of offspring which better than both parent

24. Which of the following is NOT an advantage of breeding method shown below?

A. Breeding is less labour intensive.  
B. Quality of sperm used can be guaranteed.  
C. Mating dates can be recorded more accurately.  
D. Males with specific breeding traits can be used.

25. A farmer noticed that several cows lost calves 2 to 3 month before they were due to calve. Two of the animals showed some lameness and one bull had swollen testicles. What disease could cause this and which treatment is necessary?

<table>
<thead>
<tr>
<th>Disease</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Brucellosis</td>
<td>Isolate and slaughter</td>
</tr>
<tr>
<td>B Tuberculosis</td>
<td>Isolate and vaccinate</td>
</tr>
<tr>
<td>C Dystocia</td>
<td>Provide good neonatal calf care</td>
</tr>
<tr>
<td>D Mastitis</td>
<td>Penicillin, with-hold milk for 3 days</td>
</tr>
</tbody>
</table>
26. The diagnosing animal health is normally testing temperature by inserting a thermometer into the animal’s ___________.

A. nose  
B. mouth  
C. vagina  
D. rectum

27. When milking is over, a dairy farmer cleans the floor of his dairy shed with running water, washes the dairy equipment with detergent and finally sterilise it. This working procedure is carried out to prevent _________________.

A. metritis  
B. mastitis  
C. brucellosis  
D. leptospirosis

Study the diagram below which shows a type of animal identification and then answer question 28.

28. To determine the identification number of Animal B, you have to follow the example on Animal A. What would be the identification number of Animal B?

A. 66  
B. 601  
C. 667  
D. 668
Use the table given below to answer Question 29.

<table>
<thead>
<tr>
<th>Price per kg ($)</th>
<th>Meat demand (kg)</th>
<th>Meat supplied (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.40</td>
<td>86</td>
<td>210</td>
</tr>
<tr>
<td>2.20</td>
<td>97</td>
<td>198</td>
</tr>
<tr>
<td>1.60</td>
<td>123</td>
<td>125</td>
</tr>
<tr>
<td>1.10</td>
<td>141</td>
<td>70</td>
</tr>
<tr>
<td>0.70</td>
<td>160</td>
<td>58</td>
</tr>
<tr>
<td>0.35</td>
<td>197</td>
<td>5</td>
</tr>
</tbody>
</table>

29. According to the table, what will happen to the price of meat when demand decreases?

A. Increases
B. Decreases
C. Stay the same
D. Increase then levels off

30. Post-harvest handling is important for maintaining and promoting product _______________.

A. freshness and aroma
B. texture and ripeness
C. quantity and added value
D. quality and market requirements
Mr. Finau is a vegetable grower who grows vegetables on three different types of soil. The Ministry of Agriculture conducted soil testing and analyzed the physical properties of these soils. The results of the physical analyzes test were based on water retention and soil aeration movement illustrated by the pie graphs below.

Study the pie graphs carefully and use your own knowledge to answer the following questions.

1. What are appropriate percentage composition of a typical surface soil in good condition for plants growth?
   - Water: _____________
   - Air: _____________
   - Mineral Matter: ________________
   - Organic matter: ________________ (2 marks)

2. Which soil from the three soil types represented by the pie charts above is best for growing vegetables?
   - Sample: ________________ (1 mark)

   Give your reasons.
   ____________________________________________________________________________
   ____________________________________________________________________________
   (1 mark)
3.  
   a. What could be the texture of Soil C?
      ______________________________
      (1 mark)
   b. Give your reason for your answer in 3. a).
      __________________________________________________________
      __________________________________________________________
      (2 marks)

B. MANAGEMENT AND SOIL FERTILITY            (10 Marks)
1. Carefully study the diagram of the piece of land shown below and its characteristics in Table 1.

![Diagram of land with areas A, B, C, D, E labeled.]

