UNIVERSITY OF CAMBRIDGE INTERNATIONAL EX
International General Certificate of Secondary Educati

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CAN NUMBER

4540694681

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 **October/November 2013**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler

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 **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.

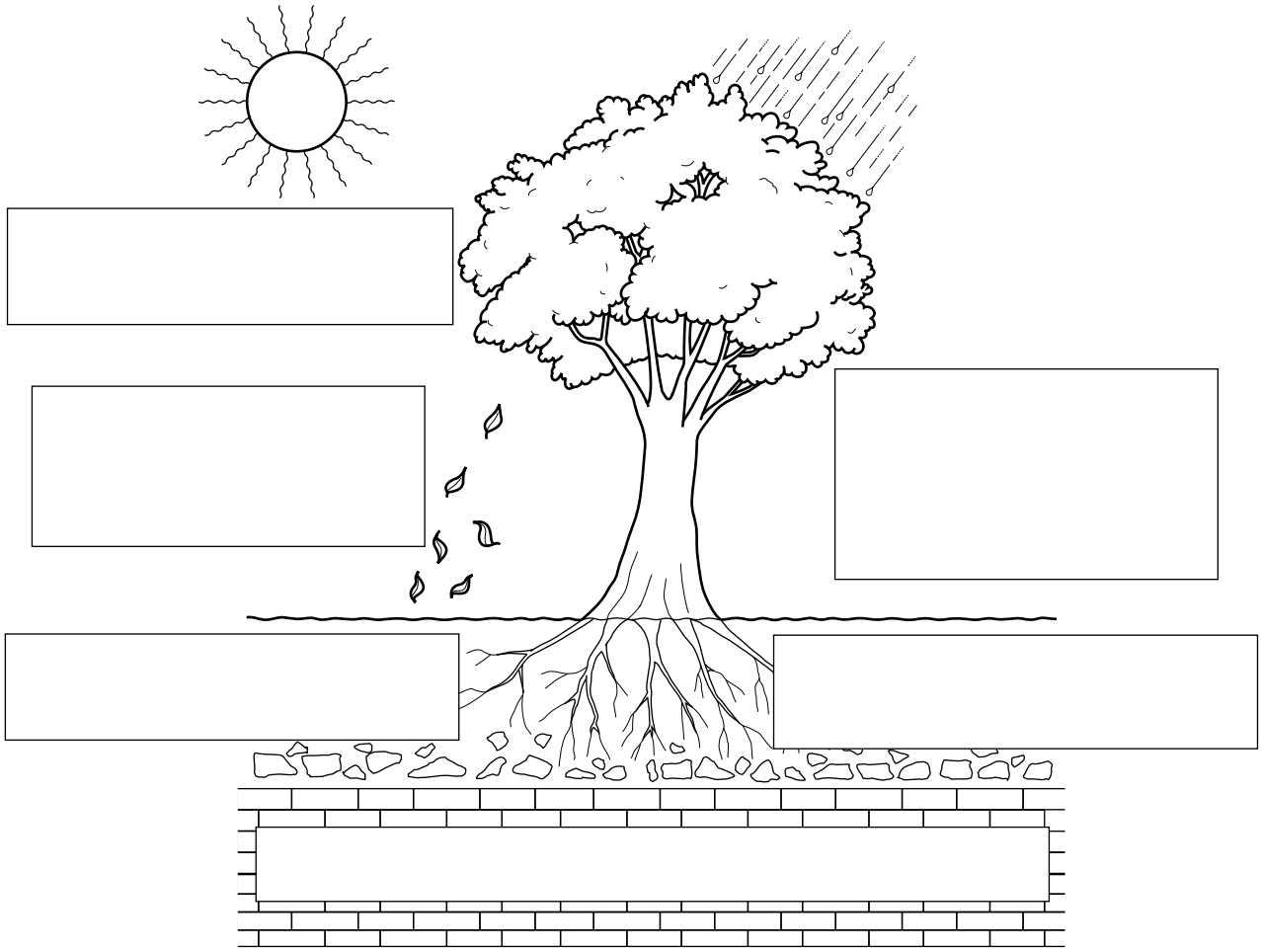
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
Total	

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

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1 **(a)** Look at the diagram of natural energy flows and stores for tre



(i) Fill in the spaces to complete the diagram of energy flows and stores for tree and forest growth.

