Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

1706635760

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 **October/November 2018**

2 hours 15 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 **all** 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.

Write your answers in the spaces provided on the Question Paper.
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.

This document consists of **24** printed pages.

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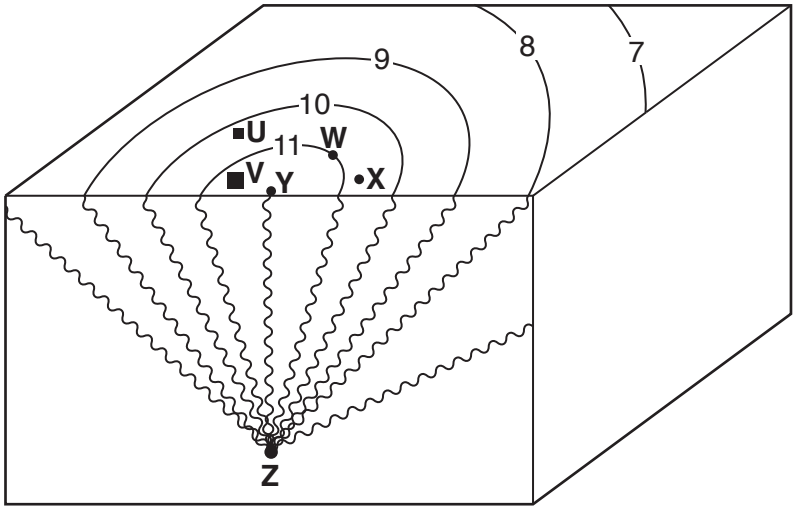
CAMBRIDGE
International Examinations

Section A

Answer **all** the questions.

1 **(a)** The diagram shows the pattern of levels of damage caused by an earthquake.



Key

——— line of equal earthquake damage

—11— very disastrous

—10— disastrous

— 9 — ruinous

— 8 — destructive

— 7 — very strong

▪ **U** village

■ **V** town

(i) Identify the letter on the diagram, **U**, **V**, **W**, **X**, **Y** or **Z**, that shows the location of:

the point where the movement that caused the earthquake occurred

.....

the point on the Earth's surface where the greatest damage by the earthquake would be.

.....
[2]

(ii) Describe the pattern of the damage of the earthquake at the surface of the Earth.

.....

.....[1]

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(iii) Describe the likely impacts of the earthquake on the town at **V**, shown on the diagram.

.....

.....

.....

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.....

.....[4]

(b) **(i)** Give **one** reason why some towns are located in earthquake zones.

.....

.....[1]

(ii) Describe **two** ways in which the risks of damage in a town located in an earthquake zone can be reduced.

1 .....