<table>
<thead>
<tr>
<th>Area</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Steep slope, rocky outcrops, very little soil.</td>
</tr>
<tr>
<td>B</td>
<td>Steep slope, shallow soil, areas of grass, some trees grow here.</td>
</tr>
<tr>
<td>C</td>
<td>Slope less steep, soil less shallow.</td>
</tr>
<tr>
<td>D</td>
<td>Land almost flat, deep soil, some flooding near river in the rainy season.</td>
</tr>
<tr>
<td>E</td>
<td>Wet, swampy land close to river.</td>
</tr>
</tbody>
</table>
16

a. Which area that is seriously affected by soil erosion?

**Area:** __________________________

Give a reason for your answer in part a.

____________________________________________________________________
____________________________________________________________________

(1 mark)

b. Outline TWO (2) reasons why **Area E** is not appropriate for growing crops.

i.  ___________________________________________________________________

ii. ___________________________________________________________________

(2 marks)

2. Study the diagram below and then answer the following questions.

![Diagram of agricultural problems](image)

a) Name ONE (1) agricultural problem that is shown in the diagram above.

_____________________________________________________________________

(1 mark)

b) How heavy raining does cause the problem?

_____________________________________________________________________

(1 mark)
3. Use the following pictures to answer the questions that follow.

![Picture A and B](image_url)

a. **Picture B** is the result of action shown in **Picture A**. Name the poor farming practice shown in **Picture B**.

____________________________________________________________________________

(1 mark)

b. Fill in the table below using your understanding of the harmful effects of what is shown in **Picture B**

<table>
<thead>
<tr>
<th>Harmful Effect</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>i).</td>
<td>i).</td>
</tr>
<tr>
<td>ii).</td>
<td>ii).</td>
</tr>
</tbody>
</table>

(4 marks)
QUESTION TWO: PLANT PRODUCTION (20 Marks)

A. PLANT PROPAGATION (3 Marks)

1. Study the diagram below and then answer the questions that follow.

![Diagram of papaya plant]

a. What type of plant propagation does papaya belong to?

_________________________________________ (1 mark)

b. Outline TWO (2) seed selection criteria that you use for collection of your papaya seed.

i. ______________________________________________________________________

ii. ______________________________________________________________________ (2 marks)

B. PLANT NUTRITION (7 Marks)

a. Define the term **organic fertilizer**.

____________________________________________________________________________

____________________________________________________________________________ (1 mark)

b. Outline TWO (2) advantages of using organic fertilizer.

i. ______________________________________________________________________

ii. ______________________________________________________________________ (2 marks)
1. The graph shows how photosynthesis responds to increasing light intensity in C3, C4 and shaded plants. Use the information given in the graph to answer Questions a. and b.

a. Explain the difference between the rate of photosynthesis of C3 and C4 plants as they respond to increasing in light intensity.

____________________________________________________________________________
____________________________________________________________________________

(2 marks)

b. Recommend the type of plant that is suitable to be grown here in Tonga.

**Plant type:** ________

**Reason:**
____________________________________________________________________________
____________________________________________________________________________

(2 marks)
C. PLANT HEALTH

1. The diagram shows the life cycle of the Leaf miner.

a) Name an example of host plant that is damaged by the leaf miner

__________________________________________  (1 mark)

b) Which stage of leaf miner’s life cycle that damages the host plant?

__________________________________________  (1 mark)
Choose ONE (1) disease from the list below and use the strategies on page 20 to the answer questions that follow.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powdery mildew</td>
<td>squash</td>
</tr>
<tr>
<td>Damping off</td>
<td>seedling</td>
</tr>
<tr>
<td>Bunchy top</td>
<td>banana</td>
</tr>
<tr>
<td>Black leaf streak</td>
<td>banana</td>
</tr>
<tr>
<td>Anthracnose</td>
<td>yam</td>
</tr>
<tr>
<td>Bacterial wilt</td>
<td>tomato</td>
</tr>
</tbody>
</table>

a) Name of the disease: ______________________________

b) Name the **Causes** of the disease: ______________________________ (1 mark)

c) Briefly explain the symptom of the disease named in a.

____________________________________________________________________________
____________________________________________________________________________
(1 mark)

d) Choose ONE (1) cultural management practice and explain how it controls the disease that you have chosen.

i. Name of cultural management practice:

____________________________________________________________________________
(1 mark)

ii. How does it control the disease?

