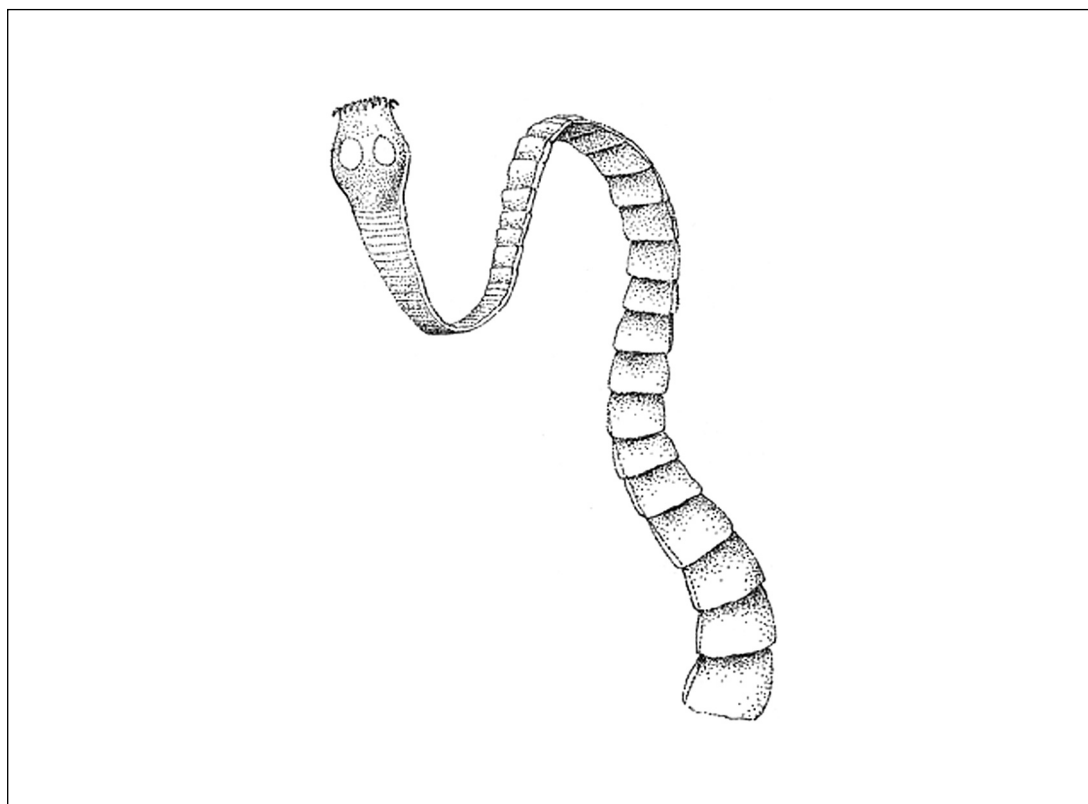


Answer ALL questions in the spaces provided.

1. (a) Tapeworms are heterotrophic organisms. The diagram below shows part of a tapeworm that occurs in dogs.

State the mode of heterotrophic nutrition carried out by this animal.

.....
(1)



- (b) On the diagram, label **three** features that are adaptations to this tapeworm's mode of nutrition. Under each of your labels, explain how the feature helps this tapeworm carry out its mode of nutrition. All your answers must be written on the diagram within the box.

(6)



(c) Compare the mode of nutrition of *Rhizopus* with that of the tapeworm.

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(2)

(Total 9 marks)

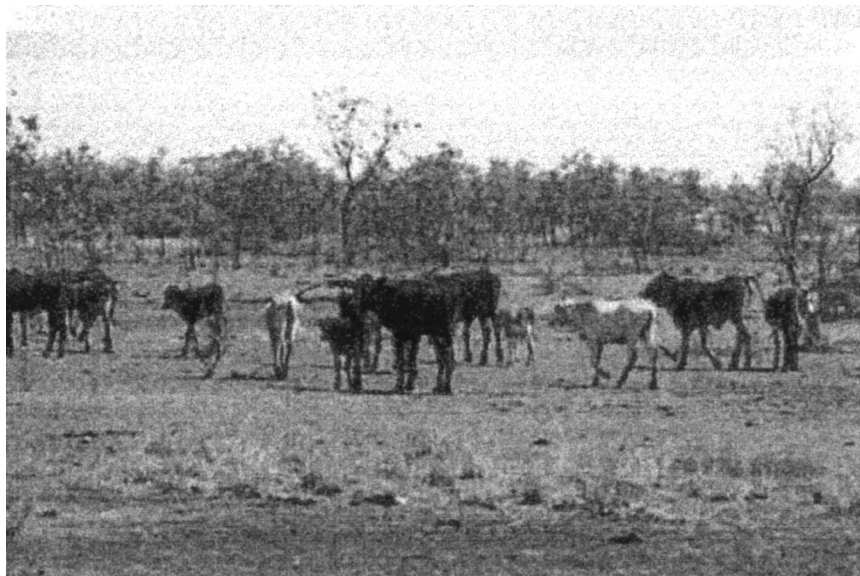
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Q1



