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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

ENVIRONMENTAL MANAGEMENT **5014/13**

Paper 1 **October/November 2010**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Protractor

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.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
All questions in Section A carry 10 marks.
Both questions in Section B carry 40 marks.

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	
1	
2	
3	
4	
5	
6	
Total	

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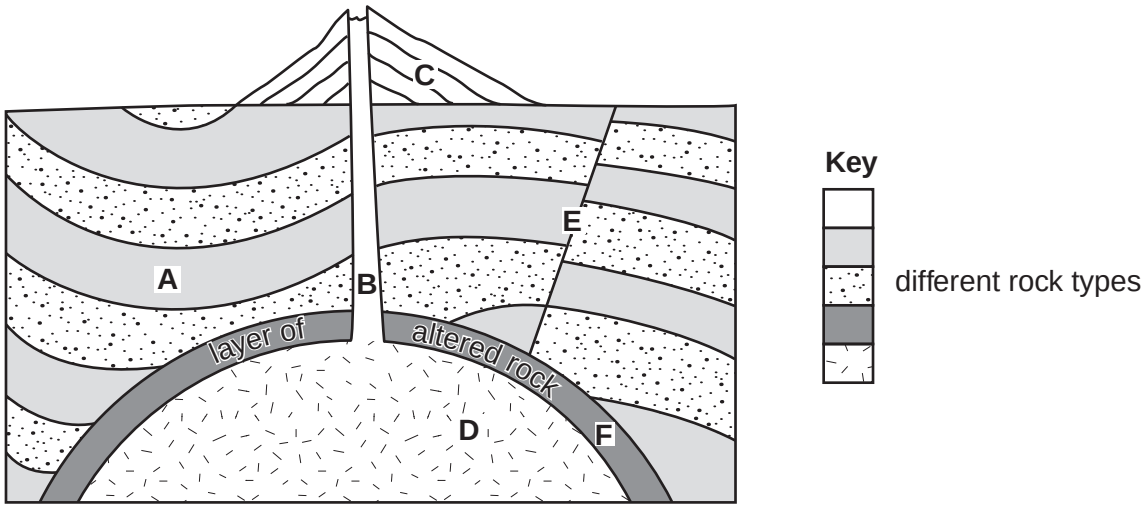
Section A

1 **(a)** Look at the diagram of part of the Earth's crust.



(i) Use letters A to F from the diagram to identify the following:

two areas of igneous rock, areas …….. and ……....

one area of sedimentary rock, area ……....

one area of metamorphic rock, area ……....

one area of folded rock, area ……....

one area of faulted rock. area …….... [3]

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(ii) Draw simple **labelled** diagrams to show **two** ways in which geological facto[illegible] make the mining of minerals difficult.

[4]

(b) Why are minerals sometimes mined, even when geological factors make the mining difficult?

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.....[3]

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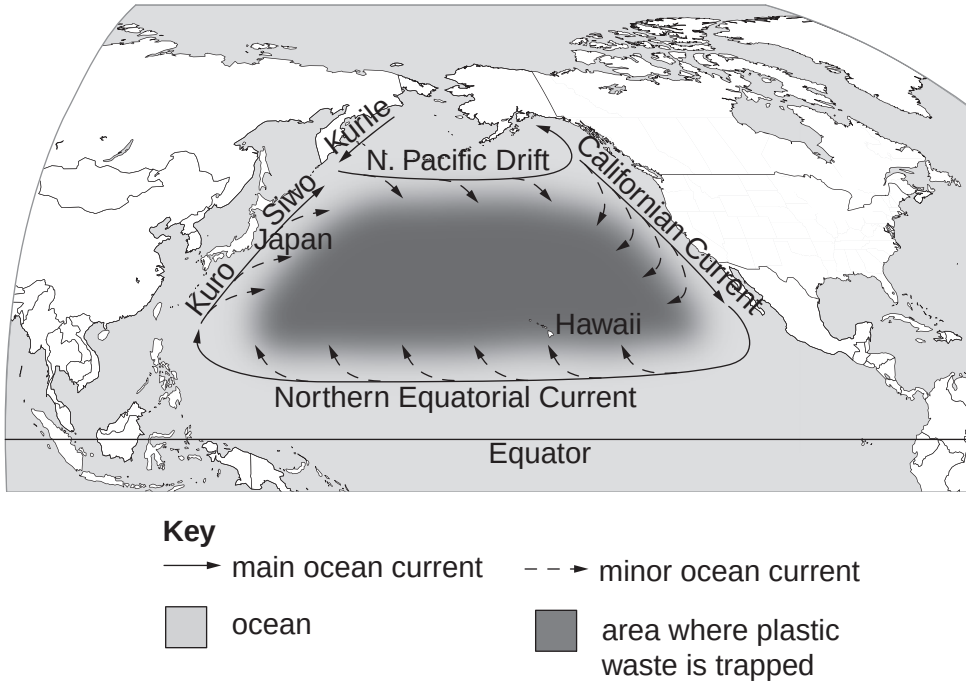
2 **(a)** Look at the map of the North Pacific Ocean.