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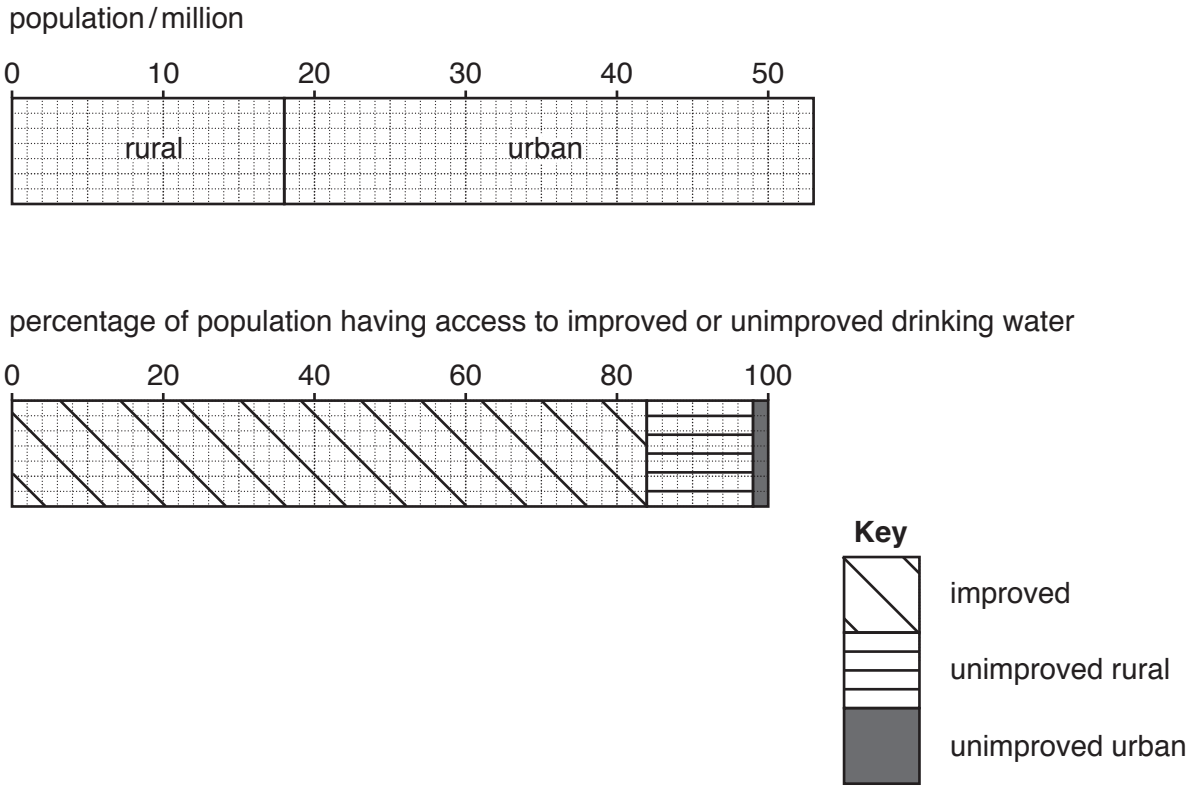
2 .....

.....
[2]

2 **(a)** The graphs show the rural and urban populations of a country in Asia and the percentage of the population with access to improved or unimproved drinking water.



(i) State the total population living in rural areas in this country.

.....[1]

(ii) State the percentage of rural population with unimproved drinking water supplies.

.....% [1]

(iii) Calculate the number of people living in rural areas of this country that have unimproved drinking water supplies.

.....[1]

(b) People with unimproved drinking water supplies collect water from wells, rivers and ponds and filter it through a cloth.

Suggest the likely problems of this method of supplying drinking water for a family.

.....

.....

.....

.....

.....

.....[3]

(c) Explain why most people have good quality drinking water in developed countries.

.....

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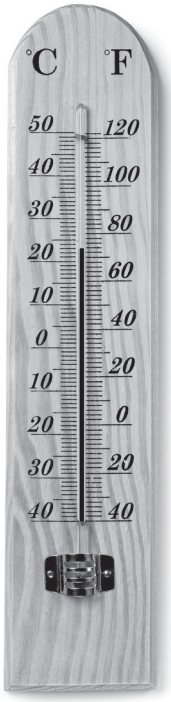
.....[4]

3 **(a)** The photograph shows a weather instrument found on the outside of a building.



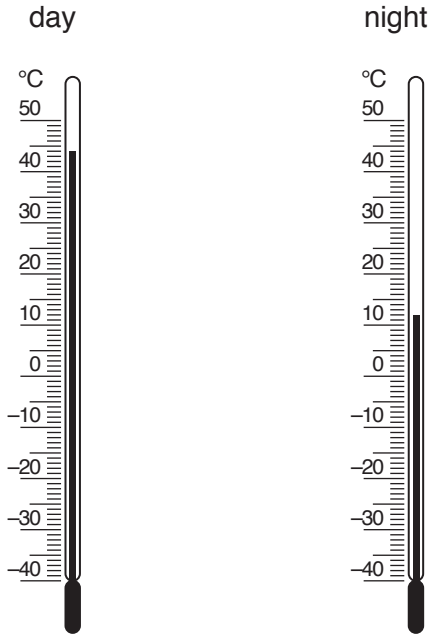
(i) State the element of weather that is measured by this instrument.