____________________________________________________________________________
____________________________________________________________________________
(1 mark)
D. ENVIRONMENTAL EFFECT  
(4 Marks)

Study the diagram below and then answer Questions a. to c.

a. Tomato plants are growing under control to overcome the harmful effects of heat stress in tropical countries like Tonga. Name the system where tomatoes are grown as shown in the diagram above.

______________________________  
(1 mark)

b. Outline TWO (2) ways of how the system above controls heat stress.

i.  ____________________________________________________________  

ii.  ___________________________________________________________  

(2 marks)

c. Explain ONE (1) side effect of how heat stress affects the growth of tomatoes.

__________________________________________________________________

__________________________________________________________________  

(1 mark)
QUESTION THREE: ANIMAL PRODUCTION (25 MARKS)

A. ANIMAL NUTRITION: (7 Marks)

1. The graph shows the changes in protein content of pastures during its growth cycle. The letters a-h represents a pasture at different growth stages.

a) At what pasture growth stage would you recommend for feeding lactating cows? Give a reason for your answer.

Growth stage: ______________
Reason: ____________________________________________________________________________
____________________________________________________________________________________

(2 marks)

b) Briefly describe the relationship between palatability and digestibility and the growth stage of pasture.

____________________________________________________________________________________
____________________________________________________________________________________

(1 mark)
2. Study the graph below and answer the following questions.

![Graph showing diet nutrient level (%) vs. animal's body weight (Kg)]

a. Explain the relationship between diet nutrient % and body weight as shown in the graph, above.

____________________________________________________________________________
____________________________________________________________________________

(2 marks)

b. Give **TWO (2)** recommendations that you will advise local animal farmers to maintain feeding at position X.

i. _______________________________________________________________________
____________________________________________________________________________

ii. _______________________________________________________________________
____________________________________________________________________________

(2 marks)
B. ANIMAL BREEDS AND BREEDING     (7 Marks)

1. Study the time of mating for cattle and answer the questions that follow.

![Diagram of time of mating for cattle]

a) What does **standing heat** mean?
____________________________________________________________________________
____________________________________________________________________________
(1 mark)

b) What is the best time for mating, which ensured that cow will get pregnant after mating?
____________________________________________________________________________
(1 mark)

c) Why is it too late to mate a cow after 28 hours from standing heat?
____________________________________________________________________________
____________________________________________________________________________
(2 marks)

2. Outline THREE (3) selection criteria to be considered in selecting of breeds for breeding.

i. __________________________________________

ii. __________________________________________

iii. __________________________________________

(3 marks)
C. ANIMAL HEALTH

(7 Marks)

1. The table below shows some type of disease, and their symptoms and control measures in pigs, chickens and cattle. Complete the table by writing the correct Microbial/Metabolic/Parasitic, symptoms and control measures in the appropriate box.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Name of Disease</th>
<th>Type of Disease (Metabolic, Microbial and Parasitic Disease)</th>
<th>Symptom</th>
<th>Control measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickens</td>
<td>Coccidiosis</td>
<td>i)</td>
<td>ii)</td>
<td>Good hygiene</td>
</tr>
<tr>
<td>Cattle /Pigs</td>
<td>iii)</td>
<td>Microbial Disease</td>
<td>Milk change into clots of pus</td>
<td>iv)</td>
</tr>
</tbody>
</table>

(4 marks)

2. Ticks are one of the most common Ecto-parasites found in cattle farms.
   a) Define the term Ecto-parasite.

   (1 mark)

   b) Give TWO (2) symptoms of an animal suffering from tick infestation.

   i. __________________________________________________________

   ii. _________________________________________________________

   (2 marks)
D. ANIMAL MANAGEMENT

3. The diagram below shows an ideal brooding unit layout. The location of chicks in the brooder is shown by small dots.

![Brooder Diagram]

a) Explain what condition in the brooder could result in the chick distributions shown in three diagrams below.

i. arrangement X: __________________________________________________

ii. arrangement Y: __________________________________________________

iii. arrangement Z: __________________________________________________

(3 marks)

b) Suggest ONE (1) way to overcome the problem in arrangement X.