(i) Name **one** cold ocean current marked on the map.

.....[1]

(ii) Use the map to explain why a piece of plastic from a beach in Japan could later be found on a beach in Hawaii.

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.....[2]

(iii) In the darker shaded area, on the map of the North Pacific ocean, large amounts of plastic waste are trapped. Why?

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.....[1]

(b) What are the characteristics of plastic waste which cause it to be a very serious problem in the oceans?

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.....[3]

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(c) Suggest ways of reducing the amount of plastic waste entering the oceans.

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..... [3]

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3 **(a)** **(i)** Describe an instrument used to record sunshine hours and explain how it [illegible] them.

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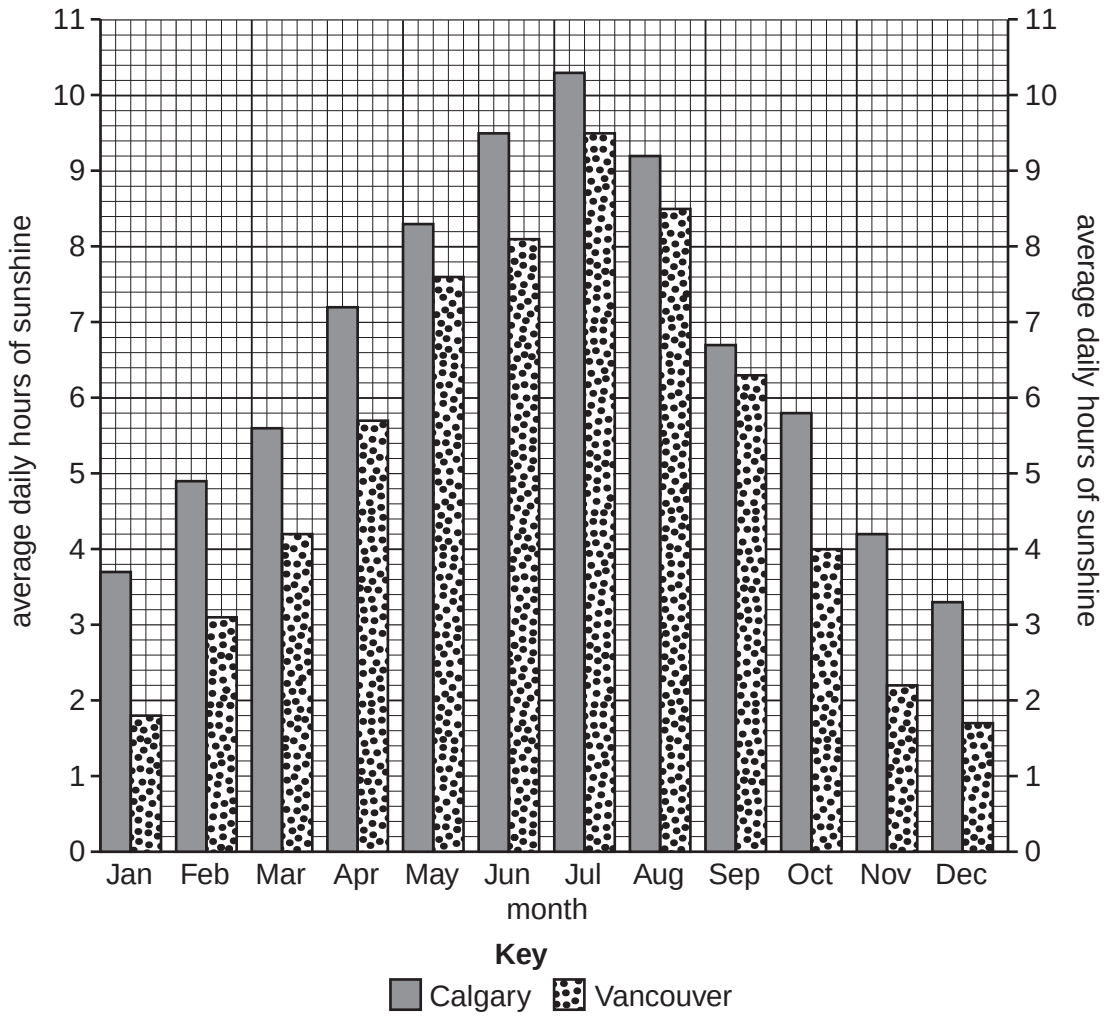
..... [3]