N 2 8 0 1 8 A 0 3 1 6

2. The photograph below shows a herd of cattle on an area of dry grassland and scrub that is undergoing desertification in central Australia.



Wayne Lawler / Ecoscene

(a) Suggest **two** possible causes of the desertification of dry grassland in central Australia.

1

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2

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(2)



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(b) Describe and explain the processes that lead to desertification of dry grassland.

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(4)

(c) Suggest **two** ways of preventing desertification in the driest parts of the world such as Australia.

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(4)

(Total 10 marks)

Q2

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3. Over the last 40 years, forests and lakes in Western Europe have shown signs of acid rain damage (see Figure 1). Various treatments to reduce the damage caused by acid rain have been tried. One treatment involves the spreading of powdered limestone over the soil and on the surface of lakes.

Figure 1: Conifer trees in Germany damaged by acid rain



Erik Schaffer / Ecoscene

Loch Fleet, a lake in Scotland, has been damaged by acid rain. This lake is surrounded by hills which are covered in coniferous forest. Between April and May 1986, more than 300 tonnes of powdered limestone were spread over the soil surrounding the lake. The pH and aluminium ion concentration of the water in the lake were monitored before and after adding the powdered limestone. The results are shown in Figures 2 and 3.



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Figure 2: The graph below shows the change in the pH of the water in Loch Fleet in each month in 1986.

