



Centre Number	Candidate Number

MINISTRY OF EDUCATION AND HUMAN RESOURCE DEVELOPMENT

SOLOMON ISLANDS SCHOOL CERTIFICATE

2019

AGRICULTURE

FRIDAY 15TH NOVEMBER 9.00 AM

**TIME: 3 Hours Plus 10 Mins
Reading Time.**

<u>SECTION</u>	<u>CONTENT</u>	<u>MARKS</u>
A	20 - Multiple Choice Questions	20
B	11 - Short Answer Questions	88
C	2 - Long Answer Question	18

	TOTAL	126

INSTRUCTIONS TO CANDIDATES

1. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. MAKE SURE BOTH YOUR CENTRE NUMBER AND CANDIDATE NUMBER ARE WRITTEN IN THE SPACES PROVIDED AT THE TOP RIGHT HAND CORNER AND ALSO ON THE BACK FLAP AT THE BACK OF THIS BOOKLET.
3. WRITE YOUR ANSWERS ON THE SPACES PROVIDED IN THIS BOOKLET.
4. DO NOT USE CORRECTION FLUID.
5. MOBILE PHONES ARE NOT ALLOWED IN THE EXAMINATION ROOM.

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

THIS BOOKLET CONTAINS 31 NUMBERED PAGES.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

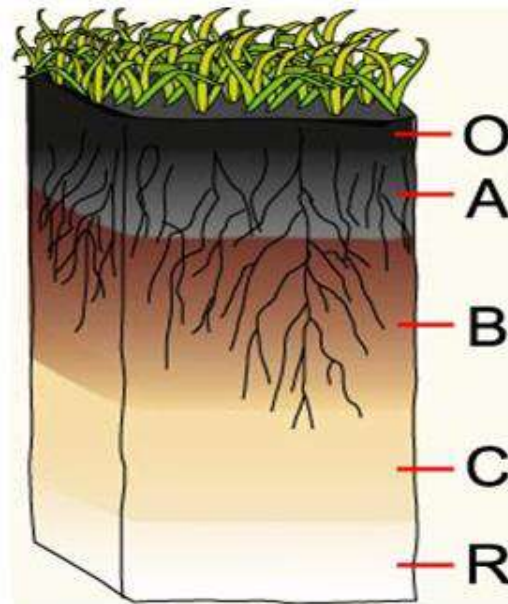
CIRCLE THE LETTER OF THE BEST ANSWER IN THE BOX PROVIDED IN THE BACK-FLAP.

1. One **key feature** of Horizon 'C' is;

- A. decomposition.
- B. high humus content.
- C. made up of large rocks.
- D. Rich in clay and minerals.

2. One **factor** affecting drainage in soil is;

- A. climate.
- B. soil type.
- C. precipitation.
- D. weather pattern.



3. Nutrient status of soil that is **degraded** can be improved by;

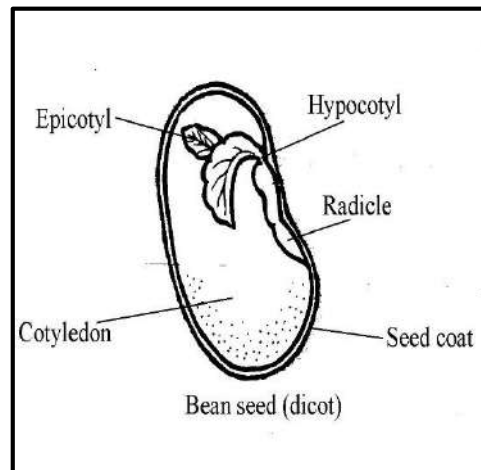
- A. deforestation.
- B. over-cultivation.
- C. use of green manure.
- D. burning rubbish from garden.

4. One **factor** that is NOT considered when selecting a suitable site to grow vegetables is;

- A. crop type.
- B. market price.
- C. water source.
- D. cat population.

5. The **function** of the part labelled seed coat on the diagram is;

- A. a specialized seed leaf.
- B. to protect content of seed.
- C. to store food and nutrients.
- D. the part of seed that is waiting to grow.



6. One significance of good seed bed preparation is for;

- A. crops to grow fast.
- B. crops to have high yield.
- C. seeds to germinate properly.
- D. protection against known pests.