(ii) Why do sunshine hours vary from day to day in a place?

.....[1]

(b) The graph shows average daily sunshine hours for each month at two places with a temperate climate. Calgary is in the interior and Vancouver is on the west coast of Canada in the northern hemisphere.



(i) In which month were the average sunshine hours for Calgary and Vancouver most similar and by how much did they differ?

month ..... difference ..... hours [1]

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(ii) Which season has the largest differences in average sunshine hours be[illegible] Calgary and Vancouver?

.....[1]

(iii) Describe the pattern of average daily sunshine hours over the year in Calgary.

.....

.....[1]

(iv) Giving reasons, compare how suitable solar power would be for Calgary and Vancouver.

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.....[3]

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4 **(a)** Look at the photograph of a hot desert area.

(i) Describe the nature and distribution of the vegetation shown.

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..... [3]

(ii) Explain how plants are adapted to survive in a hot desert climate.

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..... [4]

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(b) What are the problems for pastoral farming in hot desert areas like this?

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..... [3]

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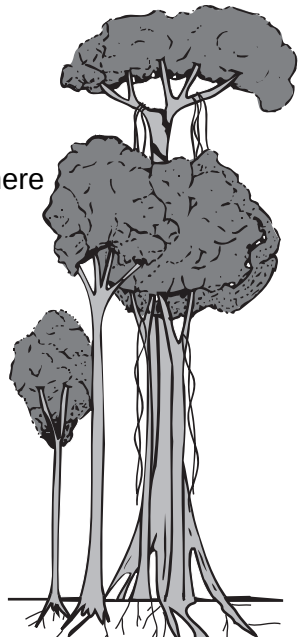
Section B

5 **(a)** Look at the diagram showing some of the features of trees and forests that are useful to life on Earth.

Useful features of trees and forests

Leaves of the trees

- trap light energy from the sun
- transpire moisture into atmosphere
- fall to surface for new nutrients



Forest canopy

-
-

see question (b)(i)

Tree roots

-
-

see question (b)(ii)

Explain how leaves

(i) use energy from the sun to support animal life on Earth,

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..... [3]

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(ii) support nutrient cycling,

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.....

..... [2]

(iii) contribute to the world water cycle.

.....

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..... [2]

(b) Fill in the bullet points below with features of the forest canopy and tree roots that are useful to life on Earth, as was done in the diagram for leaves of trees.