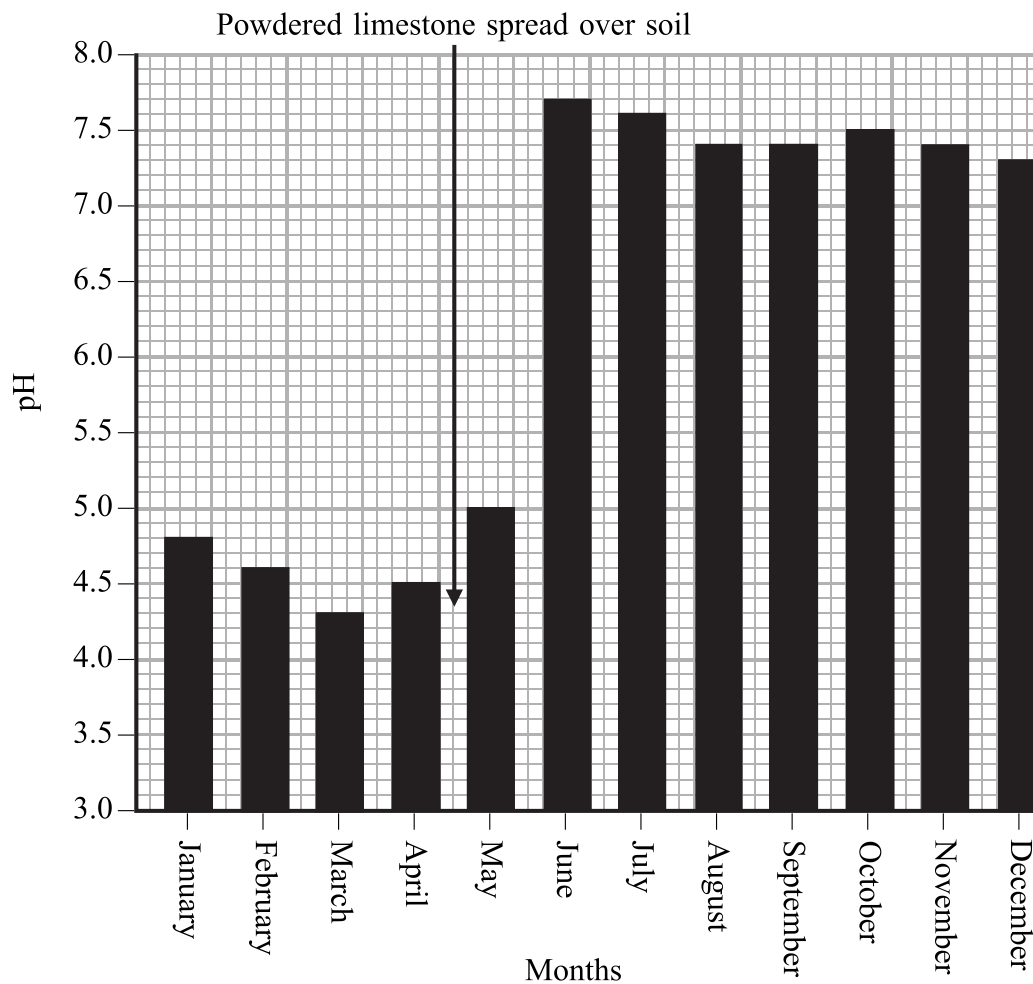
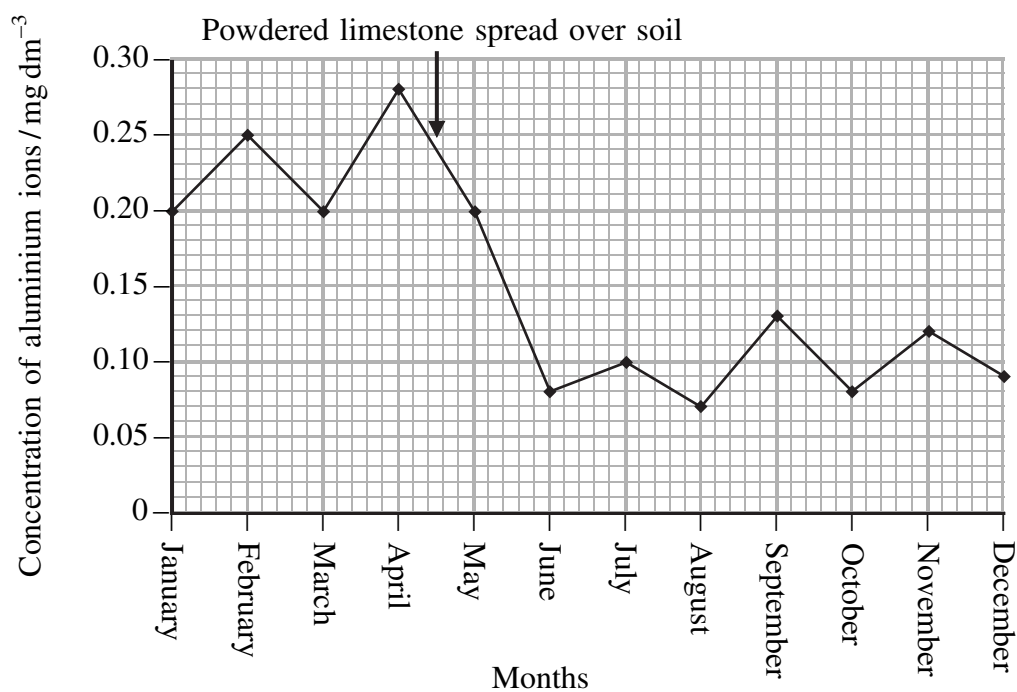


Figure 3: The graph below shows the change in the aluminium ion concentration of the water in Loch Fleet in each month in 1986.



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(a) Explain the term **acid rain**.

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(1)

(b) State **two** main sources of the pollutants that cause acid rain.

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(2)



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(c) The hills around Loch Fleet are covered in coniferous forest. Suggest **three** reasons why these forests are more likely to be damaged by acid rain than the deciduous forests found in less hilly areas of Scotland.

1

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2

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(3)

(d) Some of the conifer trees in Figure 1 have been damaged by acid rain. Suggest the symptoms of acid rain damage that might be seen on these conifer trees.

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(3)



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(e) Describe the changes in pH shown in Figure 2.

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(2)

(f) Describe and explain the change in the aluminium ion concentration in the water after the spreading of the powdered limestone over the soil, as shown in Figure 3.

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(4)

QUESTION 3 CONTINUES ON THE NEXT PAGE



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(g) Aluminium ions can be harmful to aquatic organisms. Describe the effect of aluminium ions on the health of fish.

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(2)

(h) Describe the possible consequences of a decrease in the number of predatory fish on the food chain of a lake.

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(2)

(Total 19 marks)

Q3

TOTAL FOR PAPER: 38 MARKS

END

