Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

2074084589

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 **May/June 2016**

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **both** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

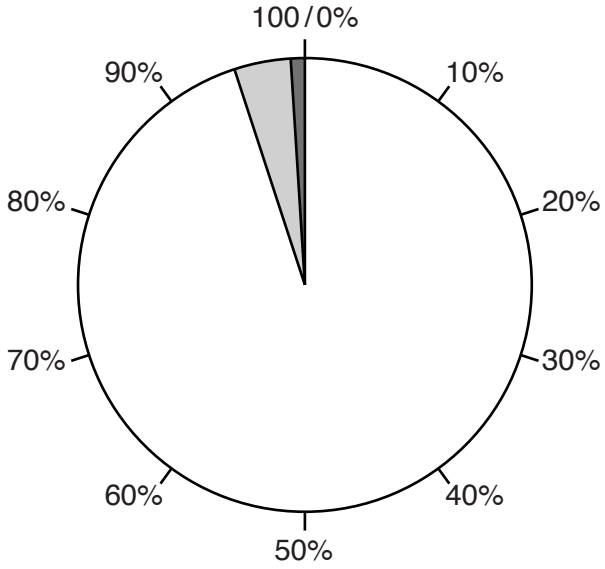
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **14** printed pages and **2** blank pages.

CAMBRIDGE International Examinations

1 (a) (i) Use the information to complete the pie graph to show typical soil composition by volume **and** complete the key. Two soil components have been done for you. [3]

soil component	percentage	**Key**
mineral particles	45	
water	25	
air	25	
humus	4	
organisms	1	



(ii) Explain why each of the following soil components is important for plant growth.

air .....

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water .....

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.....[3]

(iii) Describe the role of soil organisms in maintaining soils.

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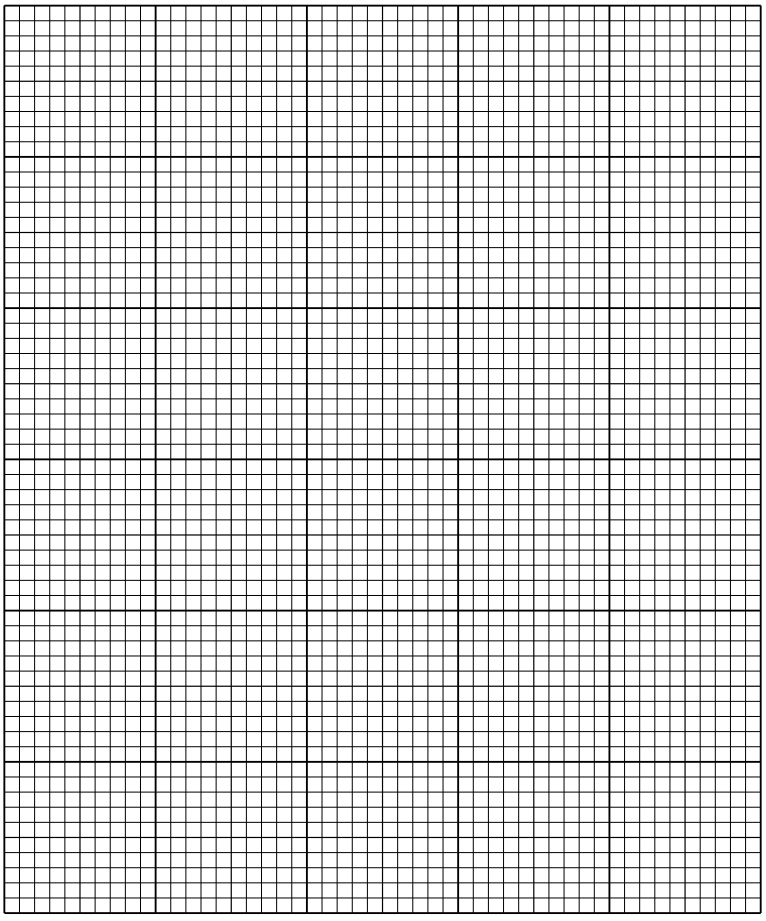
(b) Look at the table, which shows world average meat consumption per person from 1960 to 2010.

year	world average meat consumption /kg per person
1960	22
1970	27
1980	29
1990	35
2000	43
2010	57

(i) How many times higher was world average meat consumption per person in 2010 than in 1960? Circle **one** answer.