Write your answers in the spaces on the diagram. [5]

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(ii) How and why are trees and other green plants the Earth

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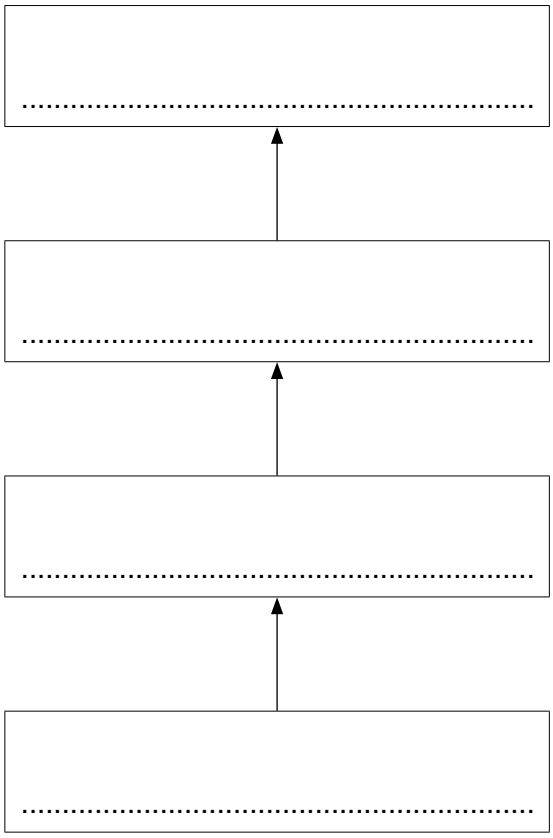
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(iii) Trees and other green plants support food chains. For a land based ecosystem of your choice, complete the diagram below by naming the organisms in the food chain and describing the natural vegetation.

location of land based ecosystem chosen .....



description of the natural vegetation

[4]

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(iv) What happens to the amount of energy passing along ecosystem? Explain why this happens.

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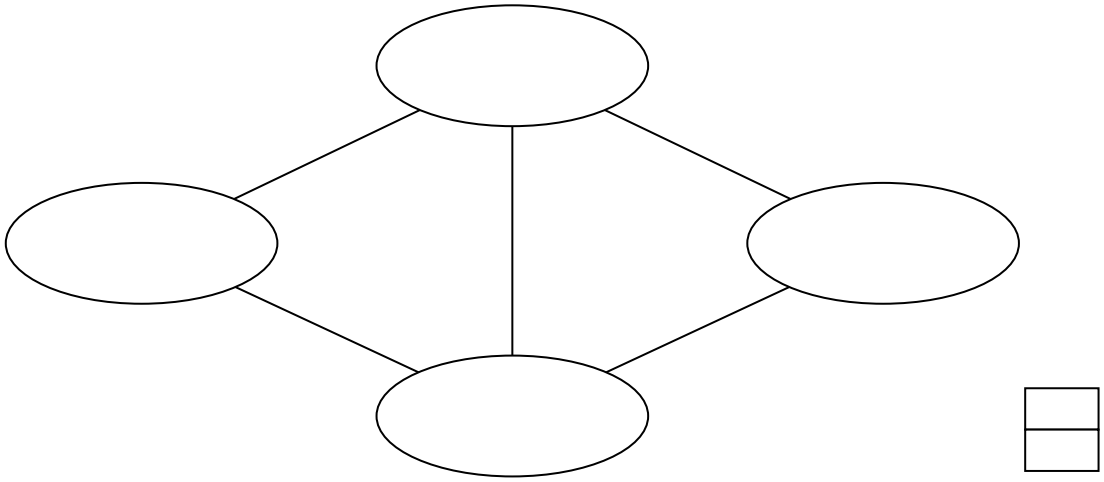
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(b) Trees grow in living communities in forest ecosystems. The diagram below shows the components of a natural forest ecosystem.



