

Centre Number	Candidate Number	Name
---------------	------------------	------

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**AGRICULTURE**

**5038/01**

Paper 1

May/June 2003

**2 hours**

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 soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

**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 **three** questions.  
Write your answers on the separate Answer Paper provided.  
At the end of the examination, fasten all your work securely together. Enter the numbers of the Section B questions you have answered in the grid below.

The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
<b>Section A</b>	
<b>Section B</b>	/
<b>Total</b>	

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

This document consists of **15** printed pages and **1** blank page.

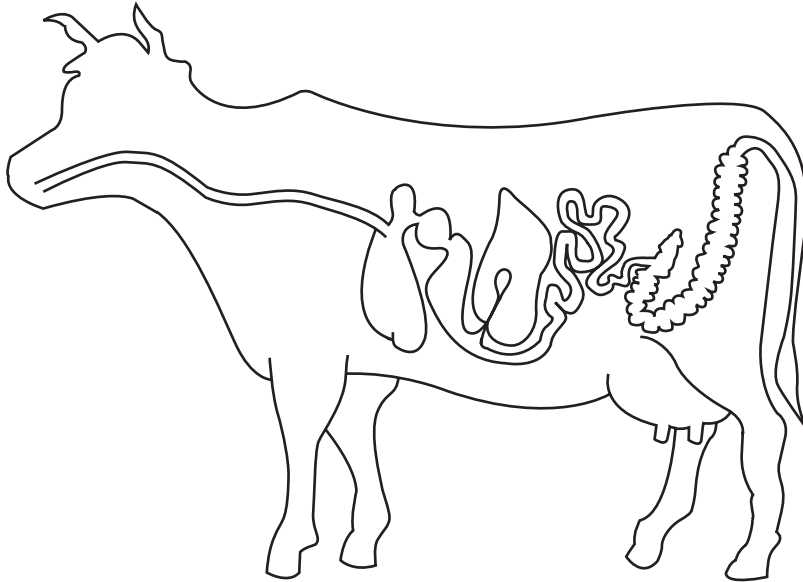


**Section A**

Answer **all** the questions.

Write your answers in the spaces provided.

**1** Fig. 1.1 shows the digestive system of a ruminant.



**Fig. 1.1**

**(a)** On Fig. 1.1, label

**(i)** the reticulum,

**(ii)** the abomasum.

[2]

**(b)** What is the function of the abomasum?

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

(c) Fig. 1.2 shows the composition of an animal feed in a bag.

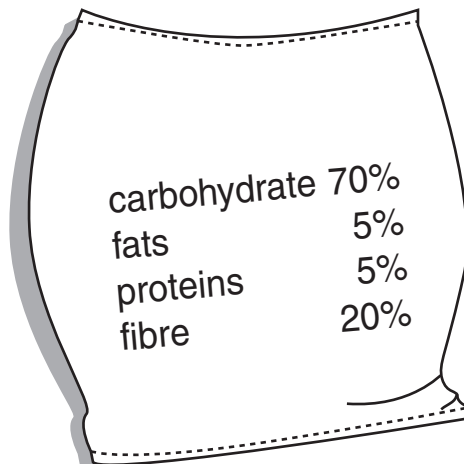


Fig. 1.2

(i) Name **one** substance in this feed whose main function is to provide energy.

.....[1]

(ii) In a ration to improve meat production, which substance in this feed should be increased?

.....[1]

(iii) Name two other components of a balanced diet that are not included in this feed.

1. ....

2. ....[2]

[Total : 8]

