

Mine
60

CEDROS SECONDARY SCHOOL
END OF TERM EXAM.
FORM 5

AGRICULTURAL SCIENCE
(Single-Award)

General Proficiency

Paper 02

2 hours

READ THESE DIRECTIONS CAREFULLY

1. There are nine questions in this booklet, six in Section I and three in Section II. Answer ALL questions.
2. Each question in Section I carries 4 marks. Each question in Section II carries 12 marks.
3. For each question in Section I, write your answer in the space provided. For each question in Section II, write your answer in the Answer Booklet provided. Attach the Answer Booklet to the Question paper and return them at the end of the examination.

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SECTION I

Answer ALL questions.

Write your answers in the spaces provided.

1. (a) (i) What does the acronym HACCP represent?
Hazard Analysis & Critical Control point
(1 mark)

(ii) State ONE benefit of HACCP to agriculture.
- analyse hazards
- identify critical control points
- establish preventative measures
- establish corrective actions
- ensure food safety
(1 mark)

(b) Farmer Rudy has a crop of tomatoes for export. He is advised to adhere to HACCP principles before his tomatoes will be accepted for export.

Advise Farmer Rudy on TWO principles of HACCP which he should adopt.

- identify & prevent hazards from contaminating food
- take responsibility to ensure food safety
(2 marks)

Total 4 marks

2. A poultry farmer, desiring to take advantage of economies of scale, decides to increase the number of birds she rears. She needs to secure capital to do this.

(a) State ONE economic factor of production, OTHER THAN capital.
Land, Labour, management
(1 mark)

(b) One type of capital in agricultural business is working capital. Name the OTHER type of capital.
 durable or fixed
(1 mark)

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(c) Give TWO reasons to show how the acquisition of capital could allow the farmer to improve the profitability of her poultry business by taking advantage of economies of scale.

- (i) Increase the size of land under production / No. of poultry houses
- (ii) Increase labour force
improve land

(2 marks)

Total 4 marks

3. (a) (i) What is the smallest inorganic component of soil?

clay (1 mark)

(ii) Name ONE OTHER inorganic component of soil.

silt, sand, fine gravel
gravel, stone (1 mark)

(b) Table 1 gives the percentage of soil particles in a soil sample. Study the data and answer the questions that follow.

TABLE 1: COMPOSITION OF SOIL SAMPLE

Percentage	Particles (mm)
18%	Less than 0.002
12%	0.002 - 0.02
54%	0.02 - 0.2
16%	0.2 - 2.0

(i) Identify the soil type from the data in Table 1.

sandy clay, sandy soil (1 mark)

(ii) Suggest ONE method, with a reason, of managing this soil to improve its productivity.

- add OM - improves structure and water holding capacity
- mulch - conserve soil water (1 mark)

Total 4 marks

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4. (a) Figure 1 shows a cross-section of a monocotyledonous stem.

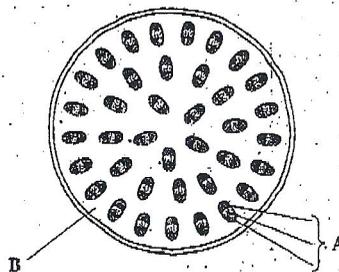


Figure 1. Cross-section of a monocotyledonous stem

Identify the structures labelled A and B in Figure 1.

- A: Vascular bundle
 B: cortex (2 marks)

- (b) Students conduct an experiment, using the following procedure.

Step 1: A potted plant is put in a dark cupboard for three days.

Step 2: Two leaves of the plant are then covered with foil, and the plant is put in sunlight for three days.

At the end of the three days in Step 2, the covered leaves and the uncovered leaves are quickly tested for starch.

- (i) Why is the potted plant put in a dark cupboard?

so that it will not be exposed to sunlight to perform photosynthesis (1 mark)

- (ii) What would be the results of the test for starch on the covered leaves?

Covered leaves no starch present (1 mark)

Total 4 marks

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5. The egg shell is one of several components of a hen's egg which functions to maintain its wholesomeness.

(a) (i) Name ONE OTHER component of the egg.