(i) Forest canopy – useful features

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

(ii) Tree roots – useful features

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

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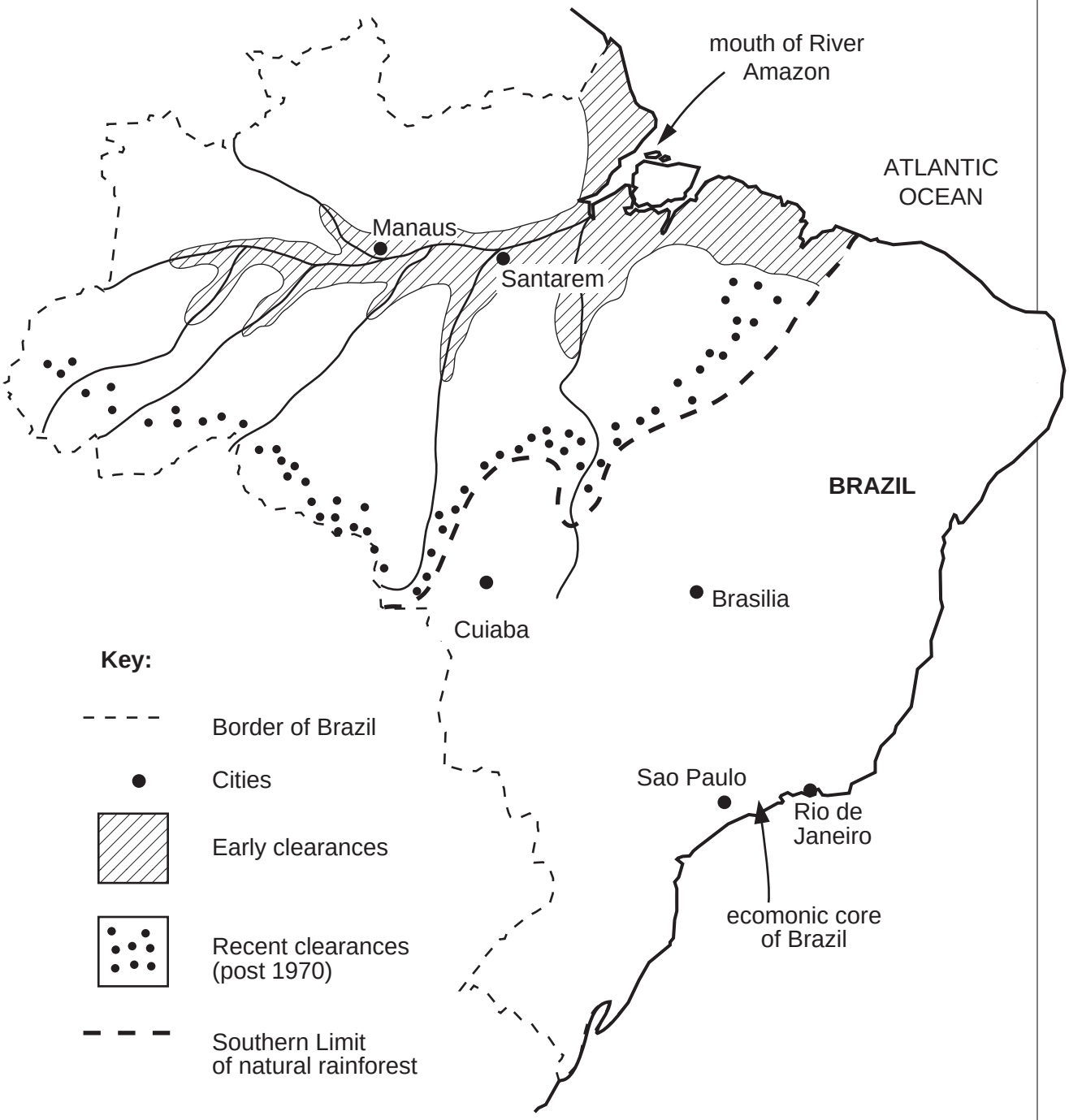
(c) One of the world's largest surviving areas of natural forest is in the Amazon [illegible] mostly in Brazil.

Location of tropical rainforest in Brazil



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(i) Describe the differences in location between areas of early and recent ra[illegible] clearances.

.....

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..... [3]

(ii) Suggest reasons which might explain these differences.

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.....[3]

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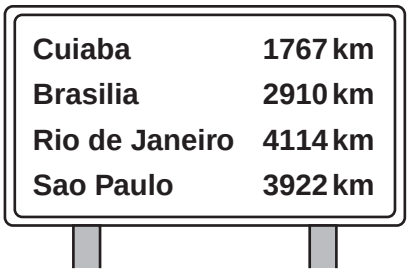
(d) The plan to pave the BR163 road between the towns of Cuiaba and Santarem located on the map) has caused a lot of controversy.

Should the rest of the BR163 be paved?

Otherwise known as the 'soyabean highway', the BR163 is the 1770 km long road linking Cuiaba in the middle of Brazil to the deep water port of Santarem on the Amazon. It was begun in the 1970s. Distances along it are huge.

Roadside sign near Santarem



At the moment, half of it is unpaved dirt track, making travel difficult and slow. During the wet season it becomes a sea of red mud; trucks can be stuck for days, weeks, or even months after bridges are washed away. Under pressure from the strong farming business lobby, the government is considering paving the rest of the road with a hard surface. The paved section north of Cuiaba passes through already important areas of soyabean and beef cattle production, both major exports of Brazil.

Although the government owns the 100 km wide stretch on each side of the road, trees on the unpaved section have already been cleared as far as the eye can see. Cattle graze among the tree stumps. The only lorries on the road are carrying timber, either tree trunks or sawn planks. Illegal logging is what dominates here, not the rule of law.

