

Agri science June 2010 Paper 2

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SECTION I

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

1. (a) An attractive way of supporting farmers with incentives is to provide them with farm inputs.

List TWO OTHER ways by which Caribbean governments can offer incentives to farmers.

Subsidies

Price supports

Other answers: Tax exemptions on inputs.

(2 marks)

- (b) Sustainable agriculture promotes the farm as a well-managed economic unit, thereby reducing farmers' dependence on subsidies.

Suggest TWO OTHER positive contributions made by sustainable agriculture.

**It promotes conservation and preservation of resources.
it reduces pollution and supports biodiversity.**

(2 marks)

Total 4 marks

2. Agriculture makes very significant contributions to the development of national, regional and international economies.

- (a) List TWO contributions which agriculture can make to the national economy.

Provision of employment

Provision of food security

Other answers: Contribution to GDP, reduction of food import bill, earning and saving or foreign exchange, creation of downstream industries

(2 marks)

- (b) Suggest TWO ways by which the Ministry of Agriculture can support young people who are involved in agricultural production.

Provision of subsidies/inputs

Access to land

Other answers: provision of credit/loans; provision of extension services; opportunities for education/training; assisting farmers with marketing of produce through provision of transportation; promoting agricultural tours and competitions that target young people.

(2 marks)

Total 4 marks

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3. Soil erosion occurs as a result of the actions of wind and water.

(a) Explain how water causes soil erosion.

Rain falls on bare soil, or water flows over bare soil due to flooding etc.

This removes the topsoil.

(2 marks)

(b) Mulch, when used as a soil erosion control method, harbours pests. Conservation techniques such as strip cropping, however, do not present such problems.

Suggest TWO OTHER conservation techniques that can be used to reduce soil erosion.

Contour tillage and drains

Planting of cover crops

(2 marks)

Total 4 marks

4. (a) The germination of seeds is affected by the depth at which they are planted.

List TWO OTHER factors which affect the germination of seeds planted in the field.

Soil oxygen content

Soil moisture content

Other answers: Soil temperature

(2 marks)

(b) In an experiment, a student observes that the germination of seeds is higher in new, unused seedling trays than in trays which have been previously used.

(i) Suggest ONE reason that may account for this observation.

The trays may have had pathogens that killed the seedlings before

they emerged.

(1 mark)

(ii) Describe ONE measure the student can undertake to improve the germination of seeds sown in seedling trays which have been previously used.

Sanitation of the trays

(1 mark)

Total 4 marks

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5. Figure 1 shows the digestive tract of two different species of farm animals.