On the diagram:

(i) name two other components of the ecosystem,

(ii) shade or colour in each of the four components according to whether they are biotic or abiotic. Shade or colour in the key to match.

Put your answers on the diagram. [2]

(c) Biomes are large scale ecosystems. On a global scale, climate is the most important component of the ecosystem for determining characteristics of the natural vegetation and how they change over the Earth's surface.

Look at the cross section of natural vegetation from the coast of West Africa (latitude 5 °N) to the interior (latitude 20 °N) on page 5.

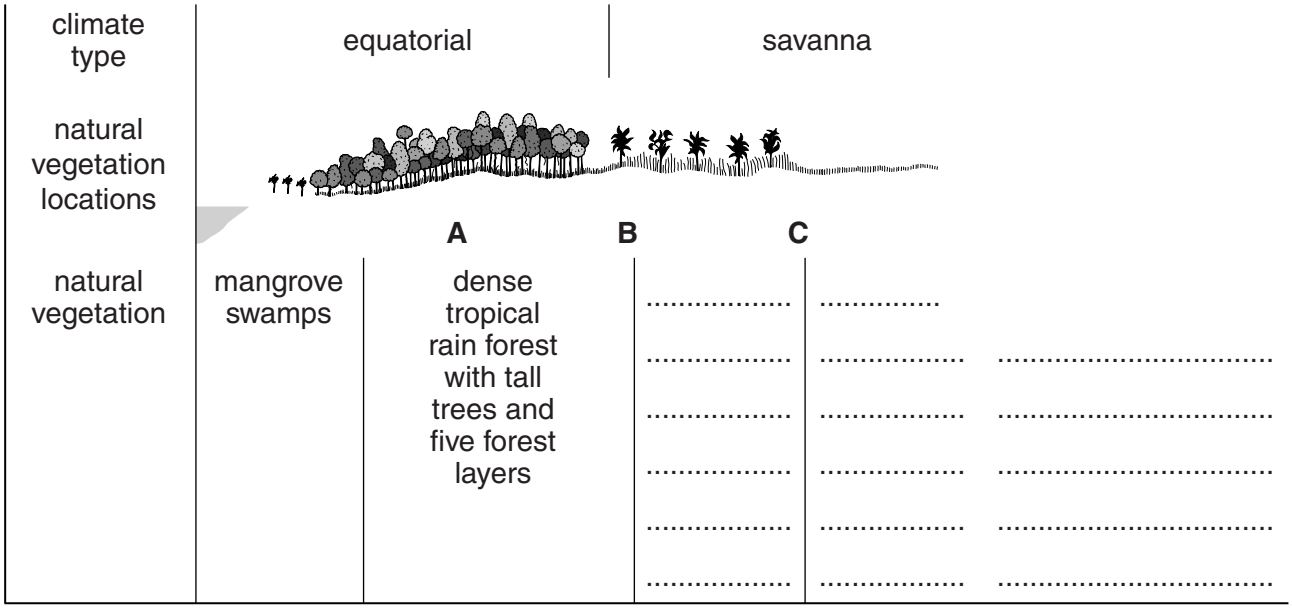
(i) The annual rainfall totals at the points marked **A** to **E** on the section are;
A: 2000 mm **B:** 1500 mm **C:** 1000 mm **D:** 500 mm **E:** 250 mm.