.....[1]

(ii) State the reading when the photograph was taken.

.....°C [1]

(iii) The diagram shows maximum and minimum recordings of the weather instrument on the same day.



Calculate the range of recordings for the day.

.....°C [1]

(b) **(i)** The photograph of the weather instrument was taken in a desert area. Describe the climate in this desert.

.....

.....

.....

.....

.....

.....[3]

(ii) Circle the most likely latitude at which the photograph was taken.

0° **30°** **60°** **90°** [1]

(c) **(i)** The average global temperature is increasing.

Explain how this increase could affect desert vegetation.

.....

.....

.....

.....[2]

(ii) Describe why international action is needed to reduce further increases in average global temperatures.

.....

.....[1]

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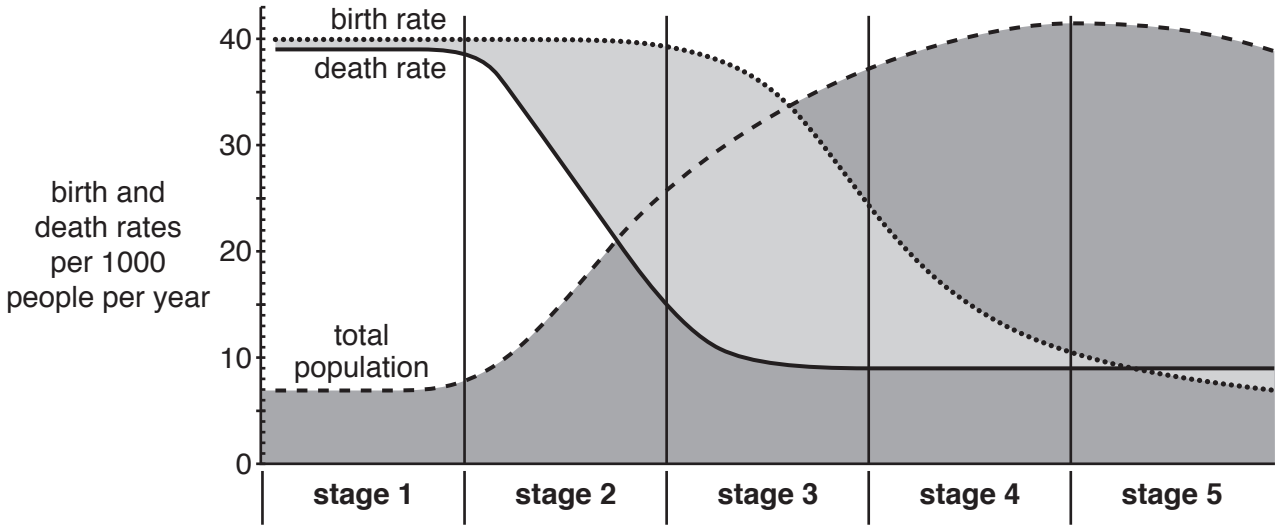
4 **(a)** The diagram shows a model of demographic transition and the table shows birth and death rates for three countries in certain years.



country	year	birth rate per 1000 people per year	death rate per 1000 people per year	stage in model of demographic transition
A	1970	33	9	.....
B	2015	8	9	.....
C	1960	40	20	.....

Use the model of demographic transition and the table to identify which stage each country was in for the year stated. Write your answers in the table. [3]

(b) Describe the social and economic problems for a country that has a rapidly growing population.

.....

.....

.....

.....

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.....

.....[4]

(c) Explain how education could reduce population growth.