2 Fig. 2.1 shows three plants grown with different fertilisers.

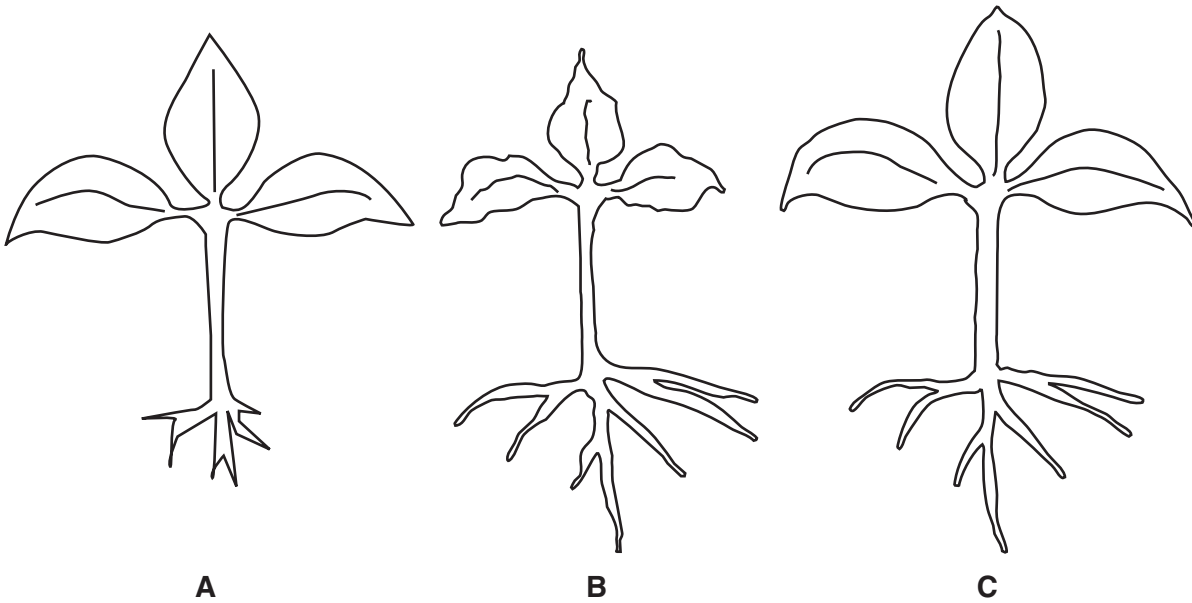


Fig. 2.1

(a) (i) Plant C had all the nutrients needed for healthy growth.

Complete Table 2.1 to show which major nutrient was deficient for plant A and which major nutrient was deficient for plant B.

Table 2.1

plant	deficient nutrient
A	
B	

[2]

(ii) What are the signs of iron deficiency in a plant?

.....[1]

**(b)** Cassava is an important drought-tolerant root crop in areas where there is a lack of rainfall. As soil dries out cassava reduces leaf production. The existing leaves hang downwards when the air is very dry.

**(i)** How do each of these two responses help to reduce water loss from the plant?

*reduced leaf production* .....

.....

*leaves hang down* .....

.....[2]

**(ii)** State how these responses will affect photosynthesis. Give a reason for your answer.

.....

.....

.....[2]

**(iii)** In drought conditions, more of the products of photosynthesis are translocated to the roots of the cassava.

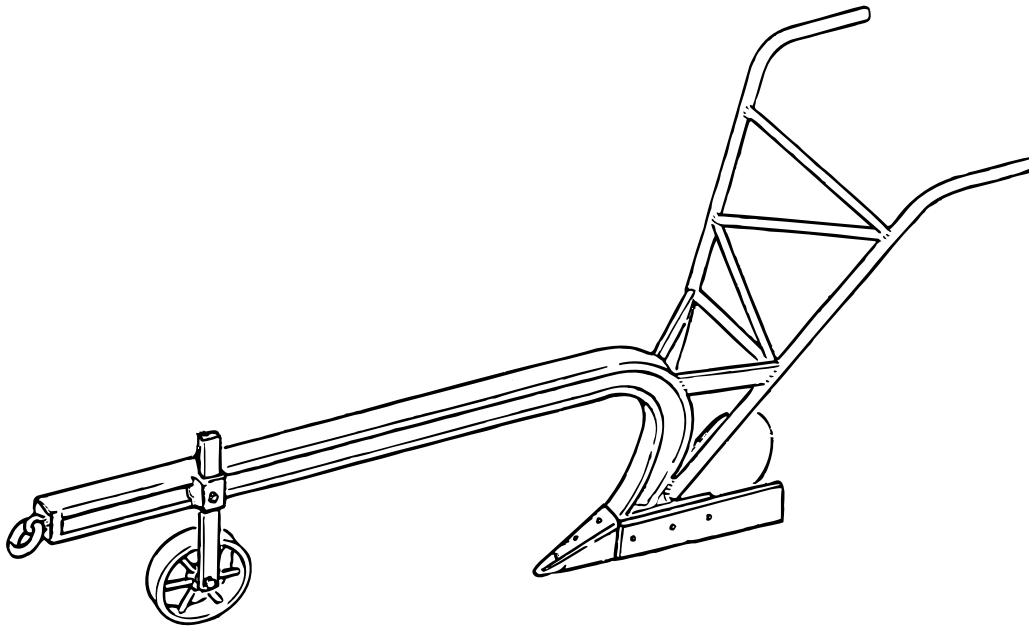
Why is this an advantage to the farmer?