Plot these rainfall totals as a bar graph on the grid below the section. [2]

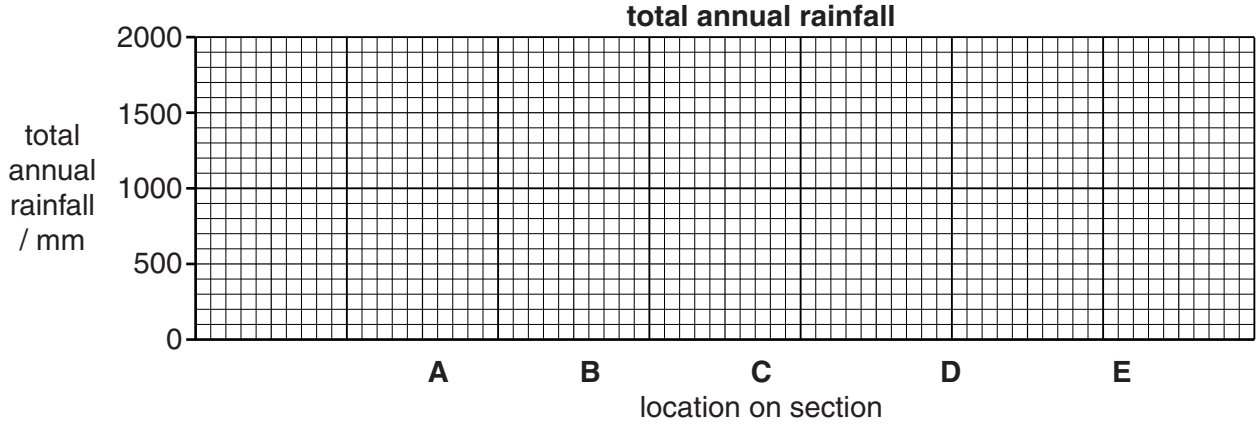
(ii) In the table below the section, describe the natural vegetation between points **B** and **C**, **C** and **D**, and **D** and **E**, in a similar way to what has already been done for **A**. [4]

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cross section of natural vegetation from the coast of West A



temperature of hottest and coldest month / °C		A	C	E
	hottest	**28**	**31**	**36**
	coldest	**26**	**24**	**22**



(iii) State which of the two climate factors, temperature or rainfall, is more important for explaining changes in natural vegetation between 5° and 20° north of the equator in West Africa. Explain your choice of factor.

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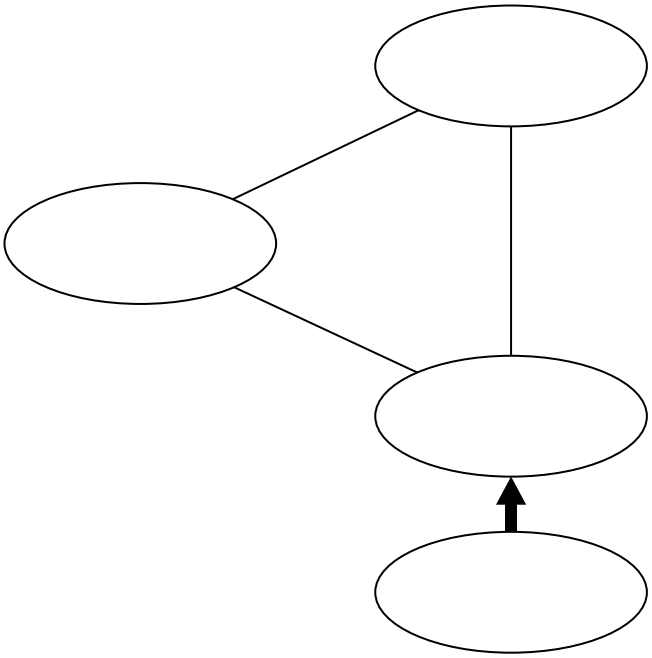
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(d) Today people are often added to diagrams of natural ecosyst
forest ecosystem modified by the addition of people.



(i) How and why is the role of people different from that of the other components which make up an ecosystem?

