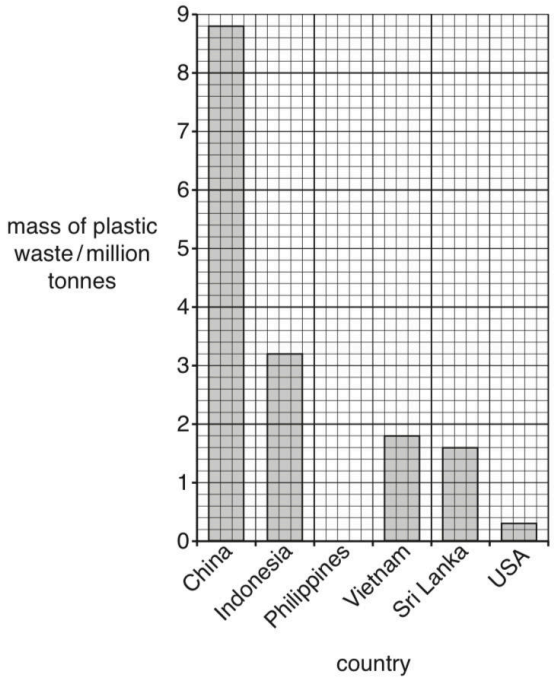
2 **(a)** The bar graph shows the mass of plastic waste that entered oceans in 2010 from six countries.



(i) Complete the bar graph to show that 1.8 million tonnes of plastic waste entered the ocean from the Philippines in 2010. [1]

(ii) State the mass of plastic waste that entered the ocean from Indonesia.

..... million tonnes [1]

(iii) Compare the mass of plastic waste that entered the oceans from the coast-lines of China and the USA in 2010.

.....

.....[1]

(b) Suggest why the amount of plastic waste entering the oceans varies from country to country.

.....

.....

.....

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.....

.....[3]

(c) Describe the problems caused by plastic waste in the oceans.

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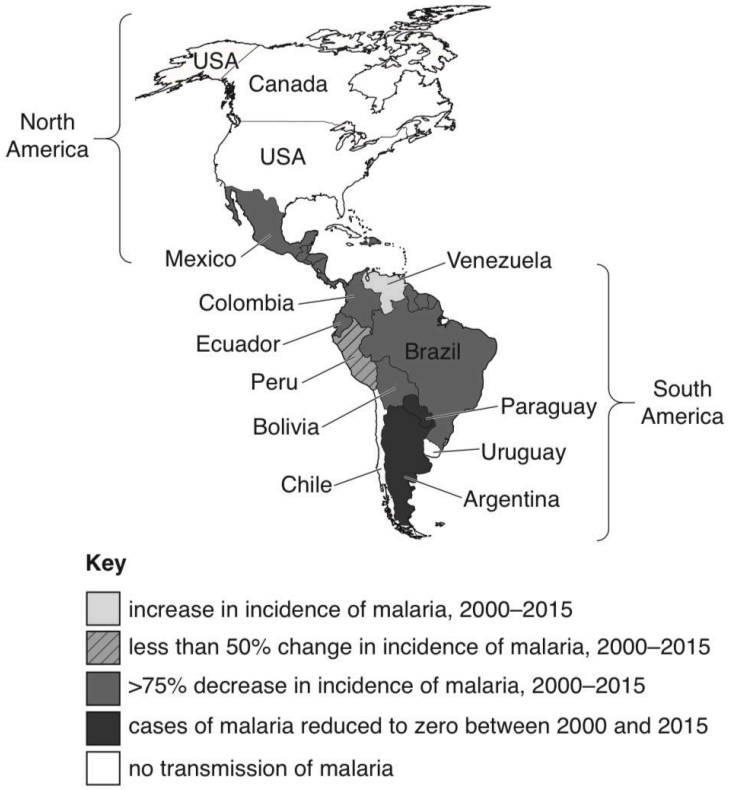
.....[4]

2 The map shows changes in the incidence of malaria in countries of North and South America from 2000 to 2015.



(a) (i) State the main difference in the incidence of malaria between the North and South American continents.