Everyone has their own view on paving the BR163.

Trees, not gold, provide the wealth in the Amazon.

Logging company manager

We all dream of the day it will be completely paved.

Truck driver

There is a land rush here, just with the prospect of the road being paved.

Land agent

All our problems for exporting will vanish. The world price of soyabean doubled between 2006 and 2008.

Soyabean farmer

We are worried. If this goes ahead, half the rainforest will be gone by 2030.

Environmentalist

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(i) State the economic advantages of paving the remainder of the BR163 road.

.....

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.....

..... [3]

(ii) How strong are the economic reasons for paving the road? Explain what you think.

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..... [2]

(iii) How far do you agree with the environmentalist that half the Amazon rainforest will be gone by 2030? Answer as fully as you can with the help of the information given.

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..... [4]

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(e) Describe what makes tropical rainforests unique (different from all the other fo[illegible] the world).

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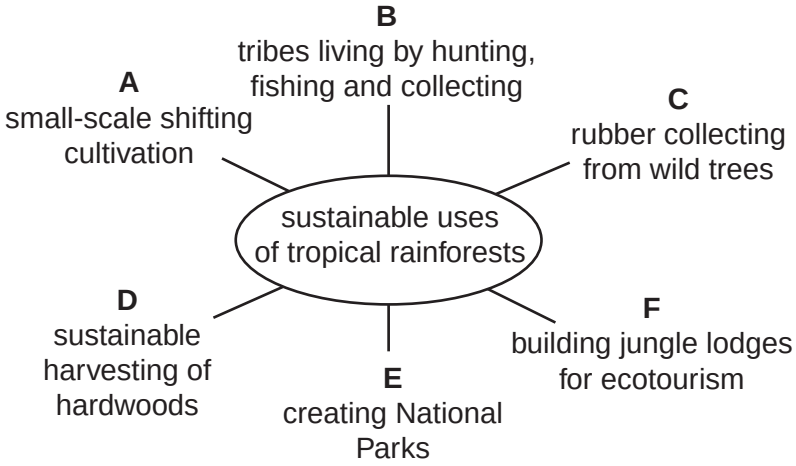
..... [3]

(f) Look at the spider diagram showing examples of sustainable ways to use tropical rainforests.



(i) Describe how the types of activities listed in A–C are sustainable.

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..... [3]

(ii) Why are all of these in decline?

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..... [2]

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(iii) State two ways in which sustainable logging of hardwoods is different fr logging taking place along the sides of the BR163 in Brazil.

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..... [2]

(iv) What is ecotourism, and can it save the rainforest and its peoples?

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..... [4]

[Total: 40 marks]

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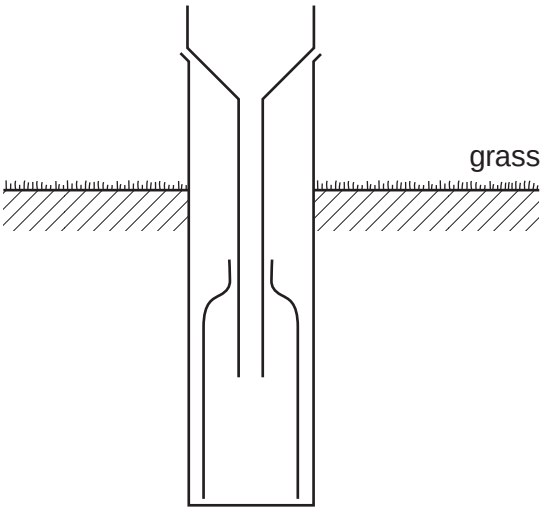
6 **(a)** The diagram shows a rain gauge.

Rain gauge



(i) On the diagram, name the main parts of the rain gauge. [3]

(ii) Why is it partly buried in the ground?

.....

..... [1]

(iii) Explain how an accurate measurement is made of the amount of rain water collected.

.....

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.....