7. One of the common root crop of Solomon Islands is;

- A. rice.
- B. cassava.
- C. pumpkin.
- D. chinese cabbage.

8. The insect shown in the diagram below is a;

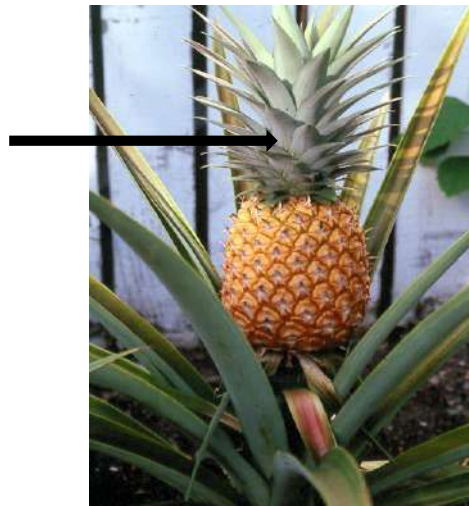
- A. Lady bird.
- B. Cocoa borer.
- C. Rhinoceros beetle.
- D. Sweet Potato Weevil.



9. The part labelled 'X' is called a;

- A. Slip
- B. Crown
- C. Aerial sucker
- D. Ground sucker

X



10. One of the common uses of cocoa beans in Solomon Islands is;

- A. for mulching.
- B. as animal feeds.
- C. in food and drinks.
- D. production of gas.

11. One ADVANTAGE of **Criollo Cocoa** variety is;

- A. high yielding.
- B. high quality cocoa.
- C. resistance to disease.
- D. mostly grown variety in Solomon Islands.

12. The MOST important requirement that contributes towards successful animal production is;

- A. proper feeding.
- B. large space for mating.
- C. big size breeding stock.
- D. protecting animals from thieves.

13. The ADVANTAGE of **ruminant digestion** in farm animals like cattle is;

- A. digestion is fast.
- B. to get energy quicker.
- C. to increase digestive use of starch.
- D. to increase efficiency of food extraction processes.

14. The function of **magnum** in the production of egg is;

- A. the fertilization of the ovum.
- B. a shell added around content of egg.
- C. addition of thick white (albumen) around yolk.
- D. formation of inner and outer shell membrane.

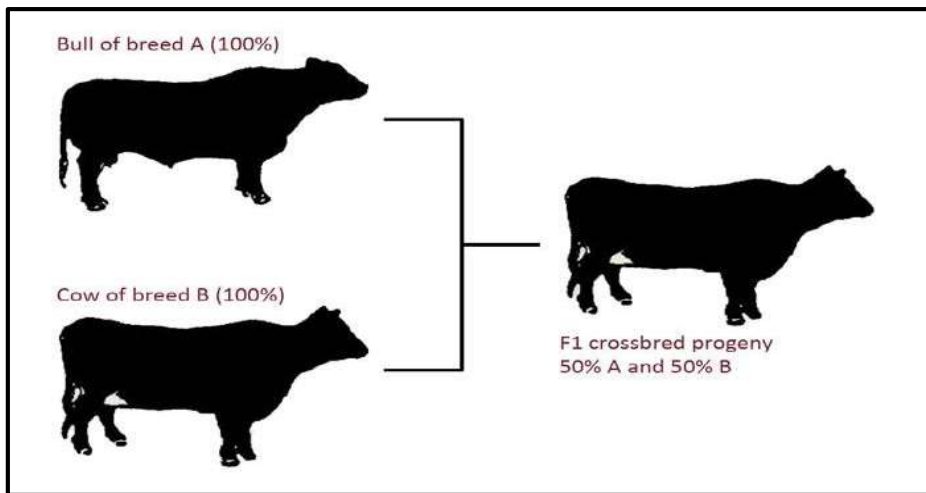
15. Livestock farmers are encouraged to grow legume and grasses together in pastures. One possible reason for this practice is to;

- A. increase palatability.
- B. reduce starvation in cattle.
- C. protect animal against diseases.
- D. increase the value and quality of pasture.

16. The grass species shown in the picture is _____ grass.

- A. Para
- B. Batiki
- C. Guinea
- D. Elephant





17. What type of **breeding programme** could the above diagram represent?

- A. In-breeding.
- B. Line breeding.
- C. Cross breeding.
- D. Progeny testing.