.....

.....[1]

(ii) Name a country in South America where:

- there was no transmission of malaria between 2000 and 2015 .....
- the incidence of malaria has increased. .....

[2]

(b) Suggest why some countries have been more successful in reducing the incidence of malaria than others.

.....

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.....[3]

(c) Explain why it is important to reduce the incidence of water-related diseases.

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.....[4]

6 **(a)** The newspaper article is about the link between toxins (pollutants) in the oceans and the death of whales.

Increase in whale deaths around the UK

Scientists think that flame retardants and polychlorinated biphenyls (PCBs) released in the oceans damage the immune system of whales. Whales then become infected with diseases and parasites which cause them to become confused and swim onto beaches where they die. Whales accumulate toxins from the food they eat. Almost 600 whales died on UK beaches in 2014. It has been found that these whales had the highest concentration of PCBs in their bodies of whales anywhere in the world.

(i) State the **two** toxins from the article thought to cause the death of whales.

..... and ..... [1]

(ii) Explain why toxin levels are higher in top predators than in animals lower in the food chain.

.....

.....

.....

..... [2]

(iii) Suggest how toxins enter the oceans.

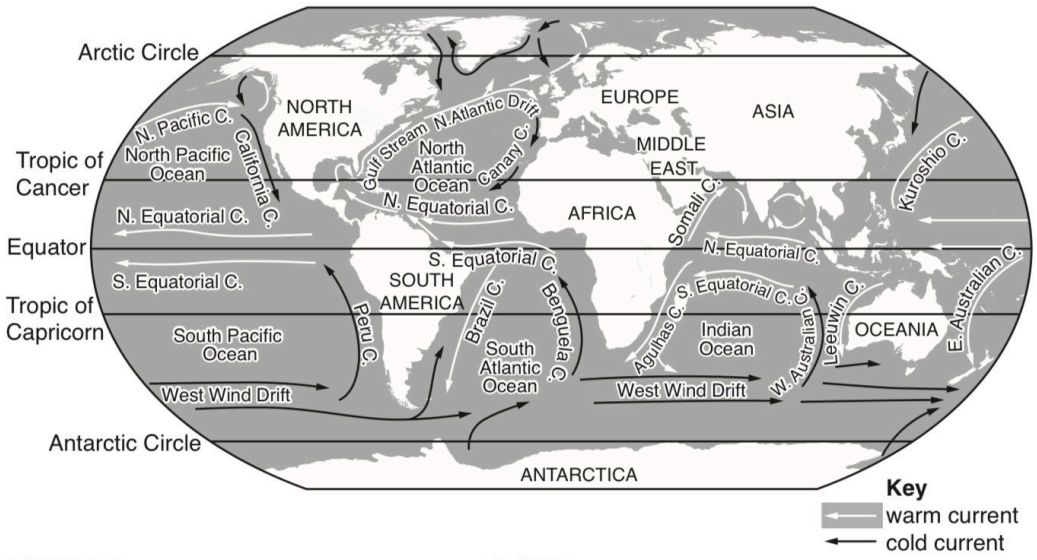
.....

.....

.....

..... [2]

(b) The map shows warm and cold ocean currents.



(i) Name the cold current along the west coast of South America.

..... [1]

(ii) Describe the movement of ocean currents in the Atlantic Ocean.

.....

.....

.....

.....

.....

..... [3]

(iii) Suggest how oil pollution from the Middle East can reach Antarctica.

.....

.....

.....

..... [2]

(iv) Describe the effect of the Benguela current on the climate of the west coast of southern Africa.