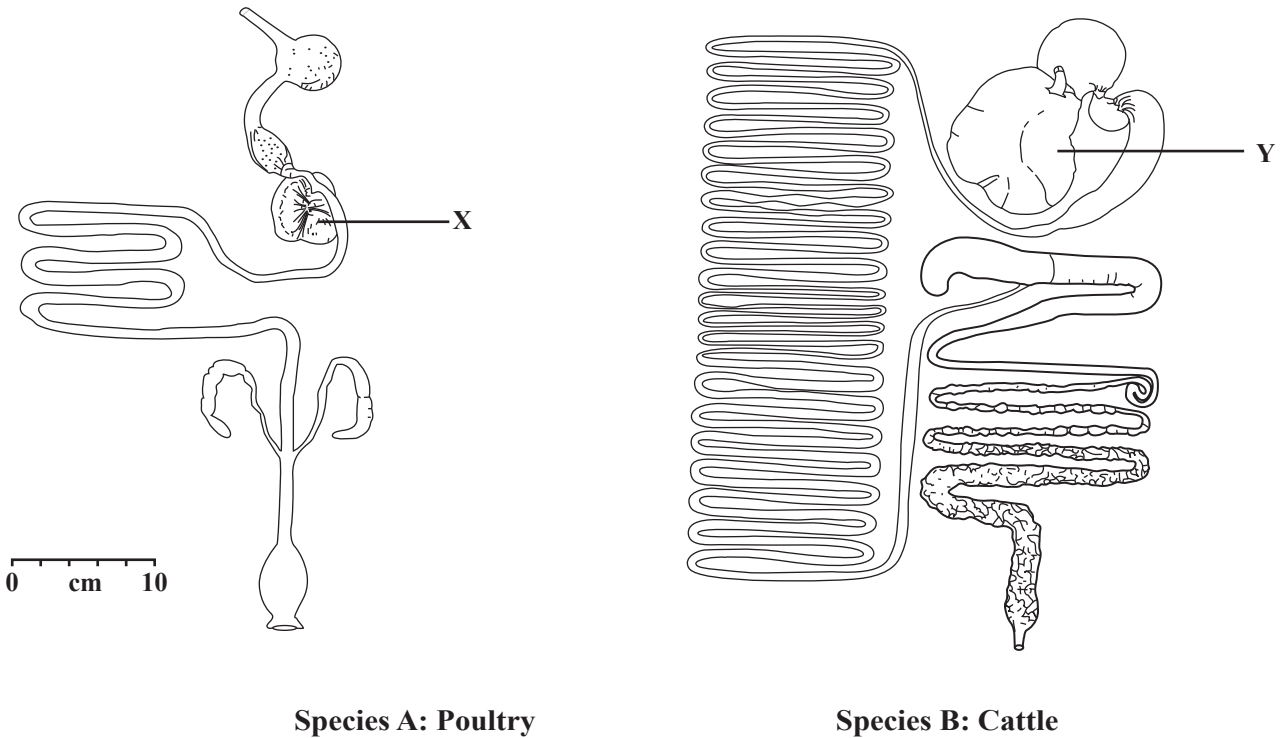


Figure 1. Digestive tract of two species of animals

(a) State the names of the parts of the digestive tract labelled X and Y respectively in Figure 1.

X **Gizzard** (1 mark)

Y **Rumen** (1 mark)

(b) A farmer feeds to Species B a ration which consists mainly of grass. Give ONE reason why Species B will be better able to utilize this feed.

Microbes in the rumen digest the cellulose in the grass.

The resulting glucose is used by the animal for energy.

(2 marks)

Total 4 marks

6. (a) Some forages fed to animals are para, antelope, stylosanthes and kudzu.

Name ONE legume and ONE grass from the list of forages above.

Grass *Para Antelope is also an answer*

Legume *Stylosanthes Kudzu is also an answer*

(2 marks)

(b) The decrease in forage production during a prolonged dry period resulted in a 20% reduction in milk production.

Advise farmers on TWO measures which should be taken during the next **rainy** season to correct this problem.

Forage conservation (haymaking and silage production)

Fertilization of native pastures

Other answers: Use of intensive zero-grazing rearing systems

(2 marks)

Total 4 marks



SECTION II

Answer ALL questions in this section.

Write your answers in the answer booklet provided.

7. Study the graphs in Figure 2 and Figure 3 and answer the questions that follow.

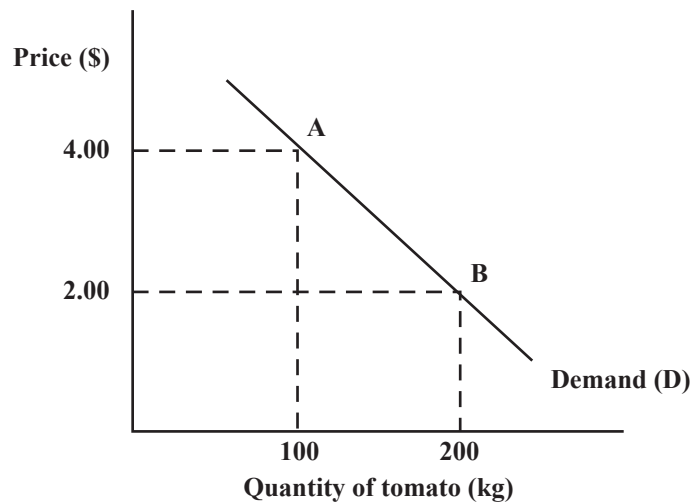


Figure 2. Demand graph

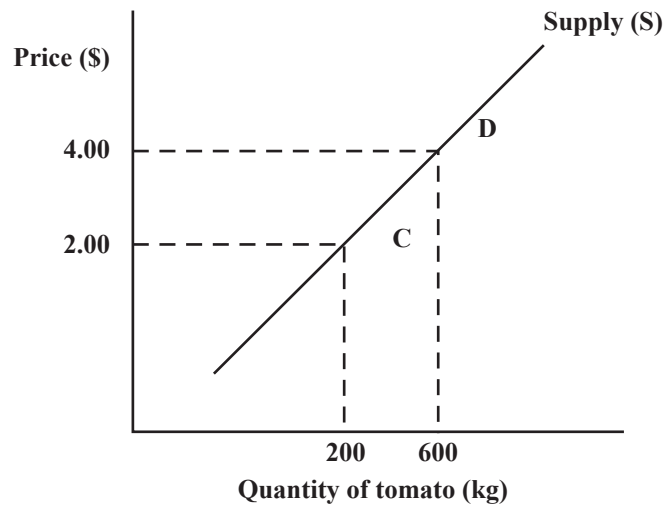


Figure 3. Supply graph

- (a) Using price and quantity, explain what is happening at point B of Figure 2.
At price \$2.00, a quantity of 200 kg of tomato would be demanded. (2 marks)
One mark each for mention of specific price and quantity.