1.5–2.0 times **2.5–3.0 times** **3.5–4.0 times** **4.5–5.0 times** [1]

(ii) Draw a line graph on the grid below to show the data for the world average meat consumption per person. Label the axes. [4]



(iii) Suggest **one** reason why world average meat consumption per person has increased.

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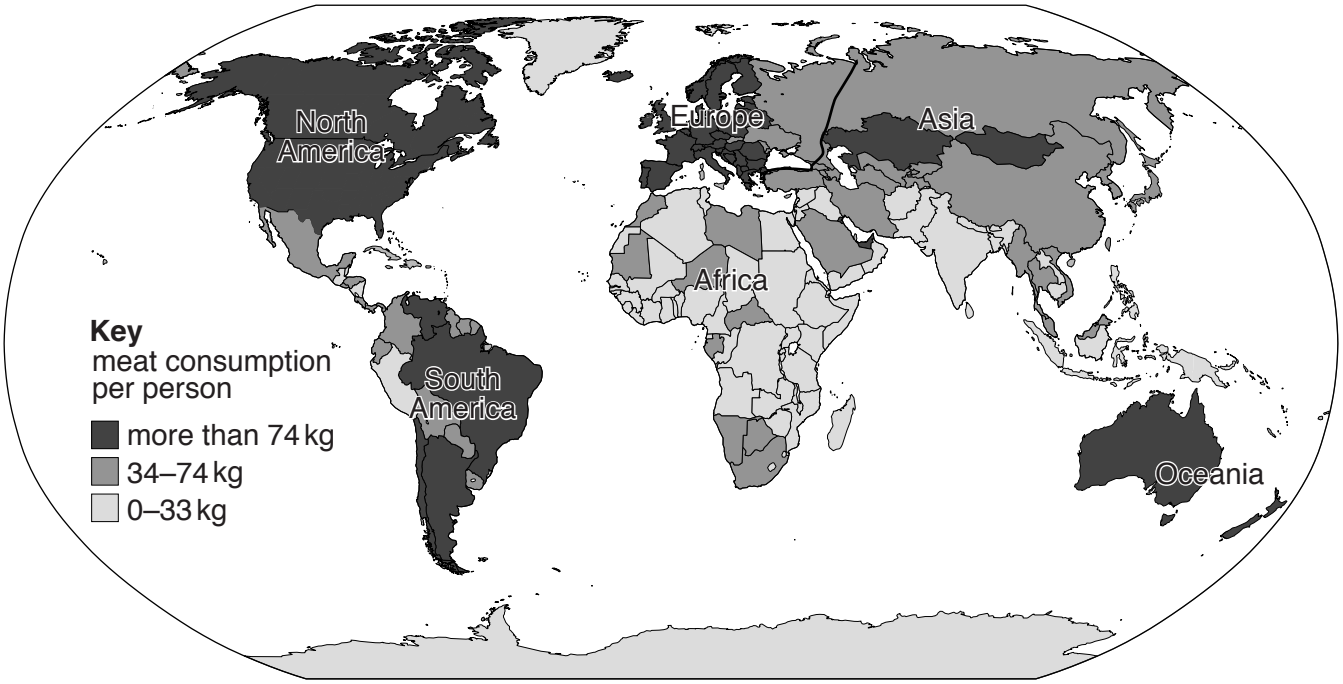
.....[1]

(c) Look at the map, which shows average meat consumption per person for 2013.



(i) State the continent with the lowest average meat consumption per person.

.....[1]

(ii) State the **two** continents with the highest average meat consumption per person.

.....[1]

(iii) Suggest reasons why average meat consumption per person is much lower in some continents than in others.

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.....[2]

(iv) Explain how large numbers of farm animals can cause soil erosion and water pollution.

soil erosion .....

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water pollution .....