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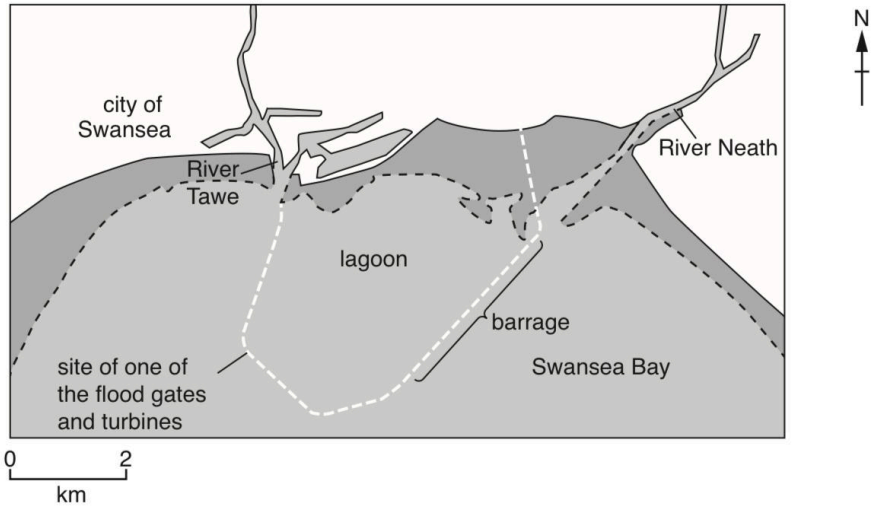
..... [2]

(c) The information is about a proposed tidal barrage for generating electricity in Swansea Bay in the UK.

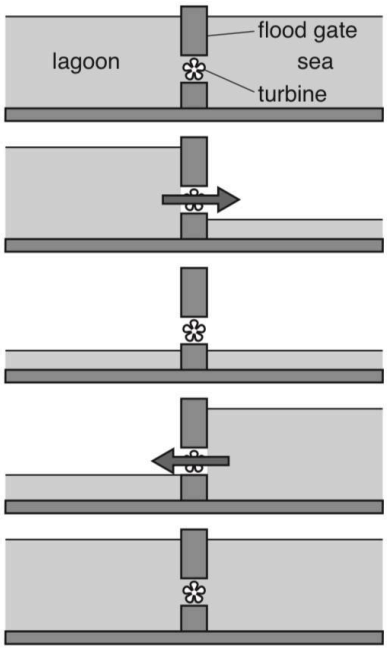


Swansea Bay has one of the world's largest tidal ranges, often reaching 10 m. A 10 km long barrage would be built 3 km out to sea. The barrage would have 16 underwater turbines generating electricity on both the rising (incoming) and falling (outgoing) tide. Enough renewable power would be generated for 155 000 homes for 120 years.

An environmental impact assessment (EIA) is needed before the barrage can be built. The EIA will identify environmental impacts on coastal ecosystems and suggest ways to reduce them.

How it works

As the tide goes out, the flood gates in the barrage stay closed and the lagoon stays full. The flood gates are then opened to let the water out until water levels on each side of the barrage are the same. When the tide comes in the process is reversed.



starting point; high tide; lagoon full

↓

tide goes out forming
a head of water in the lagoon

↓

low tide; no head of water in the lagoon

↓

tide comes in forming
a head of water outside the lagoon

↓

return to starting point

(i) State the tidal range in Swansea Bay.

..... m [1]

(ii) Briefly describe how electricity will be generated at the barrage.

.....

.....

.....

.....

.....

..... [3]

(iii) Explain why the barrage is a renewable method of generating electricity.

.....

.....

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..... [2]

(iv) State how many homes will be provided with electricity by the barrage.

..... [1]

(v) Suggest why it is important that the rivers Tawe and Neath still flow into the sea rather than into the lagoon.

.....

.....

.....

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.....

..... [3]

(vi) Suggest why people are concerned about the environmental impact of the barrage.

