UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **5038/12**

Paper 1 **October/November 2012**

1 hour 45 minutes

Candidates answer Section A on the Question Paper.

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.
You are advised to spend no longer than 1 hour on Section A.

Section B
Answer any **two** questions.
Write your answers on the Answer Booklet/Paper provided.
Enter the numbers of the Section B questions you have answered in the grid below.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

	For Examiner's Use
Section A	
Section B	
Total	

This document consists of **20** printed pages.

Section A

Answer **all** the questions in this section.

1 Fig. 1.1 shows the water cycle.

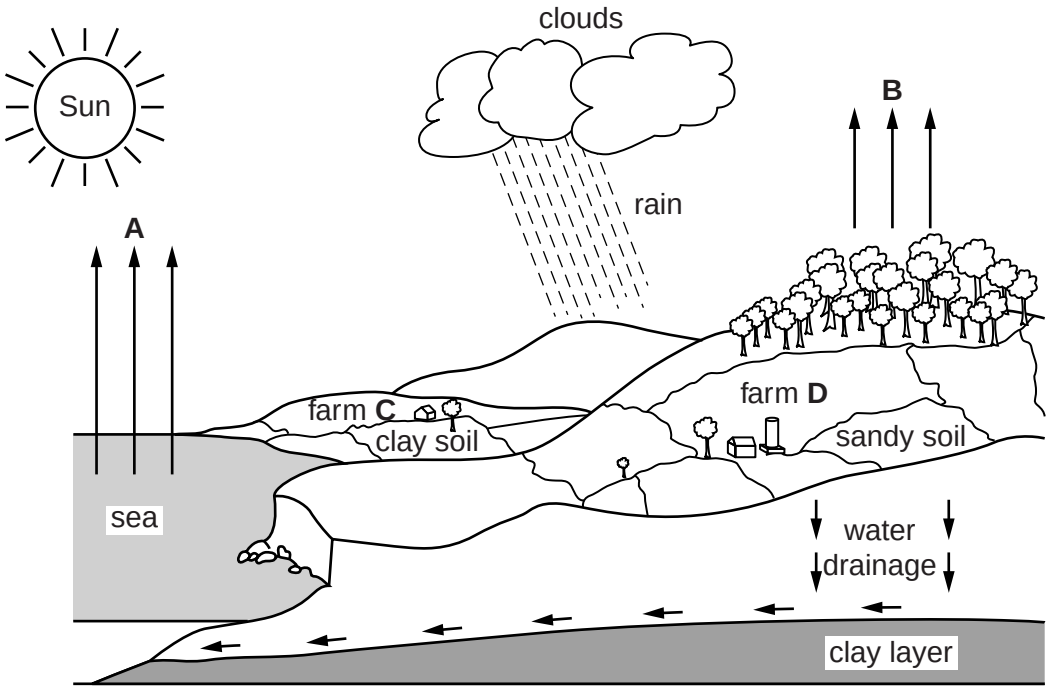


Fig. 1.1

(a) Name the processes occurring at **A** and **B**.

A .....

B ..... [2]

(b) Farm **C** is on clay soil. Farm **D** is on sandy soil.

(i) Cereal crops germinate more quickly at farm **D**.

Suggest a reason for this.

.....

..... [1]

(ii) Both farmers irrigate their fields.

State **one** disadvantage of too much irrigation

at farm **C**, ...

.....

at farm **D**. .....

[2]

(c) The farmer at farm **D** plans to cut down the trees on the hill above the farm and [illegible] the land in order to grow crops.

Suggest two reasons why the yield from crops grown there might be poor.

1 .....

.....

2 .....