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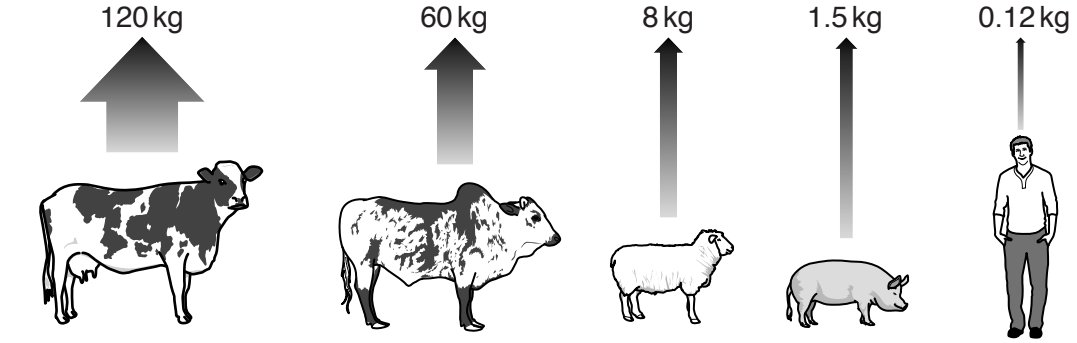
(d) Look at the diagram (not to scale), which shows annual emissions of methane from different animals. Methane is a greenhouse gas.



(i) Calculate the difference in methane emissions between sheep and pigs.

..... kg [1]

(ii) How many times higher are the methane emissions of friesian-type cattle than the methane emissions of humans? Circle **one** answer.

10 times **100 times** **1000 times** **10 000 times** [1]

(iii) The number of cattle in the world has risen from 1297 million in 1990 to 1498 million in 2014. Suggest why this increase is a concern for many climate scientists.

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(e) Read the newspaper article.

Pesticide pollution down!

In the 1990s a survey found that 17 percent of streams running through agricultural land in the USA contained concentrations of at least one pesticide that were above the maximum level allowed for drinking water. By 2012 another survey found dangerous pesticide concentrations in only one stream in the whole country.

This change is probably because new pesticides were introduced that were less toxic or required smaller applications and the use of particularly hazardous pesticides like dieldrin and lindane was banned or restricted.

(i) How many streams had dangerous pesticide concentrations in 2012?

.....[1]

(ii) Describe how the pesticide pollution in streams in the USA has been reduced.

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(f) Explain how **fertilisers** may damage the environment and suggest how their environmental impacts can be reduced.

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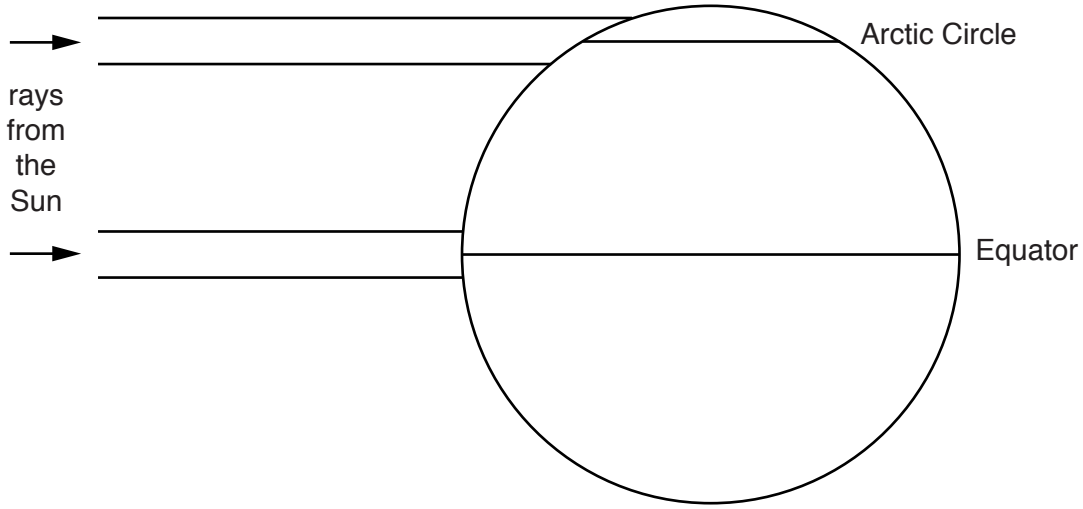
2 **(a)** Look at the diagram showing insolation.