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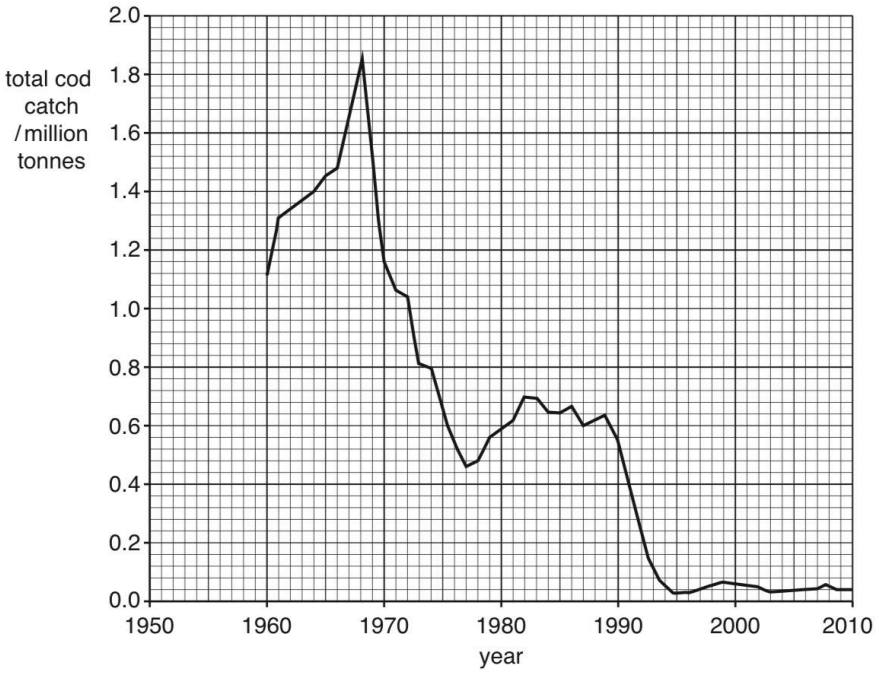
..... [4]

(d) The graph shows the cod catch in the Northwest Atlantic Ocean from 1950 to 2010. Cod are a species of fish.



(i) Complete the graph using the data in the table.

year	total cod catch /million tonnes
1950	0.6
1955	0.9

[1]

(ii) Describe the change in the cod catch in the Northwest Atlantic Ocean from 1960 to 1995.

.....

.....

.....

.....

.....

..... [3]

(iii) Suggest **one** reason why the cod catch has remained low since 1995.

.....

..... [1]

(iv) Cod are part of the Atlantic Ocean ecosystem.

Explain the meaning of the term *ecosystem*.

.....

.....

.....

..... [2]

(e) 'Plastics cause greater damage to marine environments than raw sewage and heavy metals.'

How far do you agree with this statement? Give reasons for your answer.

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..... [6]

6 **(a)** The table shows the percentage of the population of ten countries in Africa with access to safe drinking water in 1990 and in 2015.

country	percentage of the population with access to safe drinking water	
	1990	**2015**
Angola	42	49
Botswana	92	96
Ethiopia	13	57
Ghana	56	89
Malawi	43	90
Niger	34	58
Rwanda	59	76
South Africa	83	93
Tanzania	54	56
Zimbabwe	79	77
average	55.5	.....

(i) Complete the table by calculating the average percentage of the population with access to safe drinking water in 2015. [1]

(ii) State the country that had:

a decrease in access to safe drinking water from 1990 to 2015

.....

the lowest access to safe drinking water in 2015

.....

the largest increase in access to safe drinking water from 1990 to 2015.

.....

[3]

(iii) Explain why access to safe drinking water is important for people.

.....

.....