..... [2]

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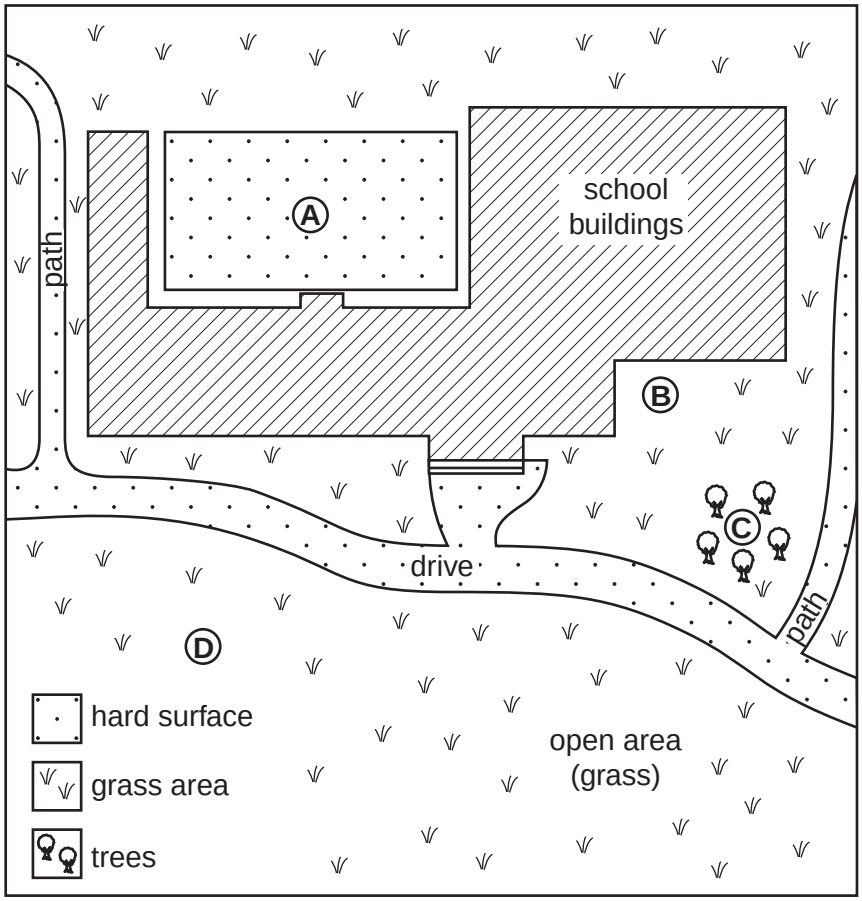
(iv) Four possible sites for locating a school rain gauge are marked A–D on the p[illegible] the school and its surroundings.



Which one of these sites is best for obtaining accurate rainfall measurements? Explain why.

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..... [2]

(v) Choose two of the other sites and explain why they are less good.

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..... [2]

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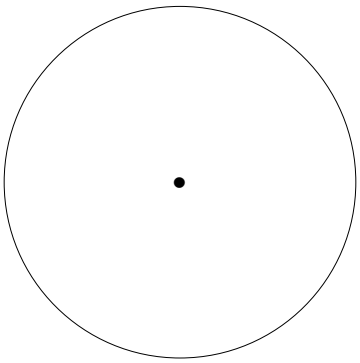
(b) (i) **Deaths from climatic hazards**
(percentages of the world total)

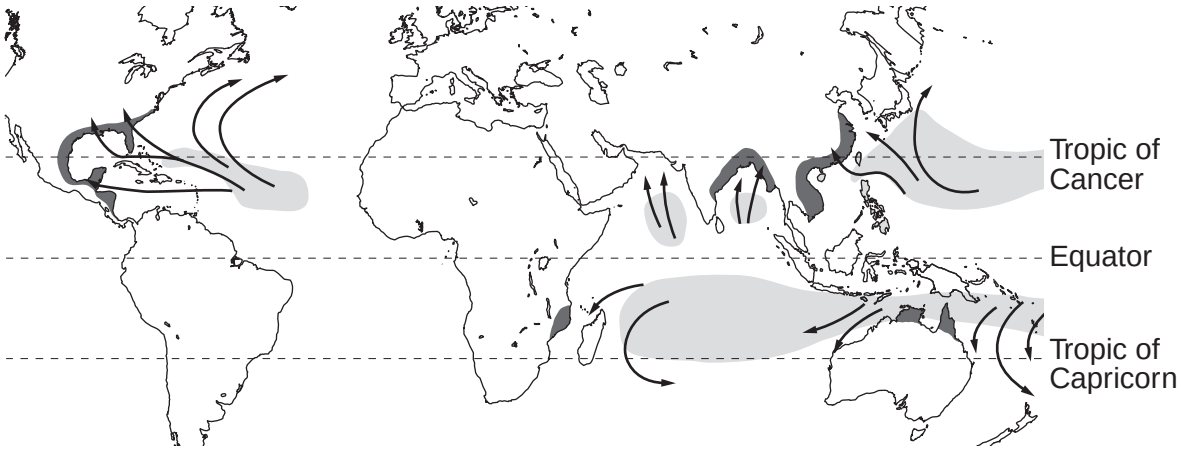


Show these percentages on a pie graph.