(i) Using the information on the diagram, explain why temperatures are much higher at the Equator than at the Arctic Circle.

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.....[2]

(ii) Explain why more sunlight (energy) is absorbed by forests than by snow and ice.

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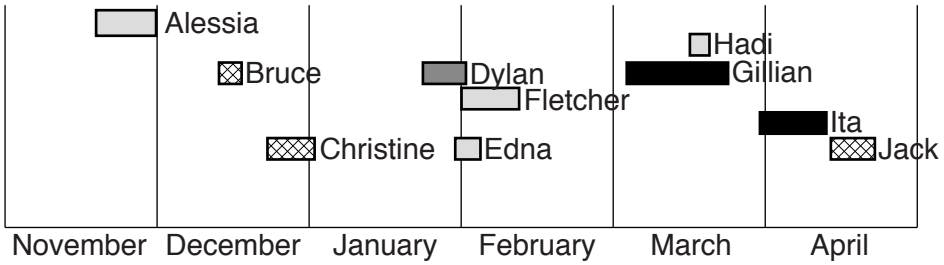
.....[2]

(b) Look at the diagram below, which shows the tropical cyclones in Australia during the 2013–14 cyclone season. All cyclones are given names in alphabetical order, based on when they began.



Key

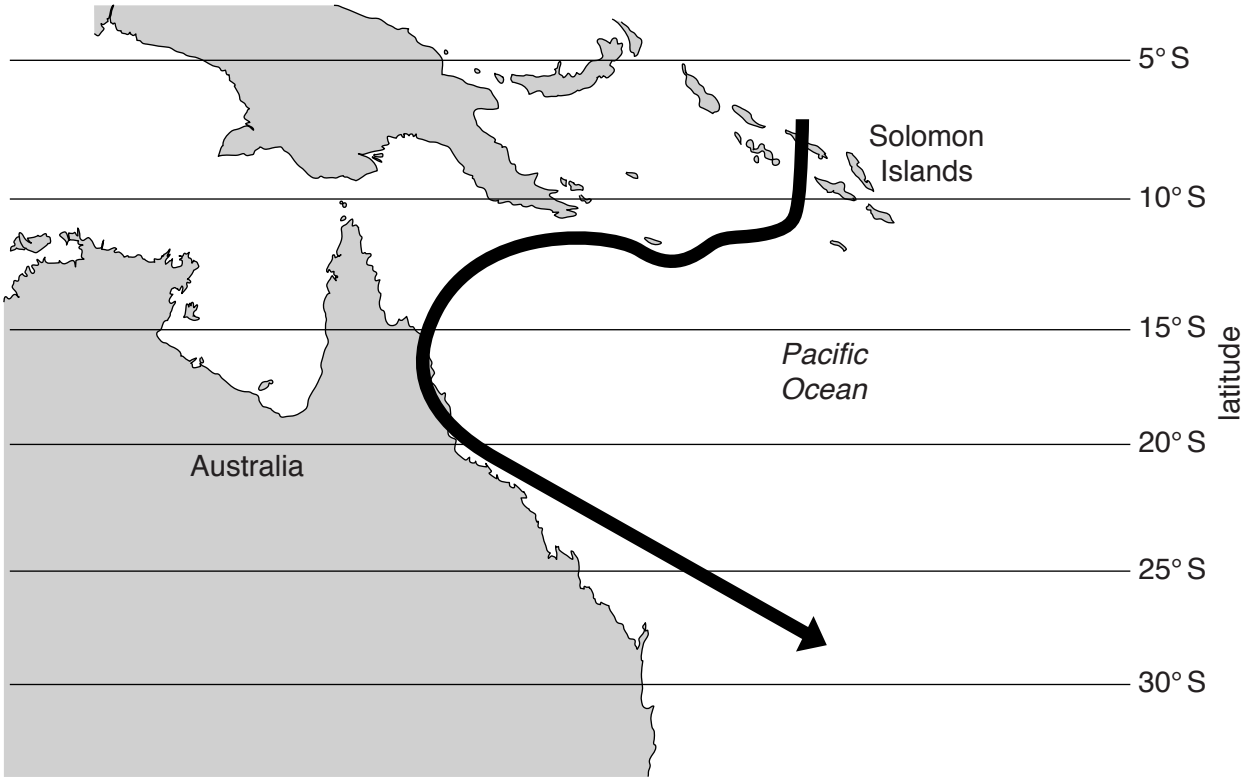
category 1 (63–87 kph)
category 2 (88–142 kph)
category 3 (143–158 kph)
category 4 (159–204 kph)
category 5 (>204 kph)

Complete the following paragraph using information from the diagram.