.....[2]

[Total: 7]

2 Fig. 2.1 shows preparations for a soil pH test being carried out.

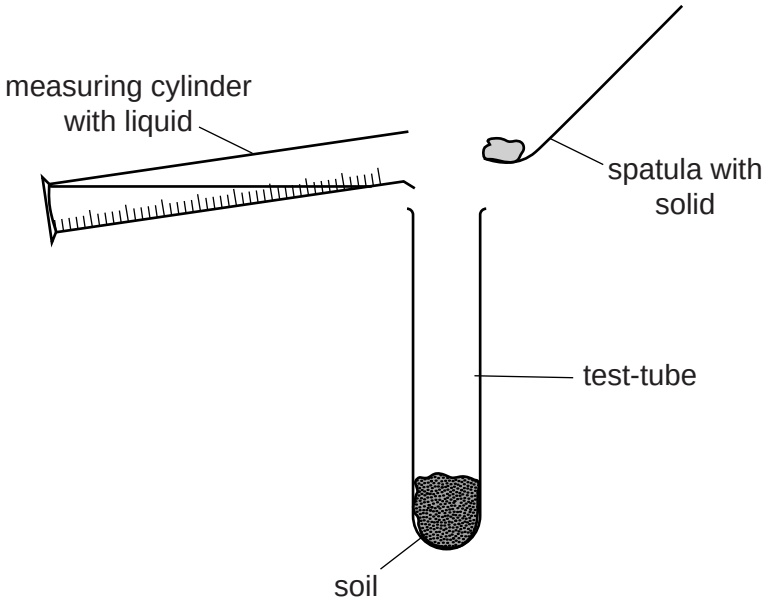


Fig. 2.1

(a) When testing a soil sample for pH, what must be added to the soil in the test-tube **before** adding the pH indicator?

..... and .....

Choose **one** item from each list.

list one – liquids	**list two – solids**
bottled water	barium chloride
deionised (distilled) water	barium sulfate
salt water	calcium carbonate
tap water	calcium sulfate

[2]

(b) The table shows a colour chart for use with a pH indicator.

indicator colour	orange	yellow	bright green	dark green
pH value	5	6	7	8

(i) A pH test was carried out on a neutral soil.

What is the pH value? ..... [1]

(ii) Lime was then added to this soil.

What colour would the pH indicator go? ..... [1]

(c) LAN (limestone ammonium nitrate) is a common fertiliser used to improve soil fe

Explain what can happen to the soil if such a fertiliser is used frequently and to excess

.....

.....

.....[2]

[Total: 6]

3 **(a)** Complete the sentence below. Select your answer from the list.

active transport **diffusion** **osmosis** **plasmolysis**

The movement of molecules from an area where they are in high concentration to an area where they are in low concentration is called ..... . [1]

(b) Fig. 3.1 shows a cross-section of a plant root.

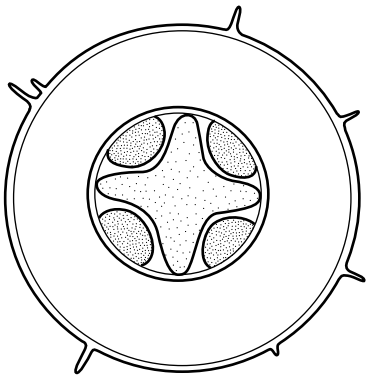


Fig. 3.1

(i) Using a label and line, indicate clearly on Fig. 3.1 the position of the xylem. [1]

(ii) Describe how molecules of oxygen can move from the soil to the centre of the root.

.....

.....

.....[2]

(c) Outline the process of translocation in a plant.

.....

.....

.....

.....[3]

(d) Suggest how the roots might be adapted in plants growing in very dry conditions.

.....

.....[1]

[Total: 8]