.....

.....[1]

[Total : 8]

- 3 Fig. 3.1 shows a plough that can be pulled by animals.



**Fig. 3.1**

- (a) On Fig. 3.1, label
- (i) the mouldboard,
  - (ii) the ploughshare. [2]
- (b) Some farmers use the plough to weed between the rows of a crop by removing the mouldboard and cultivating with the ploughshare.

Table 3.1 shows the time taken for weeding a maize crop by hand, using a plough without the mouldboard, and using a complete plough.

**Table 3.1**

method	time / hours per hectare	maize yield
hand-weeding	132	good
plough without mouldboard	85	reduced
complete plough	55	good

- weeding using the plough without the mouldboard involves passing up and down each row several times and some hand-weeding is still needed.
- weeding using the complete plough requires only one pass along each row. No hand-weeding is needed.

(i) Suggest **one** reason why weeding using the plough without a mouldboard reduces maize yield.

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

(ii) Why is weeding quickest using the complete plough rather than with the ploughshare only?

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

(iii) Suggest why **no** hand-weeding is needed when the complete plough is used.

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

(iv) Explain why maize yield is good when weeds are well controlled.

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

[Total : 8]

- 4 Fig. 4.1 shows two cultivars of wheat that produce different yields and also differ in their resistance to drought.

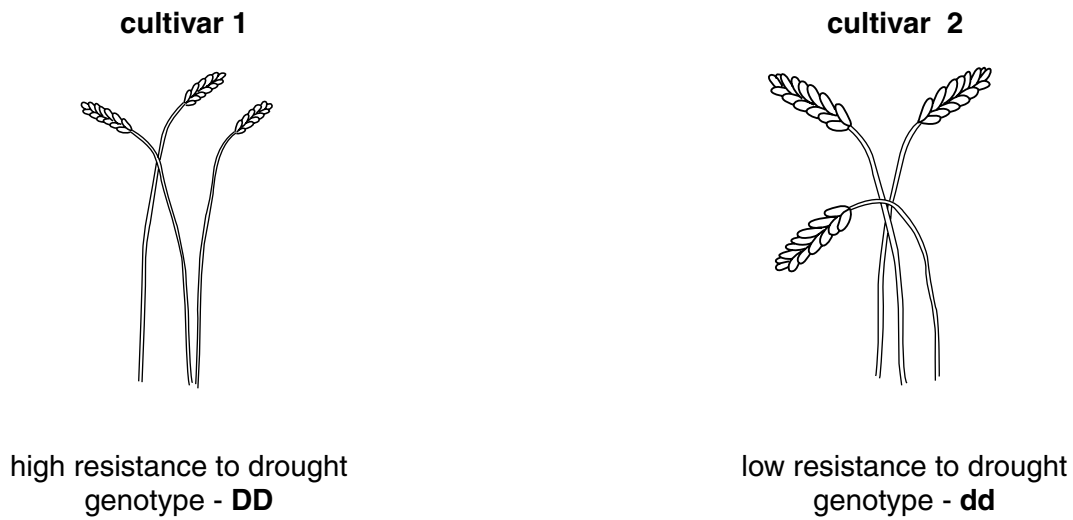


Fig. 4.1

- (a) What is a *cultivar*?

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

- (b) Fig. 4.2 shows the cross-breeding of these two cultivars.