18. Basically, gene can be defined as;

- A. unit of heredity.
- B. inward expression of traits.
- C. outward expression of traits.
- D. a small section containing cell.

Study the Punnet square of a monohybrid crossing below to answer question (19).

	G	g
G	GG	Gg
g	Gg	gg

Assumptions

If allele 'G' is yellow colour and allele 'g' is green colour, then 'gg' have green phenotype, 'GG' and 'Gg' has yellow phenotype.

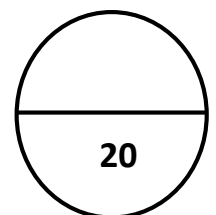
19. What could be the typical **phenotypes ratio** of the above crossing?

- A. 3 yellow :1 green
- B. 2 yellow :1 green
- C. 1 yellow :2 green
- D. 1 yellow :1 green

20. Basically, **growth** in animal can be referred to as;

- A. change in shapes.
- B. change in body conformation.
- C. change in various functions and faculties.
- D. increase in weight until mature size is reached.

Total marks for MC Q1-Q20



SECTION B: SHORT ANSWER QUESTIONS (88 MARKS)

THIS SECTION CONSISTS OF 11 QUESTIONS WHICH ARE WORTH 87 MARKS. ENSURE THAT YOU ANSWER ALL QUESTIONS BRIEFLY BUT CLEARLY IN THE SPACES PROVIDED.

21. INTRODUCTION TO AGRICULTURE

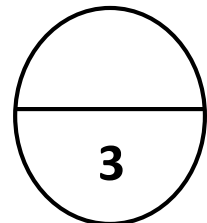
A. State ONE (1) **factor** which makes agriculture important.

(1 mark)

B. Explain why lack of farming area is a **limitation** to school agriculture.

(2 marks)

Total marks for Section B: Q.21



22. SOILS

A. Provide any ONE (1) importance of soil.

(1 mark)

B. Name any ONE (1) organism found in the soil.

(1 mark)

C. Describe ONE (1) way in which the **moisture content** in soil can be changed.

(2 marks)

D. Explain how the types of plants that are grown affect the amount of water in the soil.

(2 marks)

E. Discuss how **mulching practice** helps to keep the soil fertile.

(3 marks)

F. Explain how **crop rotation** can help improve soil structure.

(2 marks)

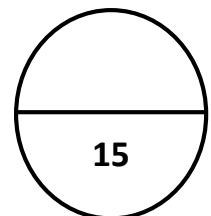
G. Describe any ONE (1) **practice** that can help to reduce soil fertility.

(2 marks)

H. Explain how **deforestation** can cause soil erosion.

(2 marks)

Total marks for Section B: Q. 22



23. VEGETABLES

A. Write down any TWO (2) ADVANTAGES of trench digging when growing vegetables.

(i) _____

(ii) _____

(2 marks)

B. List any TWO (2) things that need to be done after sowing seeds in the seed boxes.

(i) _____

(ii) _____

(2 marks)

C. Write down any TWO (2) **factors** for successful germination.

(i) _____

(ii) _____

(2 marks)

D. Write down TWO (2) ways to **protect seedlings** from extreme heat.

(i) _____

(ii) _____

(2 marks)

E. Study the picture given of a common pest of seedlings in the nursery.



i. Name the **pest** shown above:

(1 mark)

ii. List any ONE (1) alternative **control measure** for the pest shown, apart from use of chemicals.

(1 mark)

F. Damping-off disease normally affects seedlings. Explain any ONE (1) **possible solution** for protecting seedlings from the disease.

(2 marks)

G. List any TWO (2) **importance** of hardening-off seedlings prior to planting out in the field.

(i) _____

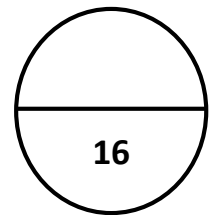
(ii) _____

(2 marks)

H. Describe how weeding as a **preventive approach** can assist to control diseases in your vegetable farm.

(2 marks)

Total marks for Section B: Q.23



24. ROOT CROPS

A. List any ONE (1) DISADVANTAGE of growing root crops.

(1 mark)

B. Explain any ONE (1) **factor** to consider when selecting quality of cassava planting materials.

(2 marks)

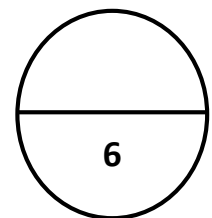
C. Identify ONE (1) **way** that would help to obtain a continuous supply of root crops.