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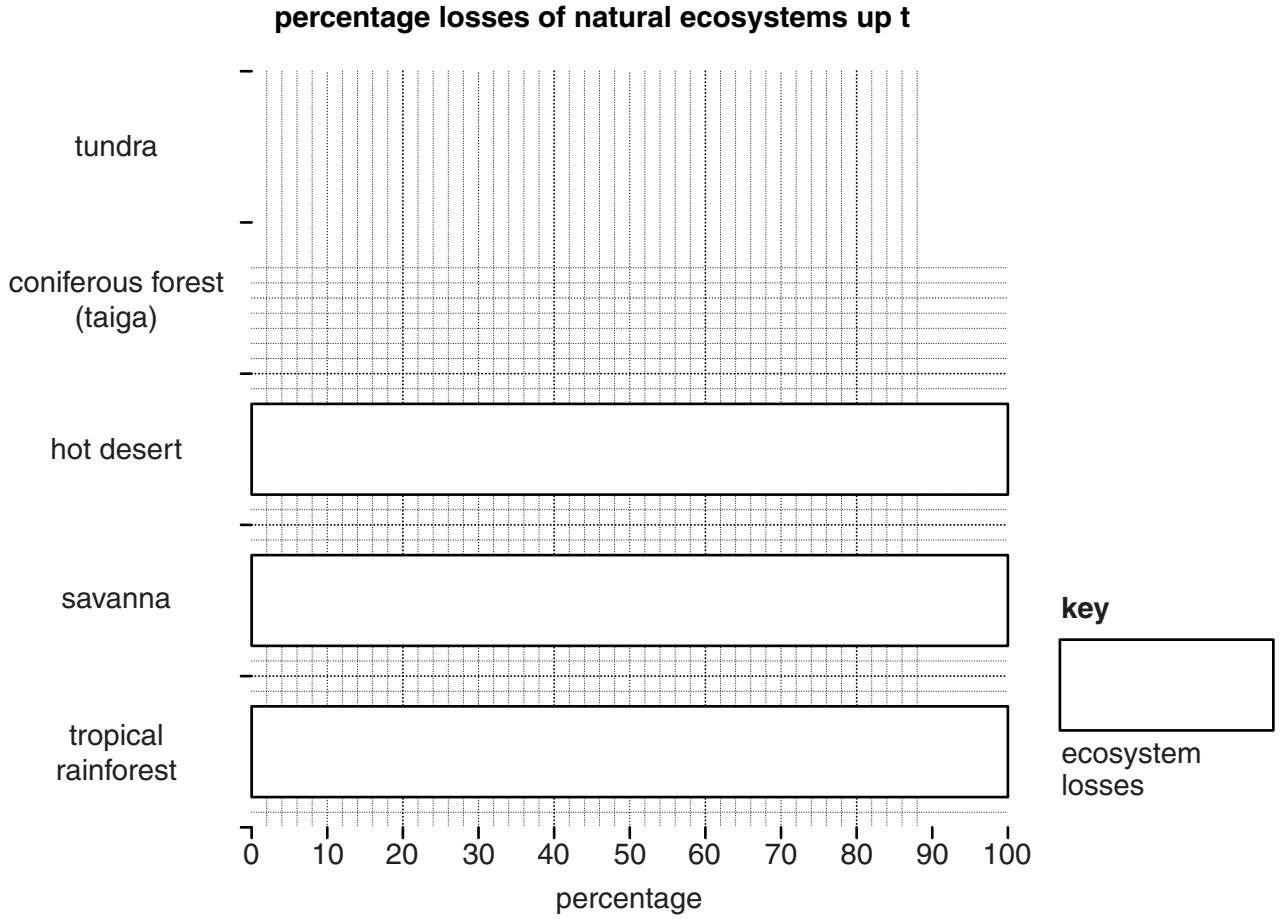
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(ii) The table shows estimates of the percentage losses of the area of five natural ecosystems (biomes) up to 2005.

natural ecosystem (biome)	percentage loss
tundra	2
coniferous forests (taiga)	5
hot deserts	25
savanna	55
tropical rainforest	40

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Show these percentages in divided bar graphs in the gri
key.