____________________________________________________________________________

____________________________________________________________________________

(1 mark)
QUESTION FOUR: AGRICULTURAL INDUSTRY (8 MARKS)

A. POST HARVESTING & MARKETING (6 Marks)

1. The managing director of a milk factory had done some market research to find out what price consumers would be willing to pay for packaged whole milk, and how this would affect the amount of milk sold. Graph I below indicate the relationship between the price of milk (c/L) and the number of litres the factory could sell. Graph II shows how production cost (c/L) for the milk varies with the total amount of milk.

<table>
<thead>
<tr>
<th>Milk - Price to buy or cost to produce (c/L)</th>
<th>Milk sold/produced (Thousands of litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>2</td>
</tr>
<tr>
<td>150</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>6</td>
</tr>
<tr>
<td>50</td>
<td>8</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

a) Explain the relationship between price and quantity produced.

____________________________________________________________________________
____________________________________________________________________________

(1 mark)

b) Which quantity supplies, that milk factory makes profit, and loss?
   i. Profit: _____________
   ii. Loss: ______________

(2 marks)

c) Costs of production slightly increase at 1000-1400 litres of milk that is produced. Explain what happens in this situation.

____________________________________________________________________________
____________________________________________________________________________

(1 mark)
2. The table below shows the average price per kilogram ($/kg) of fruit vegetables for the third and fourth quarter of 2013 at Talamahu market. Study the Table carefully then answer the questions that follow.

<table>
<thead>
<tr>
<th>Crops /Months</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>0.92</td>
<td>0.90</td>
<td>0.85</td>
<td>0.80</td>
<td>0.75</td>
<td>0.70</td>
</tr>
<tr>
<td>Watermelon</td>
<td>1.27</td>
<td>1.32</td>
<td>1.35</td>
<td>1.38</td>
<td>1.40</td>
<td>1.45</td>
</tr>
<tr>
<td>Cucumber</td>
<td>1.31</td>
<td>1.3</td>
<td>1.28</td>
<td>1.30</td>
<td>1.32</td>
<td>1.33</td>
</tr>
</tbody>
</table>

a. Decrease of average price per kg of tomatoes was due to post harvesting problems. Give ONE (1) possible post harvesting process that could harm tomato produce. Explain how the process harms tomato produce.

i. Post harvesting process: __________________________________________________ (1 mark)

ii. How?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

(1 mark)
A. FINANCIAL MANAGEMENT  

Study and use the information on the cash flow budget to answer the following questions.

<table>
<thead>
<tr>
<th>Total cash flow budget of a dairy farm</th>
<th>Year 2011 ($)</th>
<th>Year 2012 ($)</th>
<th>Year 2013 ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash receipts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales of milk ($1.5/liter)</td>
<td>375</td>
<td>300</td>
<td>150</td>
</tr>
<tr>
<td>Loans to be received</td>
<td>1000</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>Other receipts</td>
<td>500</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total receipts</strong></td>
<td><strong>1875</strong></td>
<td><strong>2100</strong></td>
<td><strong>350</strong></td>
</tr>
<tr>
<td><strong>Cash payment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable costs</td>
<td>110</td>
<td>150</td>
<td>450</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>100</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total payment (before loan repayment)</strong></td>
<td><strong>210</strong></td>
<td><strong>350</strong></td>
<td><strong>650</strong></td>
</tr>
</tbody>
</table>

a) In what year(s) did the farm experience a loss?  
_________________________  
(1 mark)

b) Show all your calculations.

(1 mark)
# TONGA SCHOOL CERTIFICATE

## 2014

**AGRICULTURAL SCIENCE**

*(FOR MARKERS USE ONLY)*

<table>
<thead>
<tr>
<th>SECTIONS</th>
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<tr>
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<tr>
<td>B SHORT ANSWER</td>
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<tr>
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<td><strong>100</strong></td>
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