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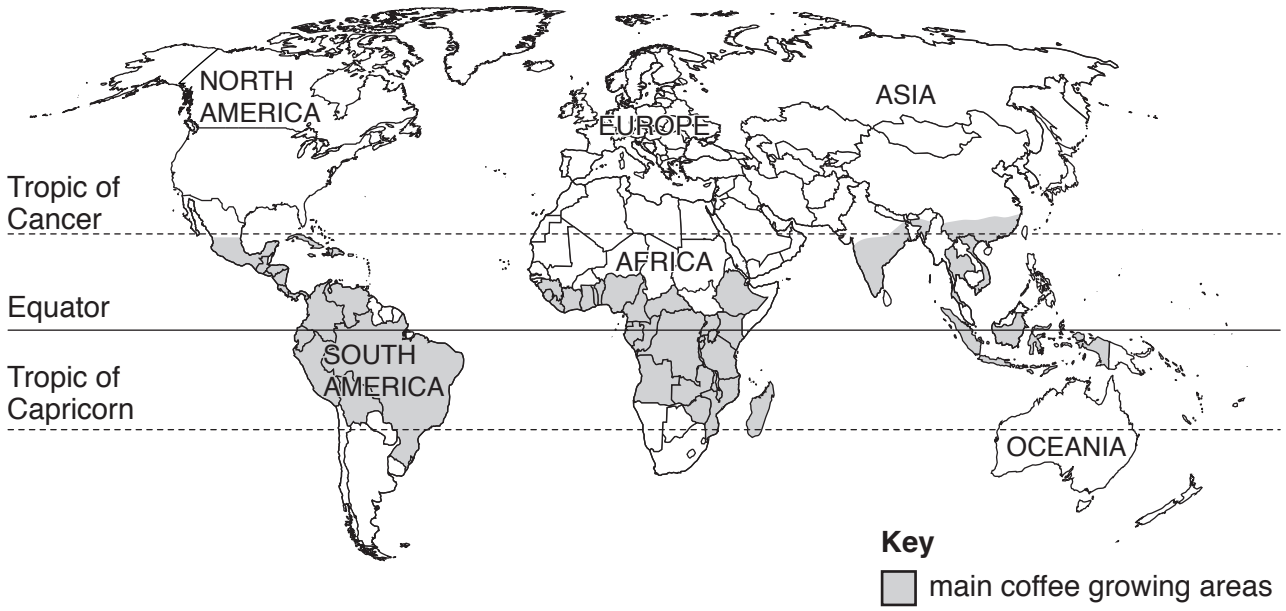
.....[3]

Section B

Answer **both** questions.

5 Coffee is a major world crop. The main coffee growing areas are shown on the map.



(a) (i) Describe the distribution of the main coffee growing areas shown on the map.

.....

.....

.....

.....[2]

(ii) There are four common species of coffee grown for coffee bean production.

The table shows a summary of their properties.

properties of coffee species	**coffee species**			
	Coffea arabica	*Coffea liberica*	*Coffea canephora*	*Coffea stenophylla*
required soil pH range	5.0–7.0	5.0–6.5	4.5–7.0	5.0–7.0
leaf size	medium	large	medium	medium
cold resistance	poor	adequate	good	poor
yield	adequate	poor	good	poor
flavour	good	poor	poor	poor
disease resistance	poor	good	good	adequate

Circle the species of coffee that can be grown in the widest range of soil pH.

Coffea arabica ***Coffea liberica*** ***Coffea canephora*** ***Coffea stenophylla***

[1]

(iii) Growing coffee outside the required pH range will reduce plant growth.

Suggest **one** reason for this.

.....

.....[1]

(iv) Name **two** factors that affect the pH of a soil.

1 .....

.....

2 .....

.....
[2]

(v) A farmer is considering growing coffee on a large area of land.

Some information about the area of land was recorded.

SITE ANALYSIS
site: slightly sloping
soil: good drainage
soil pH: 6.0
nutrient level: high
climate: cool at night

Suggest which species of coffee the farmer should grow.

Use the site analysis information and the table from **(ii)** to explain your answer.

species .....

explanation .....

.....

.....

.....

.....
[3]

(b) **(i)** The photograph shows an area where coffee is being grown.

Circle the term which best describes this type of farming.

commercial croplands	**commercial grazing lands**	**subsistence croplands**	**subsistence grazing lands**

[1]

(ii) This type of farming may also be described as intensive.