[2]

(iii) Suggest reasons for:

- variations in the size of percentage losses between the three tropical ecosystems
- the much lower percentage losses in the cold temperate and polar ecosystems.

tropical ecosystems .....

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polar ecosystems .....

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..... [5]

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(e) (i) Describe one sustainable forest management strategy use to obtain supplies of wood from natural forests.

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(ii) Explain why sustainable forest management strategies like this are not used in all forests.

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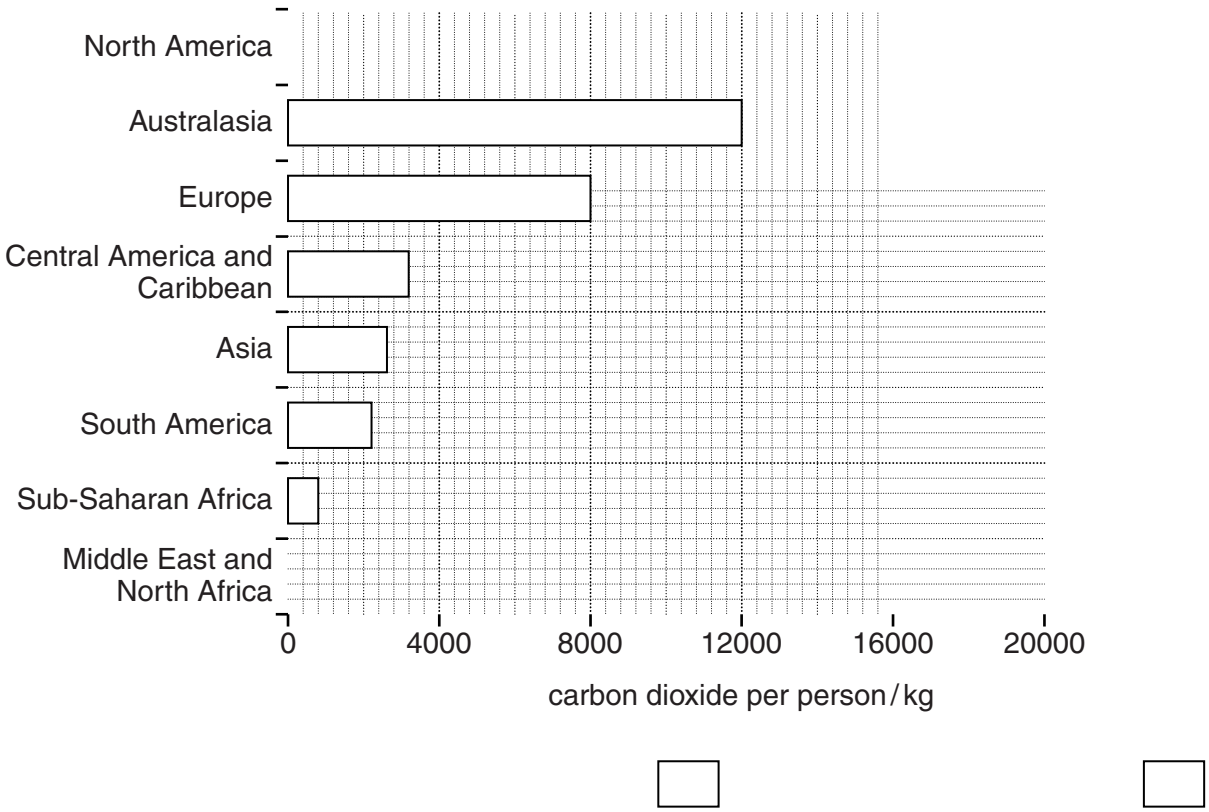
[4]

[Total: 40]

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2 **(a)** Look at the partly completed bar graph showing emissions of in major world regions.

carbon dioxide emissions per person in 2000 in major world



(i) Emissions of carbon dioxide per person in 2000 in the Middle East and North Africa were 3900 kilograms. Add this information in the space left at the bottom of the graph. [1]

(ii) On the graph, use different shading or colours to show whether the eight regions contain mainly developed or mainly developing countries. Fill in the key. [1]

(iii) Did you decide that the countries in the Middle East and North Africa are mainly developed or mainly developing?