4 Fig. 4.1 shows a selection of tools used in agriculture.

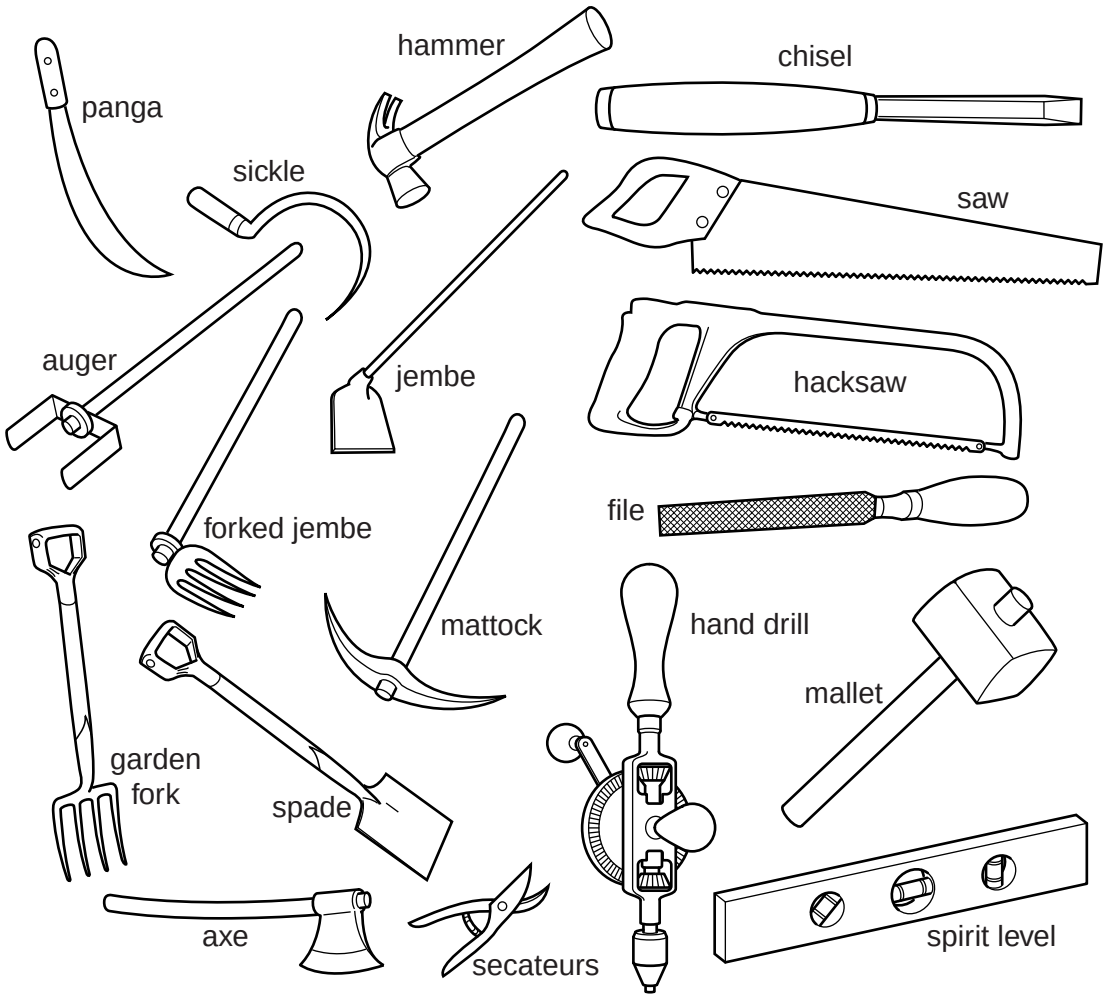


Fig. 4.1

(a) Select two tools from Fig. 4.1 that you would use when clearing the bush for a garden plot.

1 ..... 2 ..... [1]

(b) Complete the table below for a crop that is grown locally.

name of crop .....

method of planting	
spacing required	
type of fertiliser used	
method and timing of fertiliser application	

[4]

(c) Explain how a **named** crop plant reproduces asexually.

name .....

.....

.....[2]

[Total: 7]

5 **(a)** Fig. 5.1 shows the digestive system of a pig, a non-ruminant.

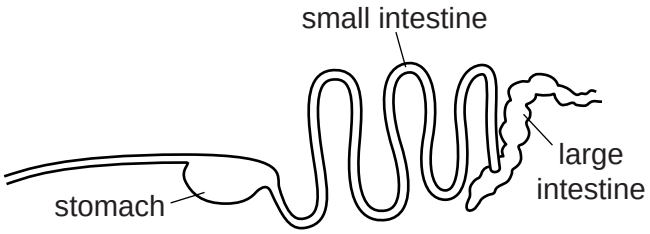


Fig. 5.1

(i) Name the part where both food **and** water are absorbed.