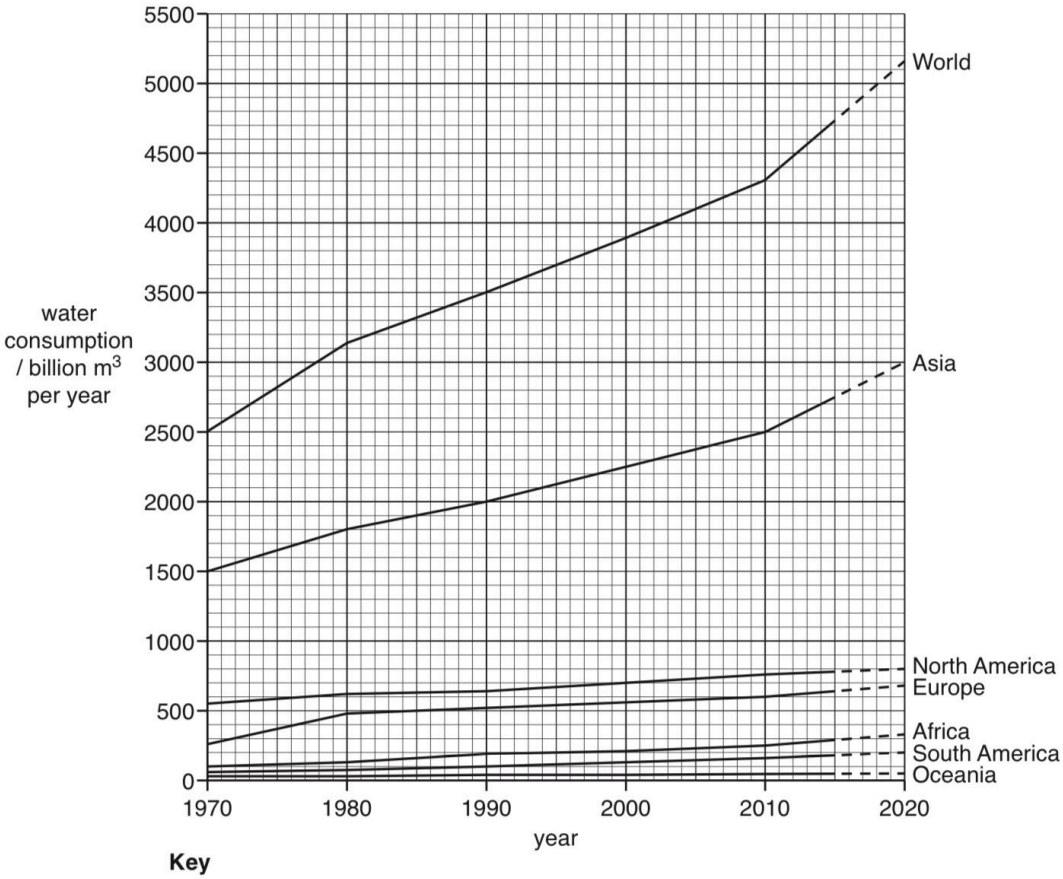
.....

.....

.....

..... [3]

(b) The graph shows global water consumption by continent from 1970 to 2015 and predicted to 2020.



(i) State the water consumption in Europe in 2010.

..... billion m^3 per year [1]

(ii) Compare water consumption in Asia with that in North America from 1970 to 2020.

.....

.....

.....

.....

.....

..... [3]

(iii) Calculate the percentage of the world's water consumed in Asia in 1990.
Circle the correct answer.

51% **54%** **57%** **60%** **63%**

[1]

(iv) The population of Africa in 2015 was 1.25 billion.

Use this figure and the graph to calculate the average water consumption per person per year in Africa in 2015.

..... m^3 per person per year [2]

(v) Explain why global water consumption keeps increasing.

.....

.....

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.....

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..... [3]

(c) Describe how human activities in towns and cities can pollute water sources.

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..... [4]

(d) 'Water pollution is a more serious problem than the enhanced greenhouse effect.'

How far do you agree with this statement? Give reasons for your answer.