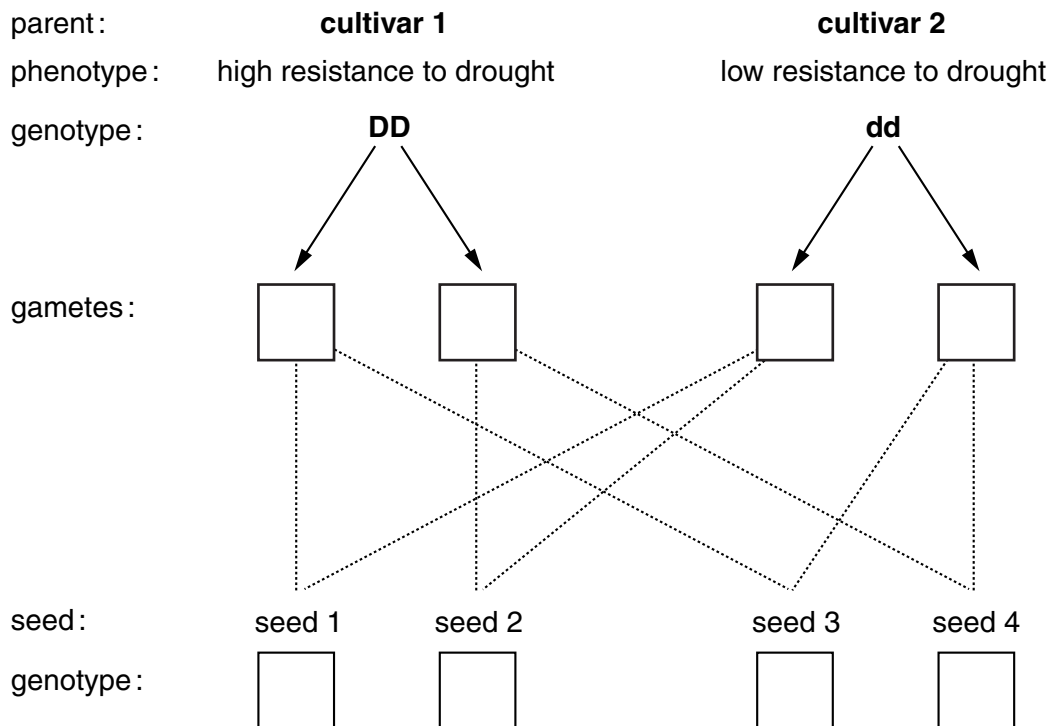


Fig. 4.2

Complete Fig. 4.2 to show,

- (i) the gametes produced;
- (ii) the genotypes of the resulting seeds.

[2]



- (c) Seeds 1 to 4 are grown.  
Suggest **one** advantage that the resulting plants might have, compared to their parents (cultivar 1 and cultivar 2).

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

- (d) The plants produced when seeds 1 to 4 are grown are allowed to cross-breed freely with each other to produce 2nd generation seed.  
Why would a crop grown from this 2nd generation seed not be all the same. (Use a genetic diagram to explain your answer.)

.....  
.....  
.....[4]

[Total : 8]

5 (a) Fig. 5.1 shows a building used for storing maize cobs (a cereal crop).