Define the term *intensive farming*.

.....

.....

.....

.....[2]

(iii) A coffee farmer is planning to increase the level of mechanisation they use to harvest the crop.

Give **one** advantage and **one** disadvantage of increased mechanisation.

advantage .....

.....

disadvantage.....

.....

[2]

(c) **(i)** Coffee grown without the use of artificial pesticides can be sold at a higher price.

Explain how pests might be controlled without the use of artificial pesticides.

.....

.....

.....

.....

.....

.....[3]

(ii) Coffee grown with artificial pesticides costs 1.10 USD per kg.

Coffee grown without artificial pesticides costs 20% more.

Calculate the cost of this coffee.

..... USD per kg [1]

(iii) Suggest why some people might be against the use of artificial pesticides on a coffee crop.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(iv) Rust disease is a major threat to coffee crops because plants with the disease die.

Some scientists suggest the way to control rust disease in coffee is to use genetic engineering.

Explain how genetic engineering might be a solution to this problem.

.....

.....

.....

.....[2]

(v) Suggest **three** reasons why some people might be against the use of genetic engineering.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(d) (i) In South America trees have been removed to grow more coffee.

Describe the impact the removal of trees may have on the local ecosystem.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(ii) Suggest **three** ways the government could help conserve these trees.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(e) 'Sustainable agricultural techniques are a viable economic strategy for farmers.'

To what extent do you agree with this statement?

Give reasons for your answer.

.....

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.....[6]

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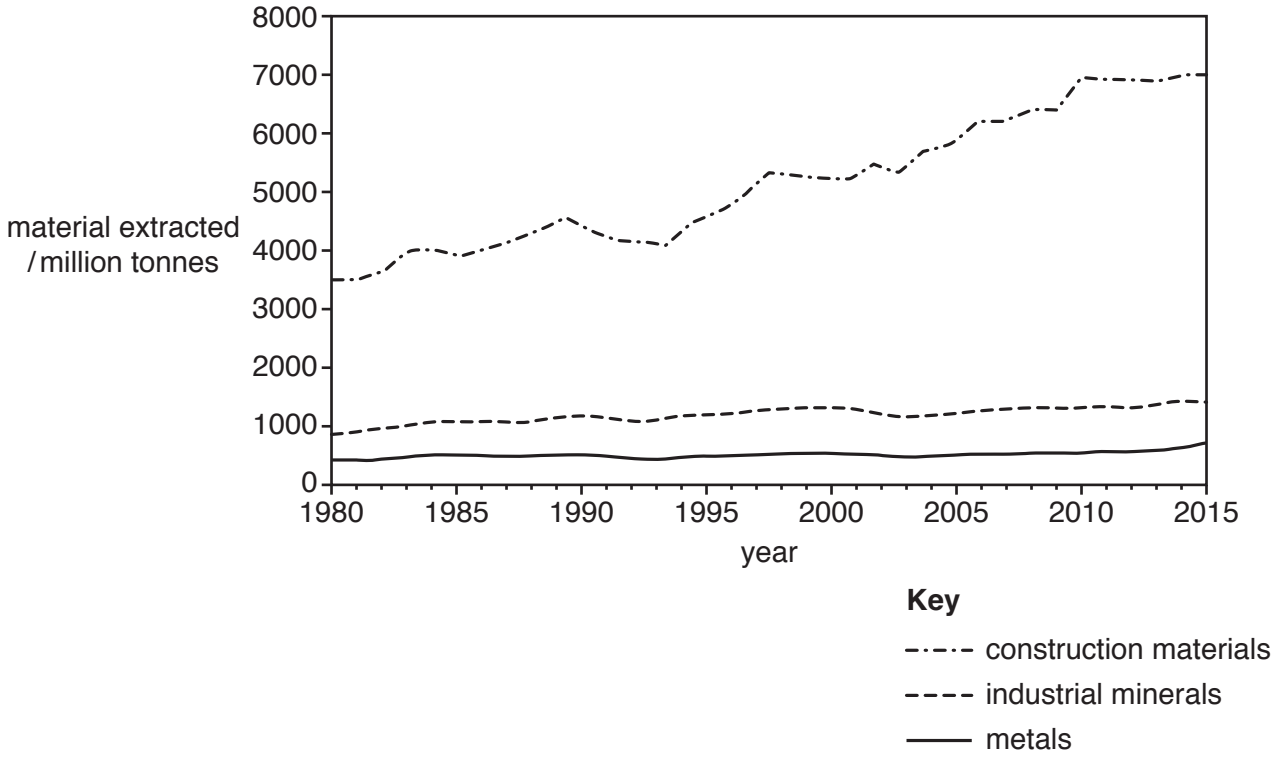
6 The graph shows the worldwide extraction of materials from mines between 1980 and 2015.