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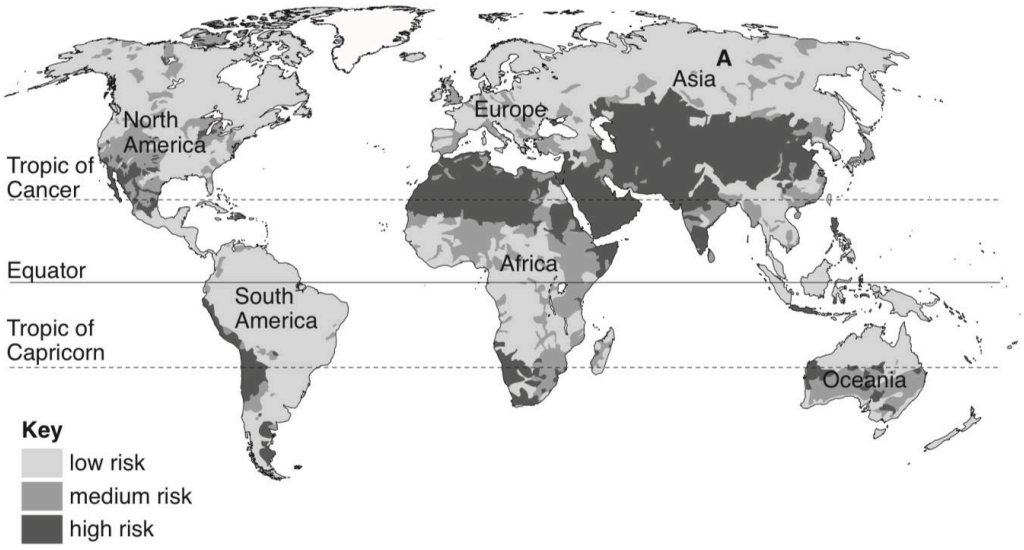
..... [6]

[Total: 27]

2 The map shows areas with a low, medium or high risk to water supplies. The risks to water supplies include low annual rainfall, risk of drought, pollution of supplies and overuse of water.



(a) Describe the location of the areas with a high risk to water supplies in South America.

.....

.....

.....

..... [2]

(b) Suggest reasons why there is a low risk to water supplies at location **A**.

.....

.....

.....

..... [2]

(c) Explain why there is overuse of water in some parts of the world.

.....

.....

.....

..... [2]

(d) State **two** strategies farmers can use to prepare for the impacts of drought.

1 .....

.....

2 .....

.....

[2]

[Total: 8]

7 The article is from a newspaper reporting on local flooding in Malawi, a country in Africa.

Floods in Karonga District, Malawi

Four people died and three people are still missing after flooding on 4th April 2017. Officials say that 5520 households were affected and about 1075 hectares of crops were damaged.

The Vice President of Malawi visited the area and assured the people that the government will do everything it can to support them. Experts predict the long term effects of this flood will result in more deaths.

A road bridge was washed away in the floods, causing major traffic problems and affecting delivery of emergency supplies.

Similar floods occurred in the north of the country in April 2016. At least 12 people died and 9000 were left homeless. Earlier in 2017, floods hit the Malawi capital after a river burst its banks following six hours of heavy rain.

(a) Complete the table using information from the article about the flood on 4th April 2017.

number of people killed	.....
number of households affected	.....
area of crops damaged	.....

[3]

(b) Explain why experts predict that the number of deaths will increase in the long term.

.....

.....

.....

.....

.....

..... [3]

(c) The government of Malawi are developing a plan to reduce the impact of future floods.

Describe **three** ways the impact of flooding can be reduced.

1 .....

.....

2 .....

.....

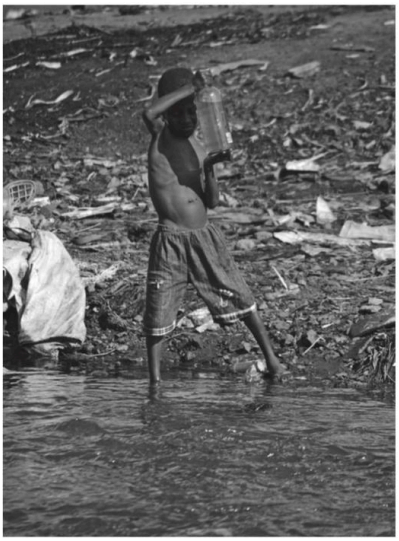
3 .....