(1 mark)

D. Describe any ONE (1) **way** to ensure that root crops can be stored successfully for longer period of time.

(2 marks)

Total marks for Section B: Q24

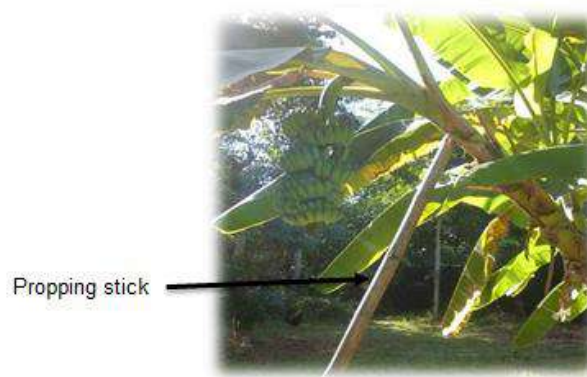


25. **FRUITS**

A. Define the term 'ratoon crop'.

(1 mark)

B. What could be the possible reason for using this **practice** as shown in the picture below?



(1 mark)

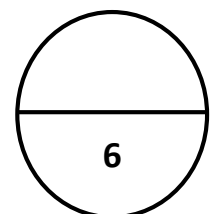
C. Explain the appropriate way of harvesting banana to avoid damaging the bunch.

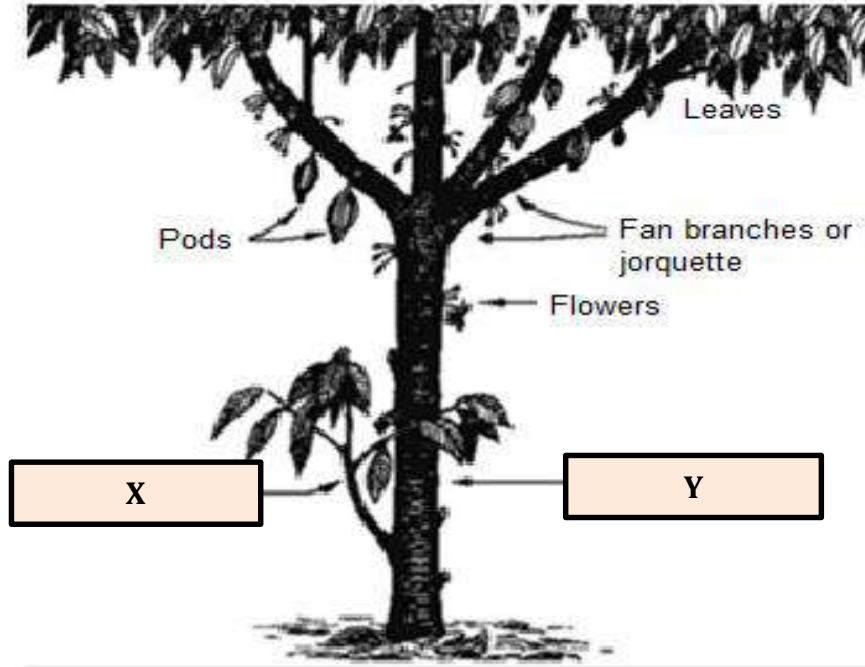
(2 marks)

D. Describe what a pineapple fruit looks like when it is ready to harvest.

(2 marks)

Total marks for Section B: Q25





26. COCOA

A. Name the **parts of cocoa tree** labelled 'X' and 'Y' in the diagram above.

i. X : _____

ii. Y : _____ (2 marks)

B. List any ONE (1) **feature** of a suitable site for growing cocoa.

(1 mark)

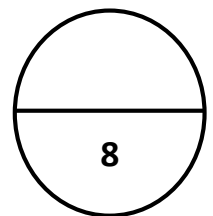
C. Describe an appropriate way to harvest cocoa pods.

(2 marks)

- D. State THREE (3) things you should consider when using fermenting boxes to ferment cocoa beans.