(a) **(i)** Use the graph to estimate the percentage increase in the worldwide extraction of construction materials from mines between 1980 and 2015.

Circle your answer.

30% **50%** **70%** **100%**

[1]

(ii) Use the graph to identify the material that has been extracted in the largest quantity. Give reasons why the extraction of this material has continued to increase.

material .....

reasons .....

.....

.....

.....

.....

[3]

(iii) The types and quantities of metals extracted between 1980 and 2015 have changed in their relative proportions.

Suggest reasons for this.

.....

.....

.....

.....

.....

.....[3]

(b) **(i)** Industrial processes produce waste. These waste products have a number of negative impacts.

Suggest **three** ways the production of waste products could be reduced.

1 .....

.....

2 .....

.....

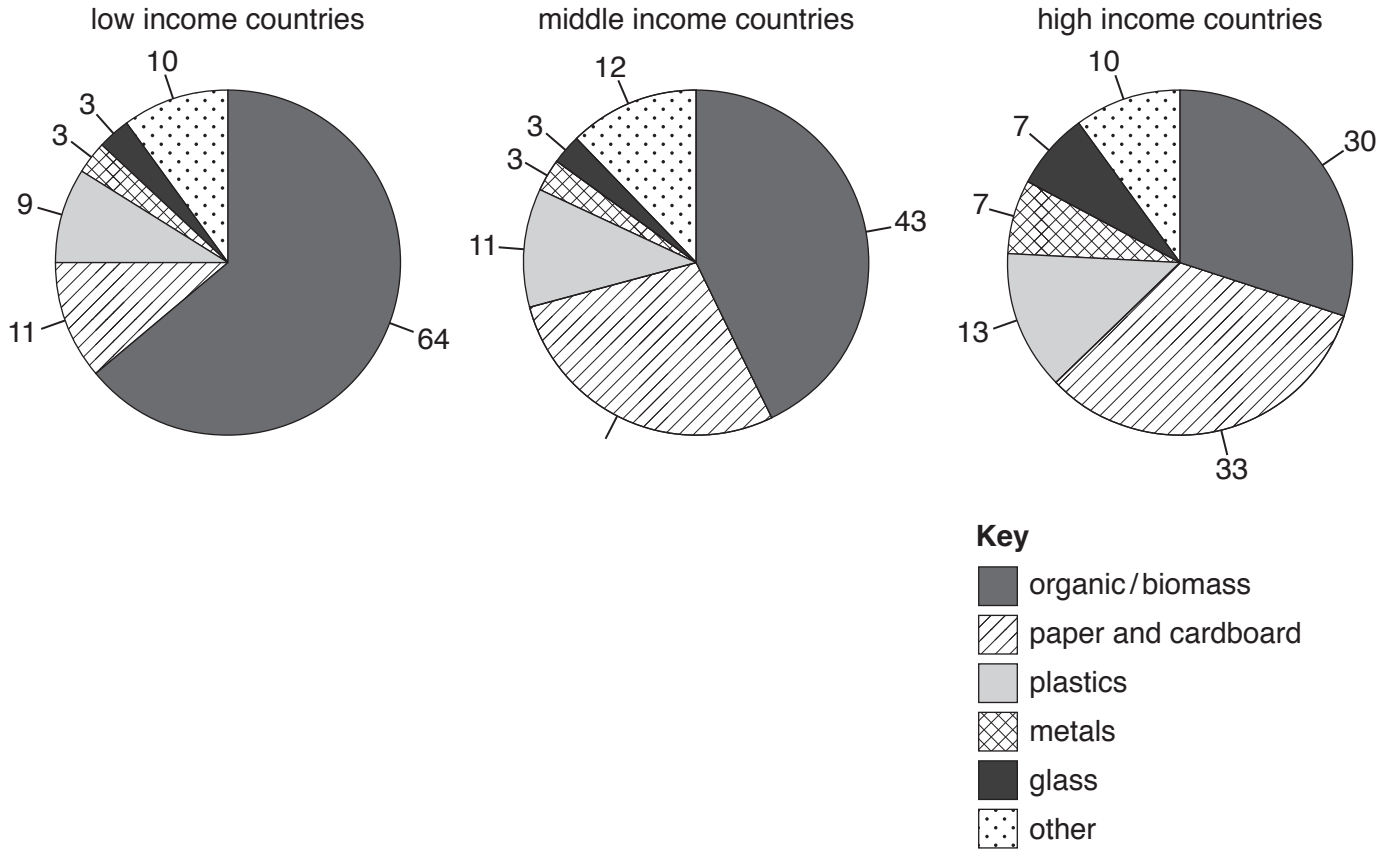
3 .....