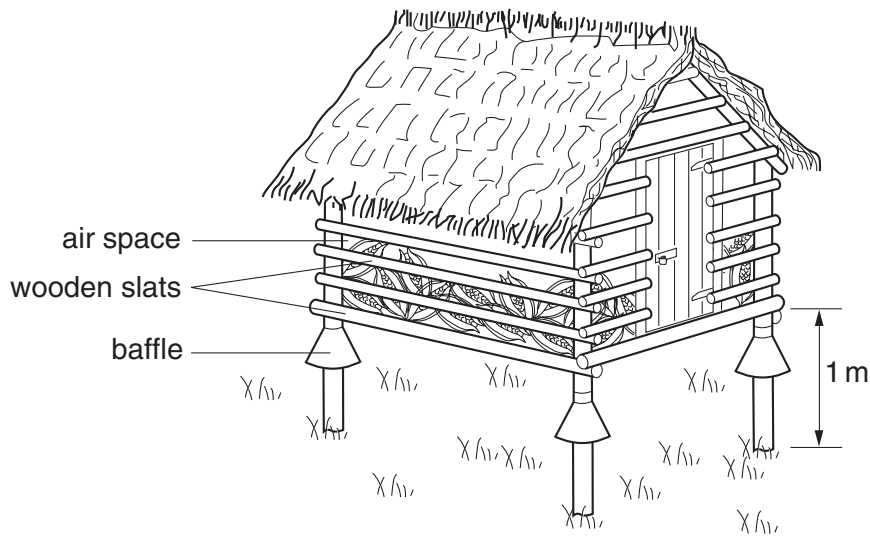


Fig. 5.1

(i) Why is the building raised off the ground?

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

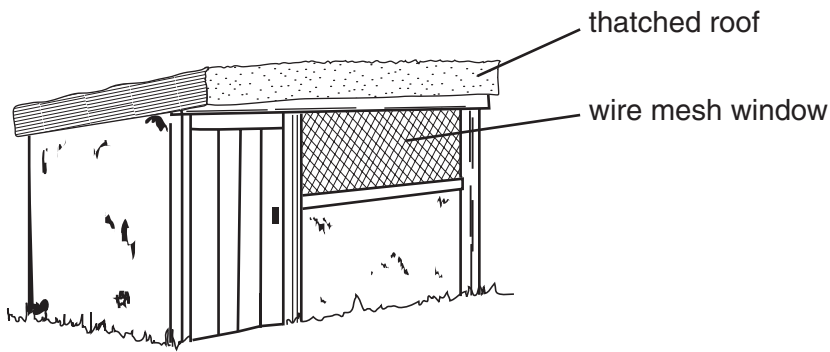
(ii) What is the purpose of the baffles?

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

(iii) Suggest **one** way in which the maize cobs could be damaged while being stored in this building.

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

(b) Fig. 5.2 shows a building used to house small farm livestock.



**Fig. 5.2**

(i) State **one** advantage of the material used for the roof.

.....[1]

(ii) State **one** advantage of the material used for the window.

.....[1]

(iii) The floor inside the building is made of concrete.  
Suggest **one** advantage and **one** disadvantage that a concrete floor has compared with an earth floor.

*advantage of concrete floor* .....

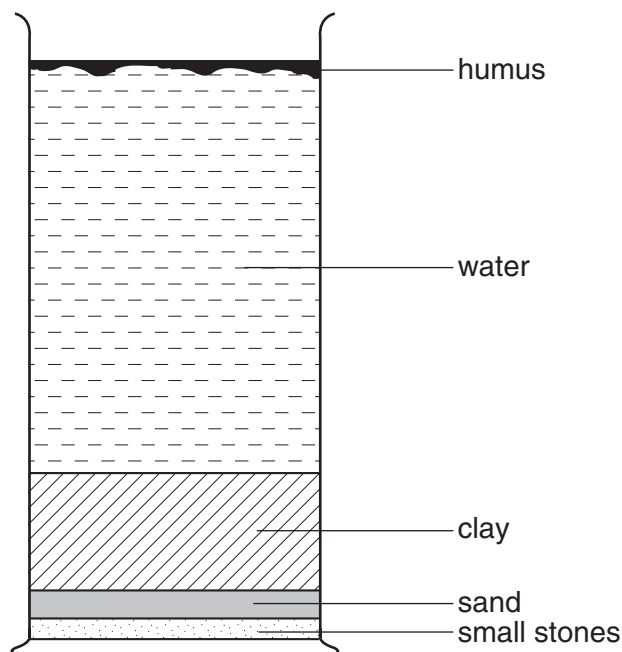
.....

*disadvantage of concrete floor* .....

.....[2]

[Total : 7]

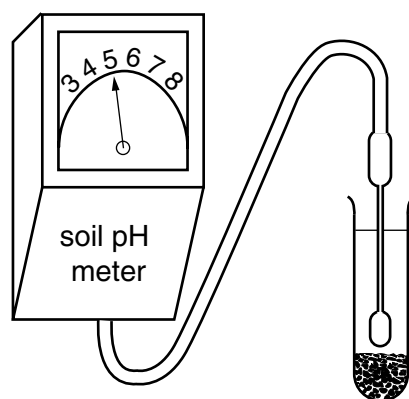
- 6 Fig. 6.1 shows the results of an experiment carried out on a sample of soil **X**. The soil was shaken with water and then allowed to settle for several days.