(3 marks)

Total marks for Section B: Q26



27. INTRODUCTION TO ANIMAL HUSBANDRY/NUTRITION

A. Write down any ONE (1) **feature** associated with traditional animal raising.

(1 mark)

B. Explain how **ruminants (e.g. a cow)** digest food.

(2 marks)

C. Study the table given below on a sample feeding regime for layer birds and answer questions (i-ii) that follow;

Type of feed	1 – 8 weeks old	9 - 22 weeks old	23 - 72 weeks old
Starter			
Pullet grower			
Layer			

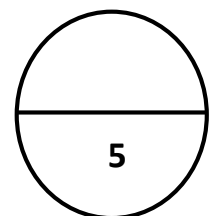
i. What is the **duration** of giving starter feed to the layer birds according to the table above?

(1 mark)

ii. When should the birds starts laying eggs according to the table above?

(1 mark)

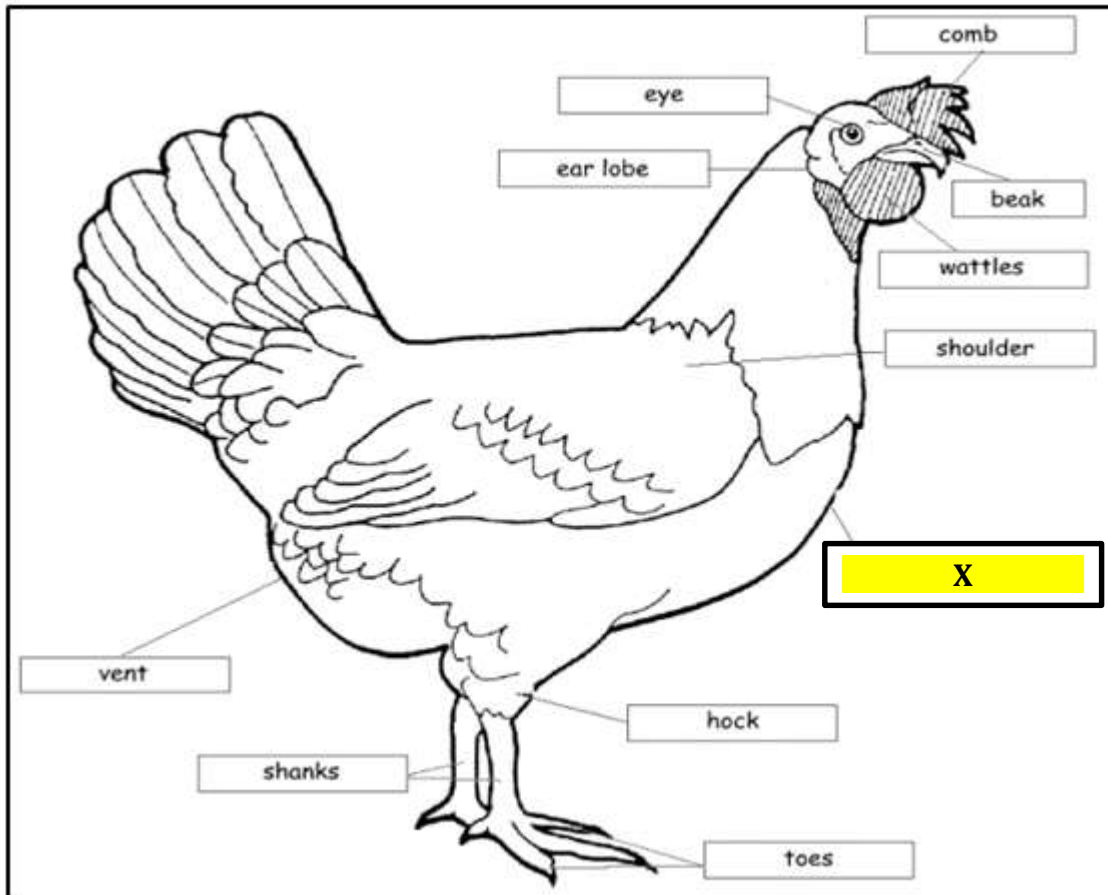
Total marks for Section B: Q27



28. POULTRY – (OPTION 1)

A. Define the term 'dual purpose' in poultry.

(1 mark)



B. Name the part of the poultry bird labelled 'X' in the diagram above.

X: _____ (1 mark)

C. List down any ONE (1) ADVANTAGE of raising local poultry.

(1 mark)

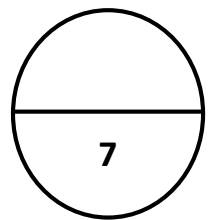
D. Write down any ONE (1) **feature** associated with intensive system of raising poultry.