.....[1]

(ii) Name the part in which the contents are most acidic.

.....[1]

(iii) State the function of bile.

.....[1]

(b) Fig. 5.2 shows the digestive system of a ruminant.

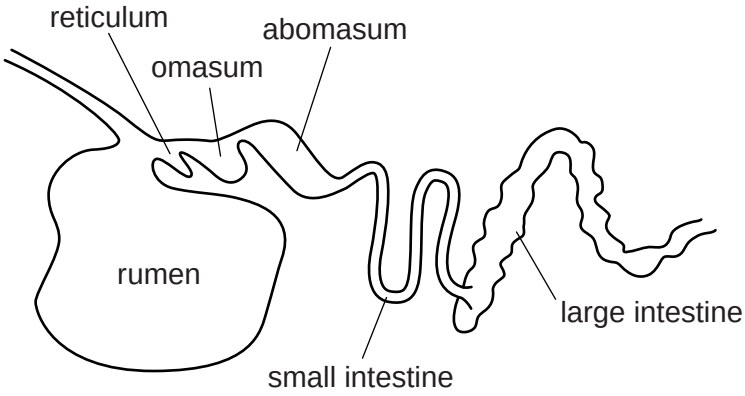


Fig. 5.2

State three differences you can see in the digestive systems shown in Fig. 5.1 and Fig. 5.2.

1 .....

.....

2 .....

.....

3 .....

.....[3]

(c) Farming practices release gases that can contribute to 'global warming'.

Fig. 5.3 is a pie chart comparing the amount of these gases released by different farming practices.

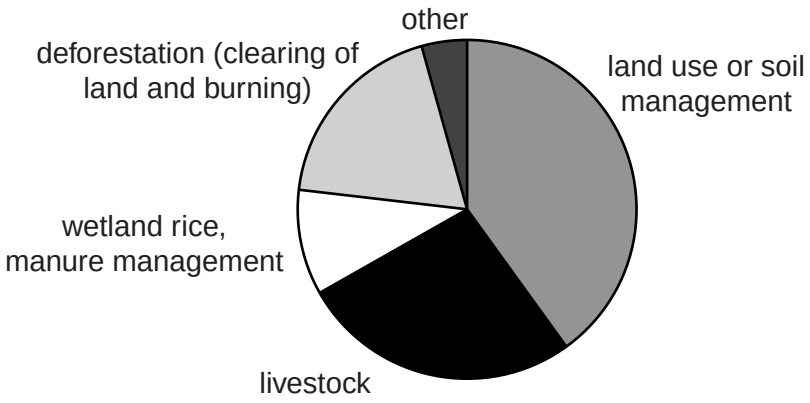


Fig. 5.3

Which farming practice gives 25% of the total gas released?

..... [1]

(d) Fig. 5.4 is a chart that compares the amount of one of these gases, methane, re... by different types of livestock.

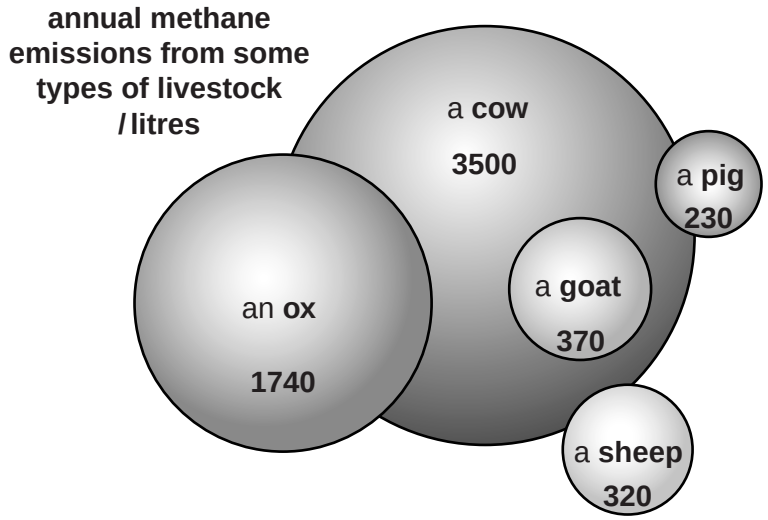


Fig. 5.4

(i) Approximately how much methane is released by a cow compared with a sheep?