The first cyclone occurred in the month of ..... . During December there were two cyclones named ..... and ..... .

These were both category ..... cyclones. The two most powerful cyclones were in the months of March and ..... and had wind speeds greater than ..... kph. [6]

(c) Look at the map showing the path of Cyclone Ita and read the information about the cyclone.



On 1 April a tropical low developed near the Solomon Islands. Flash flooding from the tropical storm killed 16 people in the Solomon Islands on 5 April. By 7 April, the death toll from the storm rose to 21. During the next few days, Ita strengthened into a category 5 severe tropical cyclone as it began to curve towards the coast of Australia. The storm hit the Australian coast on 11 April as a category 4 cyclone. Ita then rapidly weakened and was downgraded to a category 1 on 12 April. Ita caused 1 billion Australian dollars of damage to banana and sugar cane plantations.

(i) State how many people were killed by Cyclone Ita on 5 April.

.....[1]

(ii) State the highest category recorded for Cyclone Ita.

.....[1]

(iii) State the latitude where Cyclone Ita started on 1 April.

..... °S [1]

(iv) Explain why Cyclone Ita weakened as it moved onto the land and south, out of the tropics.

onto the land .....

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.....

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south, out of the tropics .....

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.....[3]

(v) Explain why damage from cyclones is greatest in low-lying coastal areas.

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(vi) Suggest why more people are killed by cyclones in developing countries, such as the Solomon Islands, than in developed countries, such as Australia.

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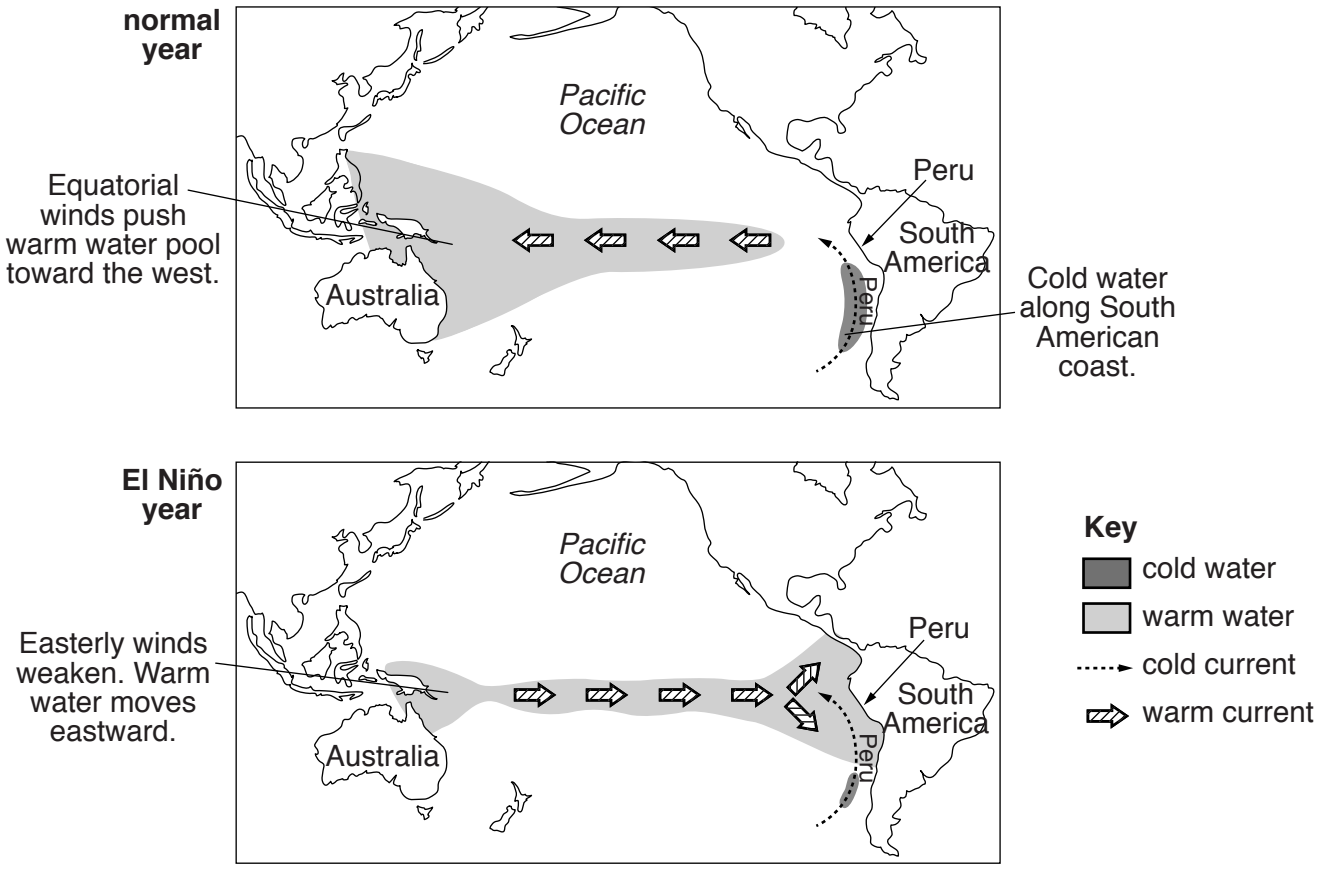
(d) Look at the maps, which show Pacific Ocean winds and surface currents.