(2 marks)

E. Describe any ONE (1) **aspect** of deep litter management in an intensive system of raising poultry.

(2 marks)

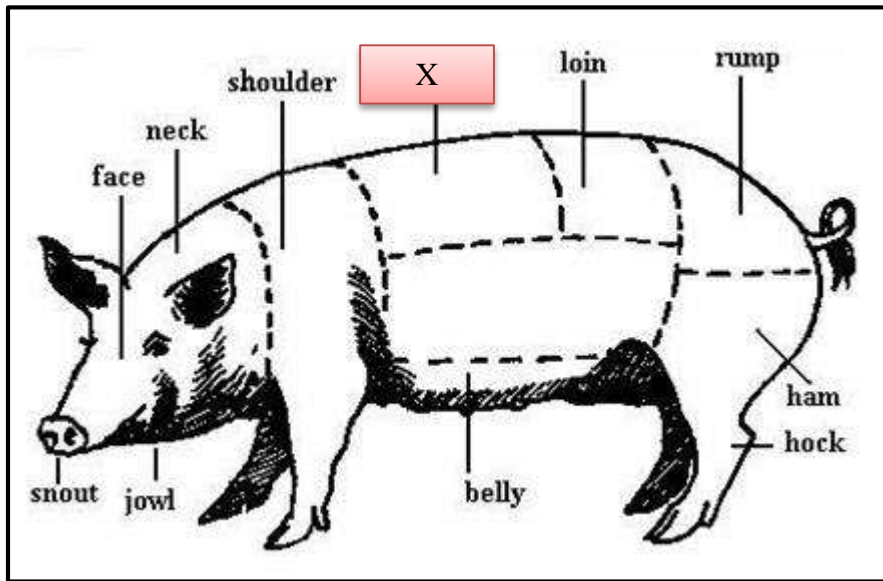
**Total marks for Section B: Q.28
(OPTION 1)**



28. PIG PRODUCTION - (OPTION 2)

A. Define the term 'sow'.

(1 mark)



B. Name the part of the pig labelled 'X' in the diagram above.

X: _____ (1 mark).

C. Write down ONE (1) ADVANTAGE of raising local pigs.

(1 mark)

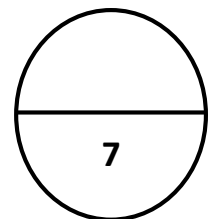
D. Explain why **disease and parasite prevention** is important for successful pig production.

(2 marks)

E. Describe any ONE (1) **feature** associated with intensive system of raising pigs.

(2 marks)

**Total marks for Section B: Q.28
(OPTION 2)**



29. CATTLE AND PASTURE

A. List any ONE (1) **feature** of natural grassland.

(1 mark)

B. Explain the **estrous cycle** of the cow.

(2 marks)

C. List any ONE (1) **ADVANTAGE** of breeding cattle in the Solomon Islands.

(1 mark)

D. Explain the **importance** of carbohydrate in cattle feed.

(2 marks)

E. Give reason why there is a need to have a continuous supply of water for cattle.

(1 mark)



F. Study the tool shown above and state its MAIN **function** in relation to cattle management.

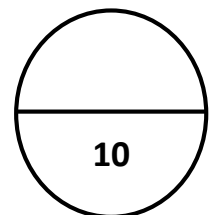
(1 mark)



G. The above picture shows a consequence of poor cattle management. Describe ONE (1) **management practice** the farmer can do to avoid the above situation from happening again on the farm.