A about four times as much

B about seven times as much

C about nine times as much

D about eleven times as much

Answer = ...[1]

(ii) A pig is larger than a sheep or a goat yet a pig releases less methane.
Suggest a reason for this.

.....

.....[1]

[Total: 9]

6 **(a)** Young calves need 'hard feed' in **addition** to milk from their mothers.

From the list **A**–**G** choose **two** things that are required of this 'hard feed'.

A high carbohydrate content

B high fibre content

C high moisture content

D high protein content

E low bulk

F low fat content

G good taste/palatable

..... and .....[2]

(b) Later in life animals are fed specific rations.

Which of the following describes a maintenance ration?

H food to keep an animal in production

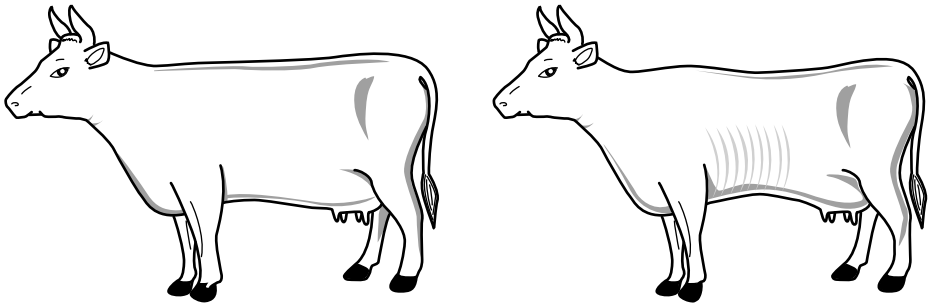
J food to keep an animal healthy and a constant weight

K food to maintain an animal's fertility

L food to provide extra minerals in the diet

Answer = ...[1]

(c) Fig. 6.1 shows two young cows. Both have been well fed and well looked after.



M N

Fig. 6.1

Animal **N** is thin.
State **two** observations, other than weight loss, that would indicate this animal was suffering from an infectious disease.

.....

.....

.....

.....[2]

(d) What is meant by a *notifiable* or *scheduled* disease?

.....

.....[1]

(e) Large animals like cows and pigs have to be handled in order to treat them.

(i) Explain how large animals should be handled to ensure the handler's safety.

.....

.....

.....[2]

(ii) Explain how you should approach a large animal.

.....

.....

.....[2]

[Total: 10]

7 **(a)** Which word describes the smallest 'unit' of inheritance that controls one characte

A chromosome

B gamete

C gene

D phenotype

Answer = ...[1]

(b) Fig. 7.1 shows the offspring that result from the crossing of two homozygous (pure breeding) varieties of rabbit.