**Fig. 6.1**

- (a) Using information from Fig. 6.1, state two characteristics of soil **X**.

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



**Fig. 6.2**

- (b) (i) Fig. 6.2 shows the result of testing soil **X** with a pH meter.  
Is soil **X** acidic, alkaline or neutral?

..... [1]

(ii) Lime is spread on the land from which the sample was taken.

State two effects that this will have on soil X.

1. ....

2. ....[2]

(c) (i) State **one** other method of improving soil X.

.....[1]

(ii) Explain how this method improves soil X.

.....

.....

.....[2]

[Total : 8]

7 Fig. 7.1 shows one stroke in the four-stroke cycle of a petrol engine.

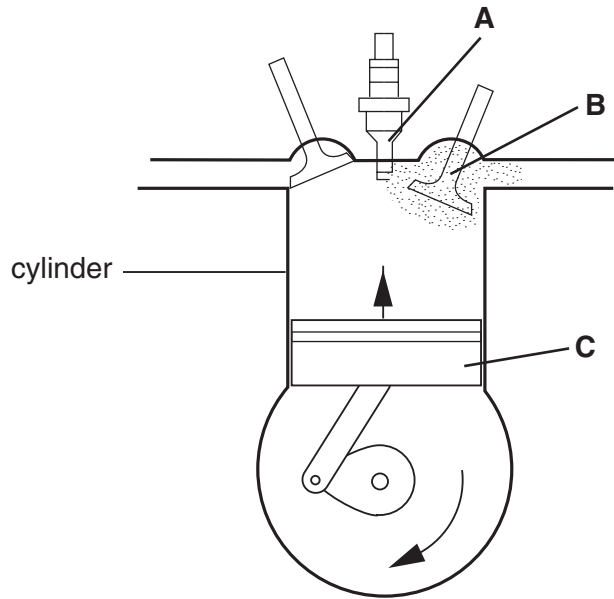


Fig. 7.1

(a) (i) Name the parts **A**, **B** and **C**.

**A** .....

**B** .....

**C** .....

[3]

(ii) Name the stroke shown in Fig. 7.1.

.....[1]

(iii) Describe what happens in the cylinder during this stroke.

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

(b) State **one** advantage and **one** disadvantage of farm mechanisation.

*advantage* .....

*disadvantage* .....

[2]

[Total : 8]

**Section B**

Answer any **three** questions.

Write your answers on the separate answer paper provided.

Use labelled or annotated diagrams where they help to make your answers more easily understood.

- 8 (a)** For a **named** crop, describe the preparation of the soil for planting or sowing. [6]
- (b)** For the crop you have named in **(a)**,
- (i)** name a common pest;
  - (ii)** outline the damage caused by the pest;
  - (iii)** describe the methods of prevention and control of this pest. [9]
- [Total : 15]
- 9 (a)** Describe the signs you would look for when checking the health of livestock. [8]
- (b)** Outline the ways in which the spread of disease in livestock can be prevented. [7]
- [Total : 15]
- 10 (a)** Outline the precautions you would take when using a knapsack sprayer to spray a crop with insecticide. [6]
- (b) (i)** List the hand tools you would use to clear and cultivate a school garden.
- (ii)** Describe the maintenance of these tools to keep them in good condition. [9]
- [Total : 15]
- 11 (a) (i)** Explain what is meant by overstocking pasture.
- (ii)** Describe the results of overstocking pasture on the soil, vegetation, stock and farmer. [7]
- (b)** Outline the ways in which pasture can be improved. [8]
- [Total : 15]
- 12 (a)** Describe the effect that climate, soil and topography may have on the way in which land is used. [9]
- (b) (i)** Explain what is meant by *mixed farming*.
- (ii)** Outline the benefits of mixed farming. [6]
- [Total : 15]