Explain your choice of answer.

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..... [2]

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(iv) How big is the difference in emissions of carbon dioxide
America and Sub-Saharan Africa? State your answer in

Space for working.

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(v) According to one environmental group, a person living in
seven times more carbon dioxide emissions in a year than a person in Ethiopia is in a lifetime.

Why are there big differences in carbon dioxide emissions per person between different countries of the world? Explain your answer as fully as you can.

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..... [4]

(b) Carbon dioxide is one of the greenhouse gases. It is usually considered to be the most important greenhouse gas leading to global climate change.

(i) Name another important greenhouse gas.

..... [1]

(ii) Why are they called 'greenhouse gases'?

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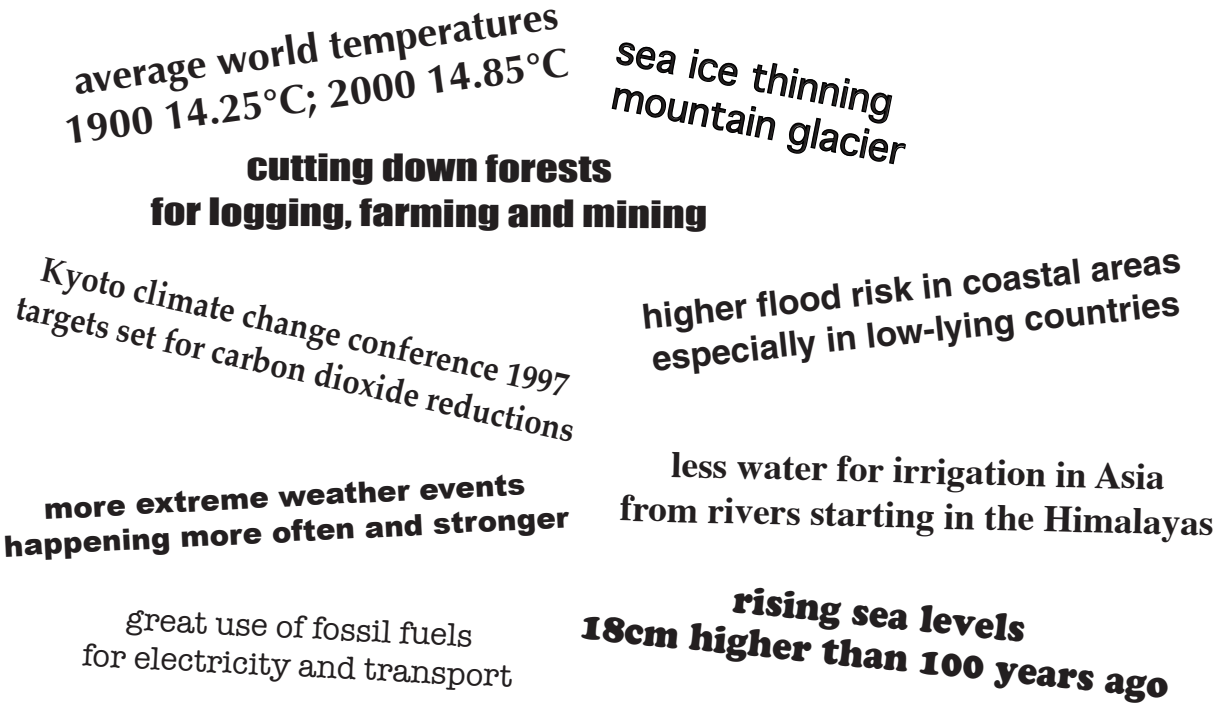
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(iii) Look at the box below which contains statements about

global climate change



Choose **two** statements which give physical evidence suggesting the existence of global warming, and another **two** statements which are effects of global warming on people.