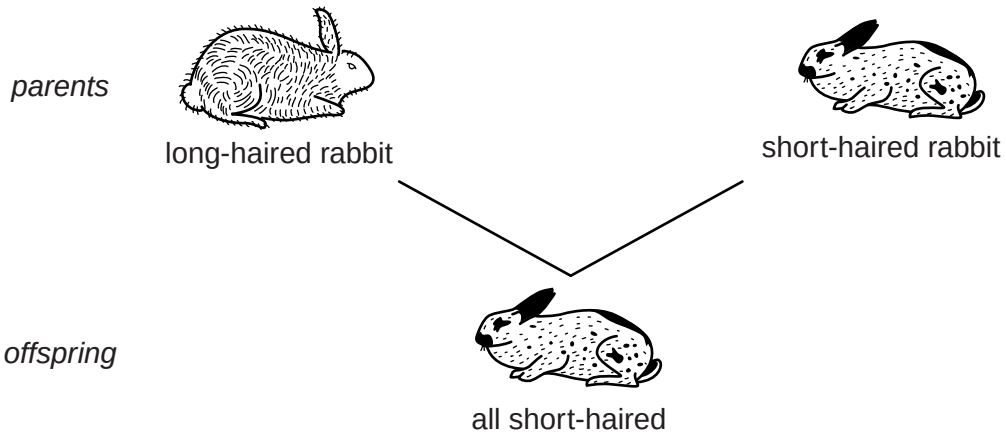


Fig. 7.1

(i) State why there are no long-haired offspring.

.....[1]

(ii) The offspring were allowed to mate with each other.
Explain why some of the next generation were long-haired.
Space is provided for any diagrams you want to draw.

.....

.....

.....[3]

(iii) A rabbit breeder wanted to have only long-haired rabbits.

Describe how this could be achieved.

.....

.....[2]

(c) A study was carried out on the food intake and growth of New Zealand rabbits from birth to eight weeks old.

The results are in Table 7.1.

Table 7.1

	weekly food intake		body weight	
age (weeks)	**doe (mother) and all young in litter (kg)**	**young rabbit (g)**	**total mass of all young rabbits in litter (kg)**	**average mass of an individual young rabbit (g)**
1	1.91		0.45	56.7
2	2.29		1.09	136.2
3	2.31		1.91	239.0
4	3.10	313	4.40	550.0
5	5.24	417	7.08	885.0
6	7.00	378	9.80	1226.0
7	8.02	428	12.35	1544.0
8	9.31	467	15.61	1952.2

(i) Explain why there are no figures for food intake for a young rabbit in weeks 1 to 3.

.....

.....[1]

(ii) Comment on the food intake of a young rabbit in weeks 4–8.

.....

.....[1]

(iii) Use the body weight data in Table 7.1 to work out how many rabbits were in the litter.
Show your working.

.....[2]

[Total: 11]

8 Fig. 8.1 shows a livestock house.

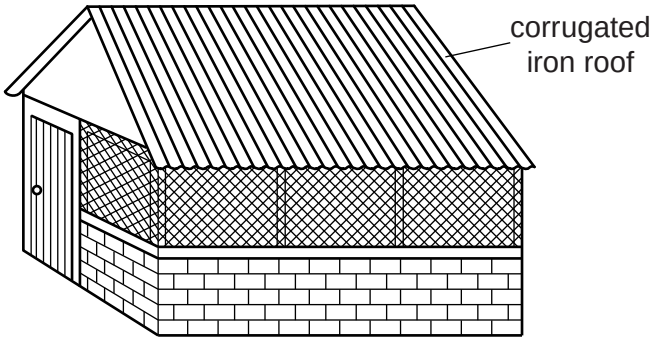


Fig. 8.1

(a) (i) What will be improved by replacing the corrugated iron roof with thatch?

A control of pests

B insulation

C light penetration

D ventilation

Answer = ...[1]

(ii) Why has wire been used rather than glass for the windows?

E to let air into the house

F to keep the house warmer

G to keep out harmful insects

H to let light into the house

Answer = ...[1]

(iii) State **two** advantages of using blocks for the walls of the house rather than wood.

.....

.....

.....

.....[2]

(b) Fig. 8.2 shows a livestock house near a dam.