(2 marks)

Total marks for Section B: Q.29



30. GENETICS

A. Explain the **difference** between genotype and phenotype.

(2 marks)

B. Give reason why it is important to consider the selection of breeding stock based on their traits.

(1 mark)

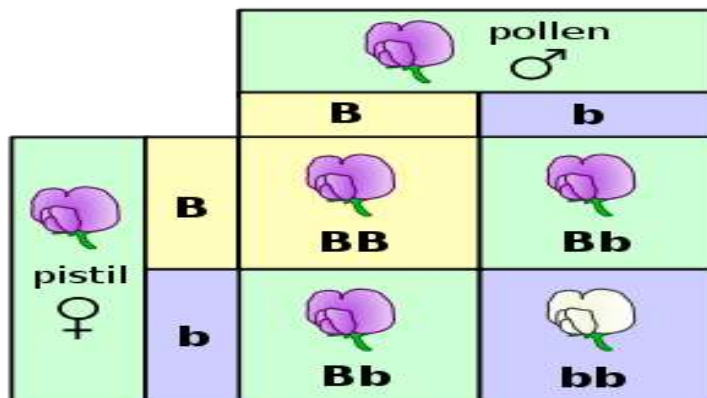
C. Write down any ONE (1) application of genetics.

(1 mark)

D. Explain the **concept** of artificial insemination in animal breeding.

(2 marks)

E. Study the **crossing** shown in the Punnett Square and answer the question below.

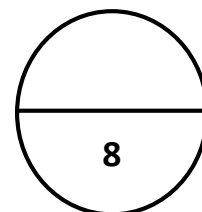


What do the following **genotypes** represent as indicated in the above crossing?

- BB: _____
- Bb: _____

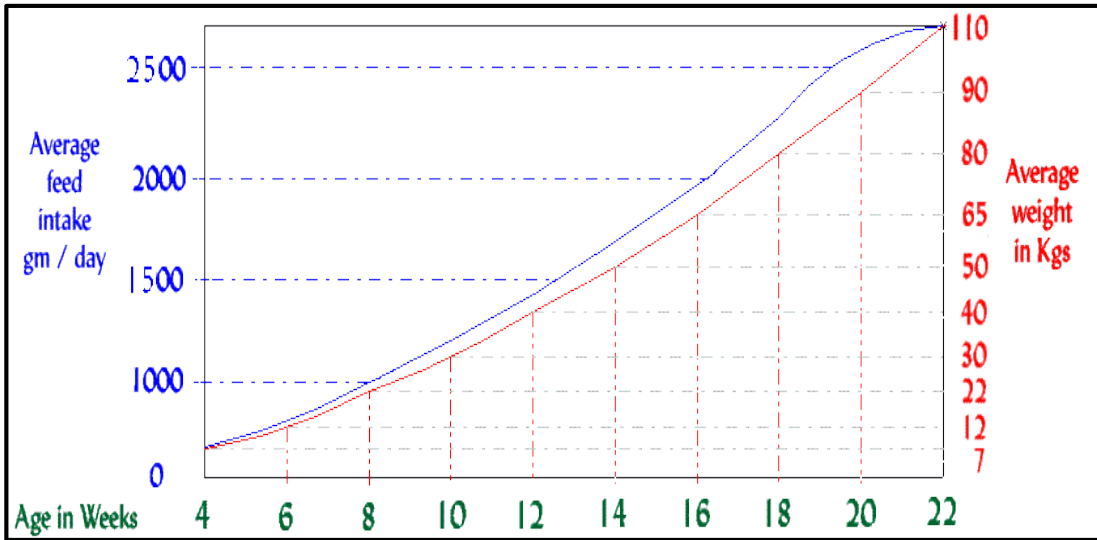
(2 marks)

Total marks for Section B: Q.30



31. ANIMAL GROWTH AND DEVELOPMENT

This chart indicates the average feed intake and growth rate for commercial grower pigs. The blue line in this chart shows the average daily feed intake for a growing pig from week 4 to week 22. The red line shows the average weight for a growing pig during the same period.



Study the chart above and answer questions (A-B) that follow.

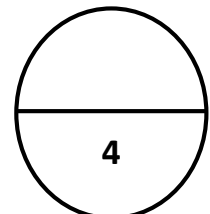
- A. What is the **appropriate time** to slaughter a pig reared for pork normally about 50 kg live weight?

(2 marks)

- B. Explain any ONE (1) **factor** which influence growth and development in animal from fetus to adult.

(2 marks)

Total marks for Section B: Q.31



SECTION C: LONG ANSWER QUESTIONS

(18 MARKS)

THIS SECTION CONSISTS OF 2 QUESTIONS WORTH 18 MARKS. ENSURE THAT YOU WRITE YOUR ANSWERS IN THE SPACES PROVIDED.