climatic hazard	% of deaths
tropical cyclones	63
floods	33
drought	4

[3]

(ii) World map showing the distribution of tropical cyclones



Key:
→ tracks of tropical cyclones
main areas of formation
areas affected

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Look at the world map showing the distribution of tropical cyclones.

State what they have in common for places where they form, direction of movement and areas affected.

formation .....

.....

.....

movement.....

.....

areas affected.....

.....

..... [4]

(iii) Explain what makes tropical cyclones so dangerous for people, sometimes leading to great loss of life.

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..... [4]

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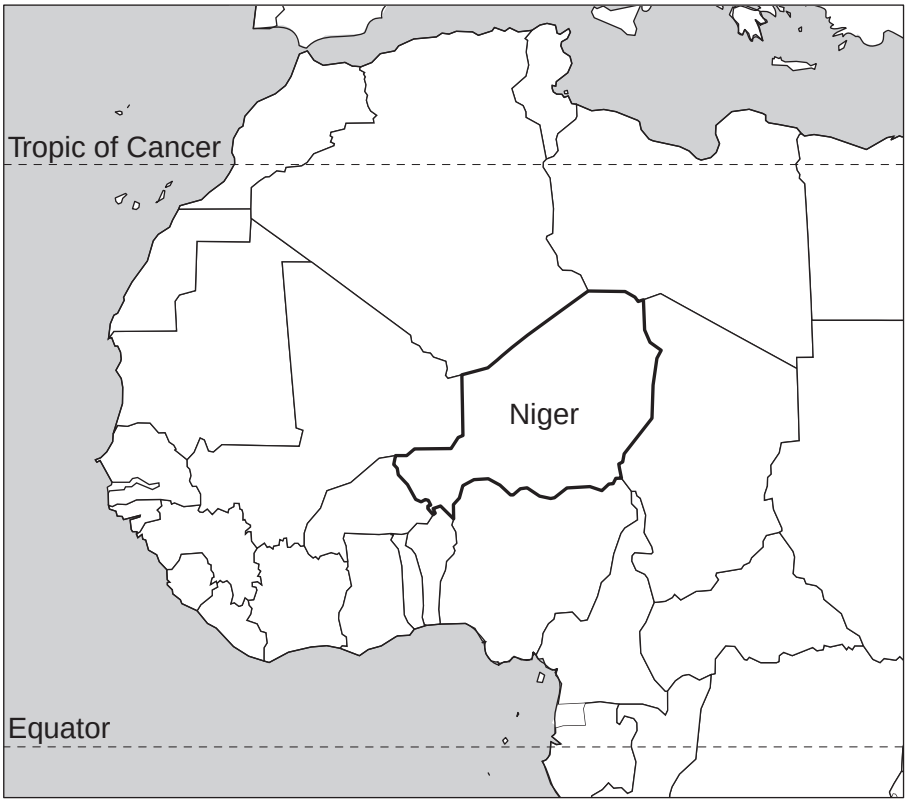
(c) One country which regularly suffers from drought is Niger in West Africa.

Location of Niger



(i) Use the map to describe the geographical location of Niger.

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(ii) Why does its location make it more difficult for it to receive aid in an emergency?

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..... [3]