Physical evidence for global warming.

1 .....

2 .....

Effects of global warming on people.

1 .....

2 ..... [2]

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(iv) Explain why some countries are more worried about the
than others.

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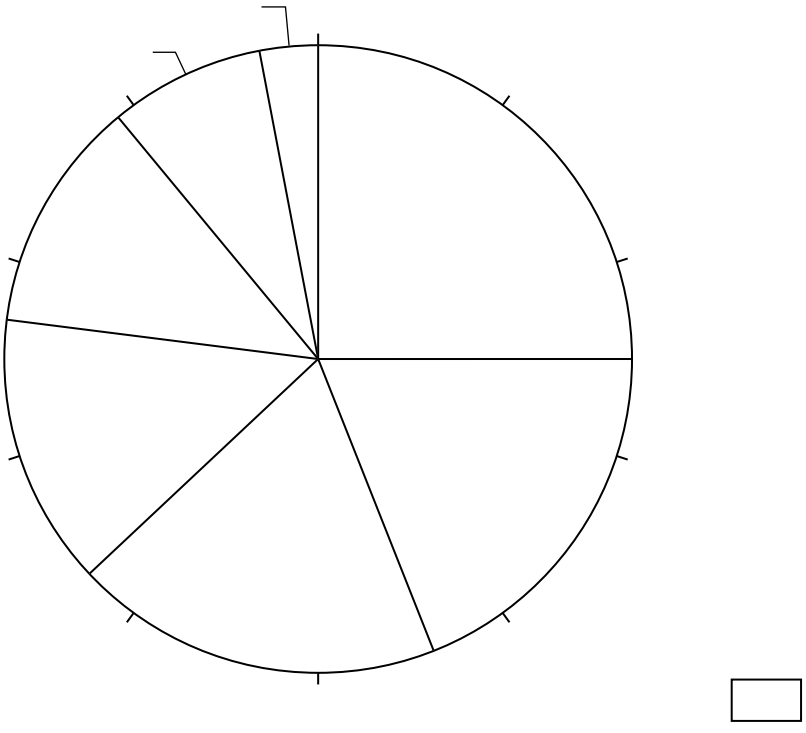
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(c) Many people believe that burning fossil fuels causes most of the increased greenhouse gas emissions and climate change.

Look at the pie graph showing global greenhouse gas emissions from different sources.



(i) Show which sources of greenhouse gas emissions are mainly due to burning of fossil fuels by shading or colouring the sectors and the key of the graph. [1]

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(ii) What is the approximate total percentage from the use o

Show your working.

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(iii) Choose one of the sources you have not shaded in the g
activities in this sector contribute to the emission of gree

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(iv) Explain how well the pie graph supports the view that the use of fossil fuels is most responsible for greenhouse gas emissions and climate change.

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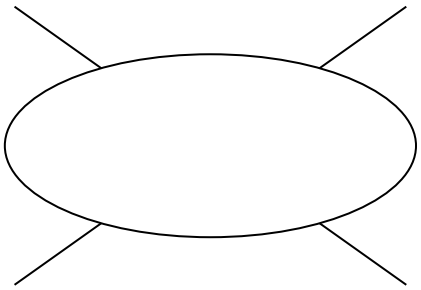
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(d) Many governments are interested in increasing the percen
sustainable alternative sources. Some examples of such alter
named in the diagram.



(i) What do all of these examples have in common that makes them sustainable sources of energy?

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(ii) State **two** different reasons why sustainable alternative energy sources currently contribute less than 10 percent of global energy consumption.

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..... [2]

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(iii) Choose **one** of the alternative energy sources named i
information about where it is used and how people har
energy.

chosen alternative source .....

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(iv) Suggest and explain how good the chances are of your chosen alternative energy source being more widely used in future years.

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(v) Suggest and explain your view of the chances of a significant increase in the use of all types of alternative energy sources for world energy supplies during the next 10–20 years.

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[Total: 40]

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