(i) Using information from the maps, describe the changes to winds and surface currents in an El Niño year compared with a normal year.

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(ii) Suggest why an El Niño year brings heavy rain to the west coast of Peru.

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(iii) Suggest **one** advantage of an El Niño year for the people of Peru.

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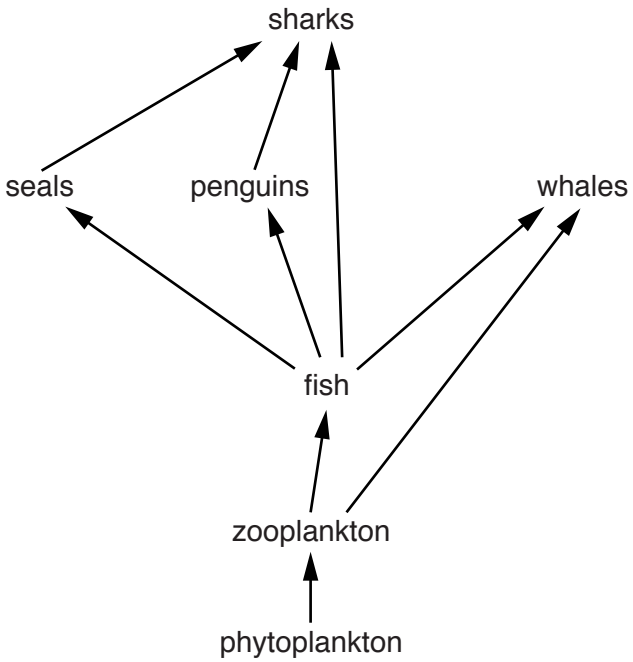
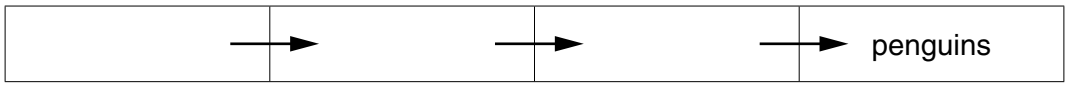
.....[1]

(e) Look at a food web for the ocean close to the coast of Peru.



(i) Use the food web to complete the food chain shown below. [2]



(ii) In an El Niño year the upwelling of cold water is reduced. This means that the number of phytoplankton and zooplankton are also reduced.

Describe how the reduction in zooplankton will affect the food web.

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.....[3]

(f) 'Droughts cause more problems to people and the environment than floods or cyclones.' How far do you agree with this statement? Give reasons for your answer.

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.....[6]

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