.....

[3]

(ii) Research shows that the wealth of a country has an impact on the type of household waste that it produces.

The pie graphs show the percentage of different materials in household waste from low, middle and high income countries.



Calculate the percentage of paper and cardboard waste produced in a middle income country.

.....[1]

(iii) Rank the top three types of household waste produced in low income countries and high income countries from highest to lowest.

	rank	type of waste	
		low income country	high income country
highest ↓	1st		
	2nd		
lowest	3rd		

[2]

(iv) Describe the differences in the percentage of organic waste and paper and cardboard waste produced by low, middle and high income countries.

organic waste .....

.....

paper and cardboard waste .....

.....

[2]

(v) Suggest reasons for the differences described in **(iv)**.

organic waste .....

.....

paper and cardboard waste .....

.....

[2]

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(vi) Many governments have plans to reduce the volume of waste entering landfill sites.

This newspaper article describes a new scheme.

> A new scheme has been set up to produce compost from organic waste.
>
> The new scheme should create 1200 new jobs, 400 in collection activities and 800 in the processing of compost.
>
> Workers will collect 700 tonnes of organic waste per day, which will produce 50 000 tonnes of compost per year. The new employer will provide workers with health insurance, free meals and access to a child day-care centre.
>
> Benefits from the scheme will include a cheap supply of compost, an organic fertiliser, that will improve the condition of the soil and reduce the need for irrigation.

Describe **three** benefits to the local people from this new scheme.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(vii) Suggest how spreading compost on the soil surface would reduce the need for irrigation.

.....

.....[1]

(viii) Name another useful resource that could be produced from this organic waste.

.....[1]

(c) **(i)** Building regulations in some high income countries require office buildings to be designed so that they require fewer resources when in use.

Suggest **four** ways in which the design of the building may help to do this.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

[4]

(ii) Some countries do **not** require office buildings to be designed so that they require fewer resources when in use.

Suggest **three** reasons why.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(d) **(i)** Some countries have large supplies of natural gas. They export this gas to other countries that have a shortage of supply.

Suggest **two** benefits and **two** risks to a country that relies on buying gas from other countries to meet their own needs.

benefit 1 .....

.....

benefit 2 .....

.....

risk 1 .....

.....

risk 2 .....

.....
[4]

(ii) State **one** advantage of using methane for electricity generation compared with using coal.

.....

.....[1]

(e) 'Burying waste in the ground is the best way to dispose of it.'

To what extent do you agree with this statement?

Explain your reasons.

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.....[6]

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