~~inner~~ inner membrane

(1 mark)

(ii) State the function of the component named in (a)(i) above.

gives the egg its shape

(1 mark)

(b) Thin shell is a common problem in egg production. Identify ONE OTHER shell defect and briefly explain its effect on the shelf life of eggs.

walk shell - predisposes egg to disease infection

(2 marks)

Total 4 marks

6. (a) (i) Name ONE species of freshwater fish reared in the Caribbean.

tilapia, ~~cas~~ cascadura

(1 mark)

(ii) Name ONE method used to harvest fish in aquaculture.

net/seine

(1 mark)

(b) Mr. Davis started an aquaculture farm with five hundred fingerlings. He followed the recommended feeding practices as advised by the local fishery officer. After one year his pond was almost dry and his fish yields were poor. Briefly explain what advice the Fisheries Officer should give to the farmer with respect to water supply.

- reliable and readily available supply

- clean

- neutral to alkaline pH

- pollution free

- spillways needed to avoid overflow

(2 marks)

Total 4 marks

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SECTION II

Answer ALL questions.

Write your answers in the booklet provided.

7. (a) (i) What is meant by the term, 'gross farm income'?

- (ii) Distinguish between gross margin and net profit.

(3 marks)

- (b) Farmer Tiwary presents the following list of his sales and expenses for you to categorise.

Description	Value (\$)
Land preparation	1,210
Sale of bulls	3,500
Sale of milk	19,600
Repairs to brushcutter	720
Farm produce used in home	4,100
Fuel for tractor	1,350
Sale of vegetables	18,700
Depreciation on farm machinery	520
Interest on bank loan	2,250
Sale of manure	1,600
Manager's salary	17,000
Insurance	145
Seeds, chemicals	2,000
Depreciation on milking machine	750

- (i) Construct a table with the following headings in your answer booklet:

- Fixed costs
- Variable costs
- Farm income

Use the table to categorise the list of sales and expenses.

- (ii) Calculate Farmer Tiwary's gross farm income and net farm income.

Show ALL your working.

(9 marks)

Total 12 marks

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8. (a) Briefly explain the main difference between 'mixed farming' and 'mixed cropping'.
(1 mark)
- (b) Plantation crops are normally planted in monoculture. List TWO disadvantages of monoculture.
(2 marks)
- (c) An agronomist advised a farmer to intercrop papaya (paw paw) with pumpkin using organic farming. Explain giving THREE reasons why this may be considered an acceptable crop combination.
(6 marks)
- (d) Identify THREE ways by which the farmer can maintain the fertility of his field using practices compatible with organic farming methods.
(3 marks)

Total 12 marks

9. (a) In the deep litter system of broiler production, bagasse is commonly used as the litter in pens.
Give ONE reason for using litter and name TWO OTHER materials that are suitable for use as litter in poultry pens.
(3 marks)
- (b) After 10 days, the chicks in the school's broiler unit show signs of listlessness, and the faeces contain streaks of blood.
(i) Suggest the name of the disease affecting the chicks, and identify ONE OTHER symptom of the disease.
(ii) How should the birds be treated to overcome the disease?
(iii) Suggest THREE measures to be taken to avoid a recurrence of the disease when introducing a new batch of chicks.
(6 marks)
- (c) Two students, Tim and Eva, are working on a rabbit project. Tim observes lots of hard and soft faeces in the rabbit pen. This continues over a period of time and eventually some of the rabbits die.
Explain what may have caused the death of the rabbits.
(3 marks)

Total 12 marks

END OF TEST

8a) Mixed farming - rearing livestock & planting crops
Mixed cropping - cultivation of more than one type of crop at the same time on a piece of land.

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b) 2 disadvantages of monoculture

- ① same nutrients are used up, leading to soil exhaustion
- ② exposes the farmer to risk of inadequate income from low price.
- ③ crop failure means a complete loss for the farmer.

c) 3 reasons for intercropping

- ① pumpkin provides ground cover & reduces weeds.
- ② pumpkin has insect repellent properties
- ③ pumpkin adds OM from leaf litter
- ④ maximum use of available space