32. COCONUTS

Use the information given in the table below to answer questions (A – D) that follow.

Situational analysis of Mr Cornelius coconut plantation	
1.	10 hectares of coconut plantation. 5 hectares are planted in the 1980s and poorly maintained and needs replacement. 5 hectares of coconut are planted in the 1990s, partly maintained but still producing heavy nuts. Mr Cornelius had other plans in mind to divert plantation to accommodate the planting of Cocoa.
2.	Coconut plantation partly having problems with button nuts and beetles. There are a lot of decaying coconut trunk and rotting trees littering the plantation.
3.	Currently planning to establish a pre-nursery and nursery in pursue of replacing the old coconuts.
4.	Current coconut variety used and grown is local tall but hybrid variety available from a farmer next door.
5.	Planting of coconuts not conform to any required planting system.
6.	There are incidences of coconut being blown by strong winds because they are not planted in proper planting holes but placed on the surface to grow to mature trees.
7.	Newly constructed copra drier available with capacity of 5 bags per round.
8.	Honourable Member of Parliament funded a coconut oil processing unit called Virgin oil, but not currently utilized. Apart from that, he owned a chainsaw, OBM boat and engine and other basic agriculture tools.

A. Rhinoceros beetle had been partly a problem with respect to insect pest. Identify TWO (2) **practices** that Mr. Cornelius should do to control the pest.

(i) _____

(ii) _____

(2 marks)

B. State THREE (3) **advice** you can give Mr. Cornelius to consider when selecting nuts for his pre-nursery.

(i) _____

(ii) _____

(iii) _____

(3 marks)

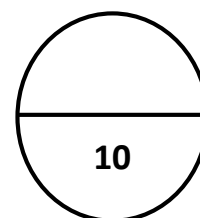
C. Explain the reason for setting up a coconut seedling nursery.

(2 marks)

D. What would you advise Mr. Cornelius on how to utilize the virgin coconut oil processing unit that remains unused?

(3 marks)

Total marks for Section C: Q32



10

33. FARM MANAGEMENT

A. Explain the importance of having goals in farming business.

(2 marks)

B. Give TWO (2) examples of short term goals that Mr. Cornelius should have in mind when trying to run a farming business.

(i) _____

(ii) _____

(2 marks)

C. Justify the importance of **keeping records** in farming business.

(2 marks)

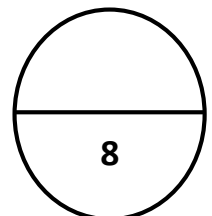
D. Give any TWO (2) examples of fixed costs that Mr. Cornelius may have had incurred in his farming business.

(i) _____

(ii) _____

(2 marks)

Total marks for Section C: Q33



SISC – AGRICULTURE 2019

**SECTION A: MULTIPLE CHOICE
(20 MARKS)**

Write the letter of the correct answer in the box provided. Make sure your answer is put alongside the right question number.

Example: If you consider A is the correct answer, write it like this:

A

To change your answer from A to C, cross out A and write the new answer C beside the box, like this:

~~A~~ **C**

- | | | | |
|-----------|----------------------|-----------|----------------------|
| 1 | <input type="text"/> | 11 | <input type="text"/> |
| 2 | <input type="text"/> | 12 | <input type="text"/> |
| 3 | <input type="text"/> | 13 | <input type="text"/> |
| 4 | <input type="text"/> | 14 | <input type="text"/> |
| 5 | <input type="text"/> | 15 | <input type="text"/> |
| 6 | <input type="text"/> | 16 | <input type="text"/> |
| 7 | <input type="text"/> | 17 | <input type="text"/> |
| 8 | <input type="text"/> | 18 | <input type="text"/> |
| 9 | <input type="text"/> | 19 | <input type="text"/> |
| 10 | <input type="text"/> | 20 | <input type="text"/> |

CENTRE NUMBER

CANDIDATE NUMBER

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FOR MARKERS USE ONLY

SECTION	MARK	MARKER	CHECKER
A. Q.1-20	20		
B. Q.21	3		
Q.22	15		
Q.23	16		
Q.24	6		
Q.25	6		
Q.26	8		
Q.27	5		
Q.28	7		
Q.29	10		
Q.30	8		
Q.31	4		
C. Q.32	10		
Q.33	8		
TOTAL	126		
Marker / Checker Initials			