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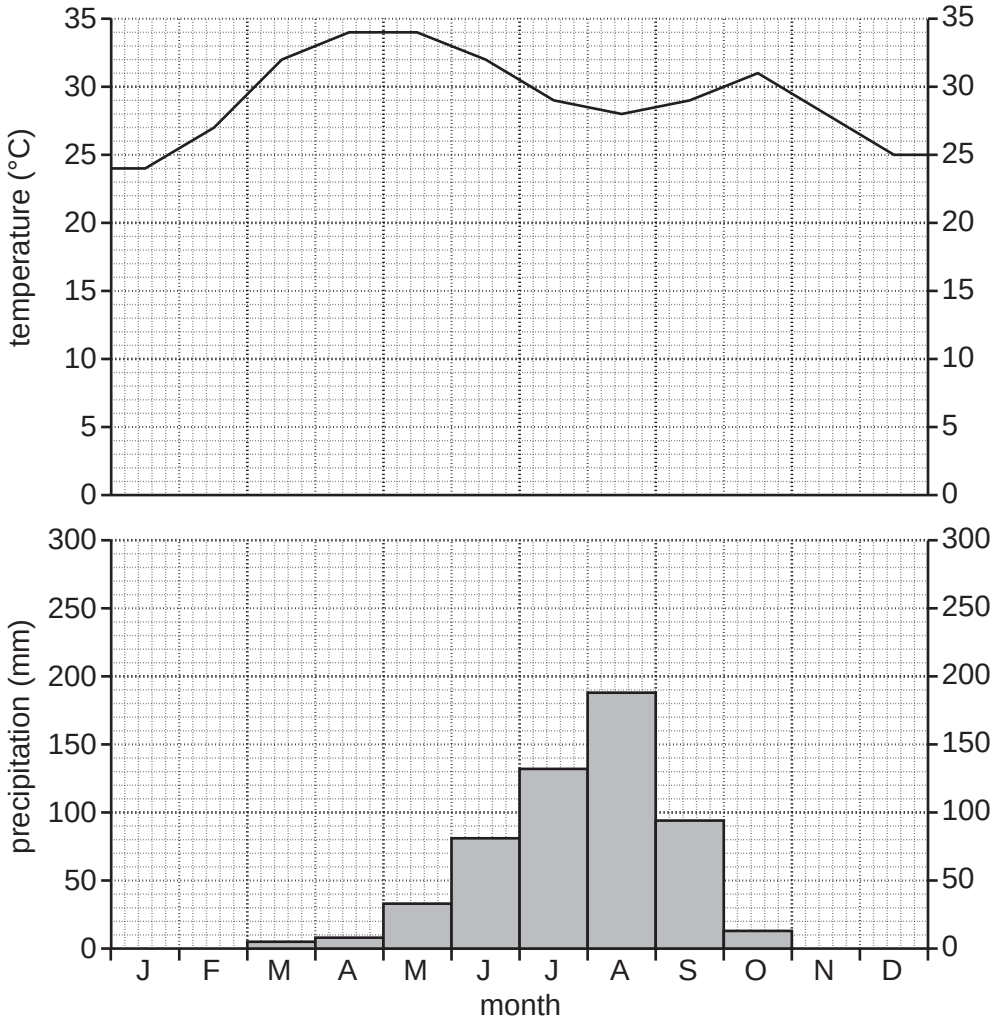
(iii) **Climate graph for Niamey in Niger**



Describe the main characteristics of this climate.

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..... [4]

(iv) Name the climatic type in Niger.

..... [1]

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(v) Average annual rainfall is 554 mm. Looking at the climate graph, explain w and livestock farmers in Niger depend greatly upon this amount of rain falling e year.

.....

.....

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..... [2]

(vi) Average annual rainfall in Niger is described as unreliable. What is meant by this and how can it lead to drought?

.....

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.....

..... [2]

(d) **Effects of two droughts**

Niger 2005	Europe 2006
• Over 3 million of its 13 million people affected by food shortages • Niger is a debt-ridden country; it had to rely upon food aid from the UN and aid organisations • Countless children were dying from severe malnutrition • Worst affected were nomadic herders such as the Fulani; up to 70% of their livestock died through lack of fodder • Nomads move their animals towards available pastures where they come into conflict with crop farmers for scarce resources	• Record low output for many crops – up to 50% lower than average • UK gardeners banned from using hose pipes and sprinklers • Swimming pools around the Mediterranean remain empty of water • Such poor pastures that livestock farmers in France forced to start using winter stocks of fodder such as hay • Lower electricity output from HEP stations
Information about Niger Income per head – US$250 per year Birth rate – 55 per 1000 Fertility rate – 7.91 per woman	**Information about Europe** Income per head – US$11,800 per year Birth rate – 12 per 1000 Fertility rate – 2.1 per woman

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(i) Describe how the effects of the droughts were different between Niger and Europe.

.....

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..... [3]

(ii) Two main factors explain the different effects of the droughts for Niger and Europe. What are they?

.....

..... [1]

(iii) Describe how and why these led to different effects in Niger and Europe.

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..... [3]

[Total: 40 marks]

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