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Note for (iii): the question asks how the farmer would respond IF THE PRICE RISES FROM \$2.00 TO \$4.00. It DOES NOT ask how the farmer would respond IF THE CONSUMER REDUCED THE AMOUNT OF TOMATOES BOUGHT.

- (b) If the price of tomato increases from \$2.00 to \$4.00:
- (i) What will be the quantity demanded?
100 kg DO NOT LEAVE OUT THE UNIT.
 - (ii) Suggest TWO ways by which the consumer will respond to the increase in price.
Purchase less tomatoes; seek a cheaper vendor
 - (iii) How will the farmer MOST likely respond?
Offering more tomatoes for sale; increasing production
 - (iv) What will be the quantity supplied? **(5 marks)**
200 kg DO NOT LEAVE OUT THE UNIT.
- (c) Suggest TWO measures which Caribbean governments can take to prevent the scarcity of tomato. **(2 marks)**
Any two of the following: import tomatoes; encourage farmers to increase production of produce year round remove taxes and offer subsidies on inputs.
- (d) State the law of diminishing returns, using an example of a crop grown on a farm. **(3 marks)**
In tomato production, if fertilizer usage is continually increased by 1 additional unit while all other inputs are kept constant, the marginal output of tomatoes will increase to a maximum level, and then start decreasing. **Total 12 marks**

The example must be incorporated into the definition. The example could be any crop with one of its inputs e.g. fertilizer

8. (a) Weeds are described as unwanted plants and if they are not controlled they have adverse effects on crop production.

List THREE ways by which weeds can affect the growth and yield of crops.

Competition for nutrients; deprivation of sunlight; denial of optimum spacing **(3 marks)**

- (b) Farmer Dillon cultivates maize (corn) on a two-hectare plot of land. He controls weed growth with a locally available weedicide.
- (i) Categorize weedicide use as either manual, mechanical, chemical or cultural control.
Chemical
 - (ii) After continued use of the weedicide, Farmer Dillon observed that the broad leaf weeds had disappeared but other weeds persisted. Give TWO likely reasons for this observation.
Weeds developed resistance to the chemicals; a selective herbicide was used.
 - (iii) Describe TWO cultural practices Farmer Dillon can use on his farm to control weed growth. **Any two of the following: mulching; intercropping; high planting density; ploughing before planting.**
 - (iv) Identify TWO methods of mechanical weed control. **(9 marks)**
Ploughing; hand-weeding

Total 12 marks

9. (a) (i) State the incubation period for broiler eggs.
21 days
- (ii) What is the purpose of candling hatching eggs?
To check development of the chick embryo
- (iii) Name the specific type of ration fed to hens that are laying.
Laying ration (3 marks)

(b) Figure 4 shows one-day-old chickens in a brooding area.

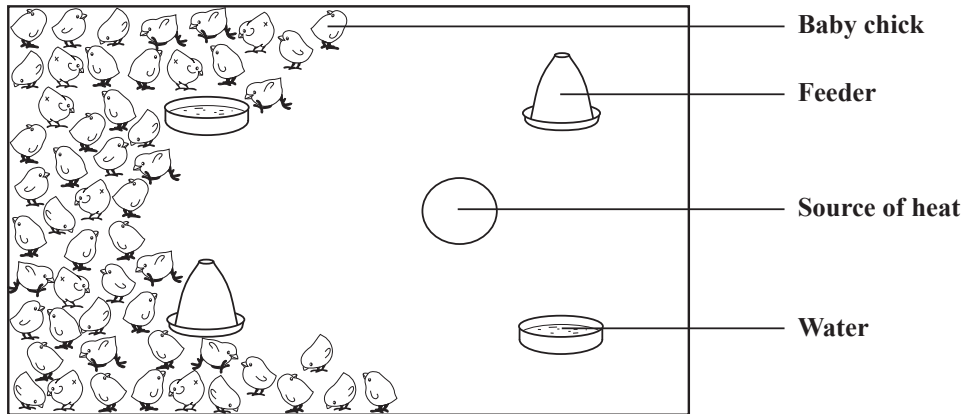


Figure 4. Baby chicks in a brooder

Identify ONE problem shown in Figure 4 and suggest how the problem could be corrected.

Problem: too much heat from the heat source; solution: raise the heat source (2 marks)
higher

- (c) A new poultry farmer recently lost many birds during the brooding period. He believes that the feed and litter quality were inadequate. Advise him on how he should manage his birds during this brooding period. Your answer should include TWO practices for feed and TWO practices for litter quality. (4 marks)
Feed: should be free from mold; should be from a reputable manufacturer
Litter: should be clean; should be dry
- (d) The farmer also observed bloody droppings in the litter.

- (i) Identify the disease MOST likely affecting the birds.
Coccidiosis
- (ii) Advise the farmer on TWO management practices to correct this problem.
Use coccidiostats; ensure clean, dry litter. (3 marks)

Total 12 marks

END OF TEST