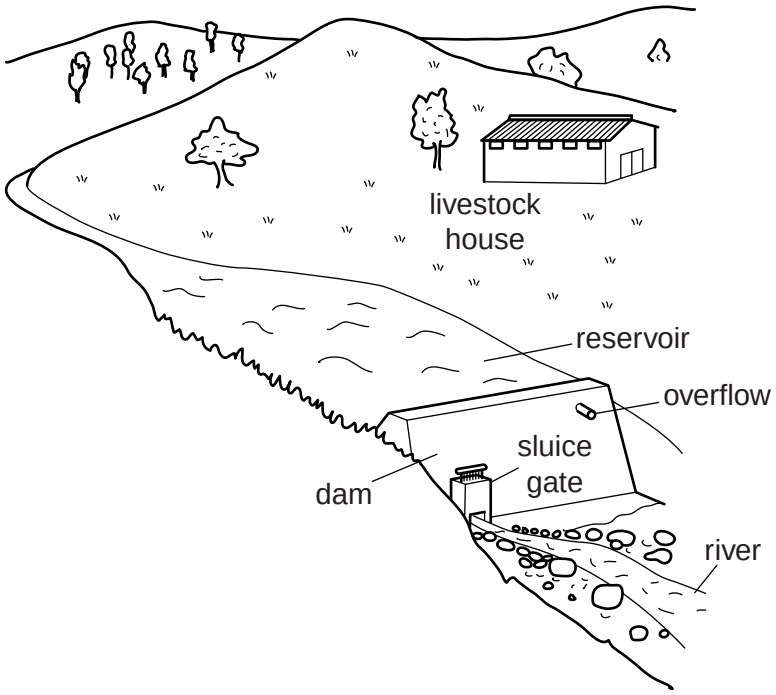


Fig. 8.2

(i) Describe how water under constant pressure could be supplied from the reservoir to the livestock house.

.....

.....

.....[2]

(ii) Explain how the supply of water to the troughs and drinkers used by the animals inside the livestock house could be controlled.

.....

.....

.....[2]

[Total: 8]

9 **(a)** What happens to the price of goods if their supply increases and the demand for [illegible] steady?

A The price will drop.

B The price will remain stable.

C The price will rise quickly.

D The price will rise slowly.

Answer = ...[1]

(b) Table 9.1 shows some financial records for a mixed farm.

Table 9.1

purchases and expenditure		**sales and receipts**	
item	**cost $**	**item**	**cost $**
cattle replacements	210.0	cattle meat	175.0
poultry replacements	87.0	milk	350.0
seeds	50.0	eggs	171.0
fertilisers	25.0	cabbages	112.0
poultry feeds	60.0	beans	100.0
cattle feed	15.0		
medicines for cattle	90.0		
medicines for poultry	6.0		
wages	197.0		
rent	10.0		
total	750.0	total	908.0
		profit	158.0

Forecasts predict that over the next 5 years:

- the demand for meat will decrease
- the demand for cabbages, beans and eggs will increase
- the cost of fertiliser and feed will rise.

Changes in production will have to be made on this farm if it is to stay in profit over the next five years.

(i) Suggest how the farmer should change cattle production.

.....

.....[1]

(ii) The farmer decided to grow fewer cabbages and more beans.
Suggest a reason why.

.....

..... [1]

(iii) Would you recommend changing egg production?
Give a reason for your answer.

.....

..... [1]

[Total: 4]

Section B

Answer any **two** questions.

Write your answers on the separate paper provided.

10 **(a)** What is meant by the term *monoculture*? [2]

(b) Describe how crops can be genetically modified. [5]

(c) State the arguments for and against organic crop production. [8]

11 **(a)** What is meant by and what causes a soil pan? [4]

(b) Explain how chemical weathering contributes to soil formation. [5]

(c) Describe the properties of a clay soil. [6]

12 **(a)** Describe the life cycle, effect and spread of a named biting and chewing pest that affects crops. [8]

(b) What is meant by *biological pest control*? [3]

(c) Explain the advantage of biological control over chemical control. [4]

13 **(a)** Define the term *lactation*. [2]

(b) Describe the process of birth in a named mammalian farm animal. [7]

(c) Explain how selective breeding can improve livestock. [6]

14 **(a)** What is meant by *rotational grazing*? [3]

(b) Describe a local pasture suitable for grazing, and include the names of plants and grasses found in this pasture. [7]

(c) Explain the effect on pasture of **intensive** grazing. [5]