.....

[3]

[Total: 9]

3 **(a)** The photograph shows a child collecting water to drink in an LEDC.



(i) Suggest **two** reasons why the water may be unsafe to drink.

1 .....

.....

2 .....

.....

[2]

(ii) Describe **two** ways a supply of safe drinking water could be provided to the area.

1 .....

.....

2 .....

.....

[2]

(b) A scientist investigated the impact of water quality on female life expectancy.

water quality	female life expectancy /years
safe drinking water	82.6
polluted water	72.9

Calculate the percentage increase in female life expectancy if there is a supply of safe drinking water.

.....% [2]

(c) Suggest **two** reasons why some countries do **not** have sufficient access to safe drinking water.

1 .....

.....

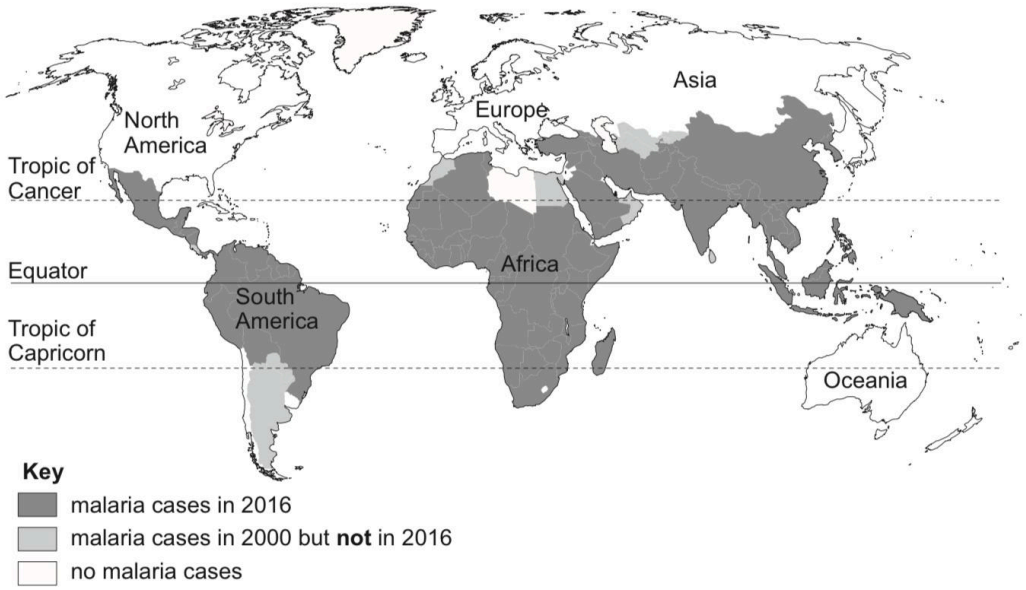
2 .....

.....
[2]

[Total: 8]

Section B

4 The map shows the areas of the world where cases of malaria occur.



(a) Use the map to describe the change in distribution of malaria cases from 2000 to 2016.

.....

.....

.....

.....

.....

..... [3]

(b) (i) State **three** methods used to control malaria.

1 .....

2 .....

3 .....

[3]

(ii) A scientist said there were 445 000 deaths due to malaria in 2016. 80% of these deaths occurred in 15 countries.

Calculate how many deaths from malaria occurred in these 15 countries in 2016.

..... [1]

(iii) Suggest reasons why it is difficult to control malaria in some countries.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

Section B

5 **(a)** Access to safe drinking water is different around the world.

(i) Suggest reasons why fewer people have access to safe drinking water in Africa than in North America.

.....

.....

.....

..... [2]

(ii) A well is one way for people to access fresh water.

State **three** other sources of fresh water.

1 .....

.....

2 .....

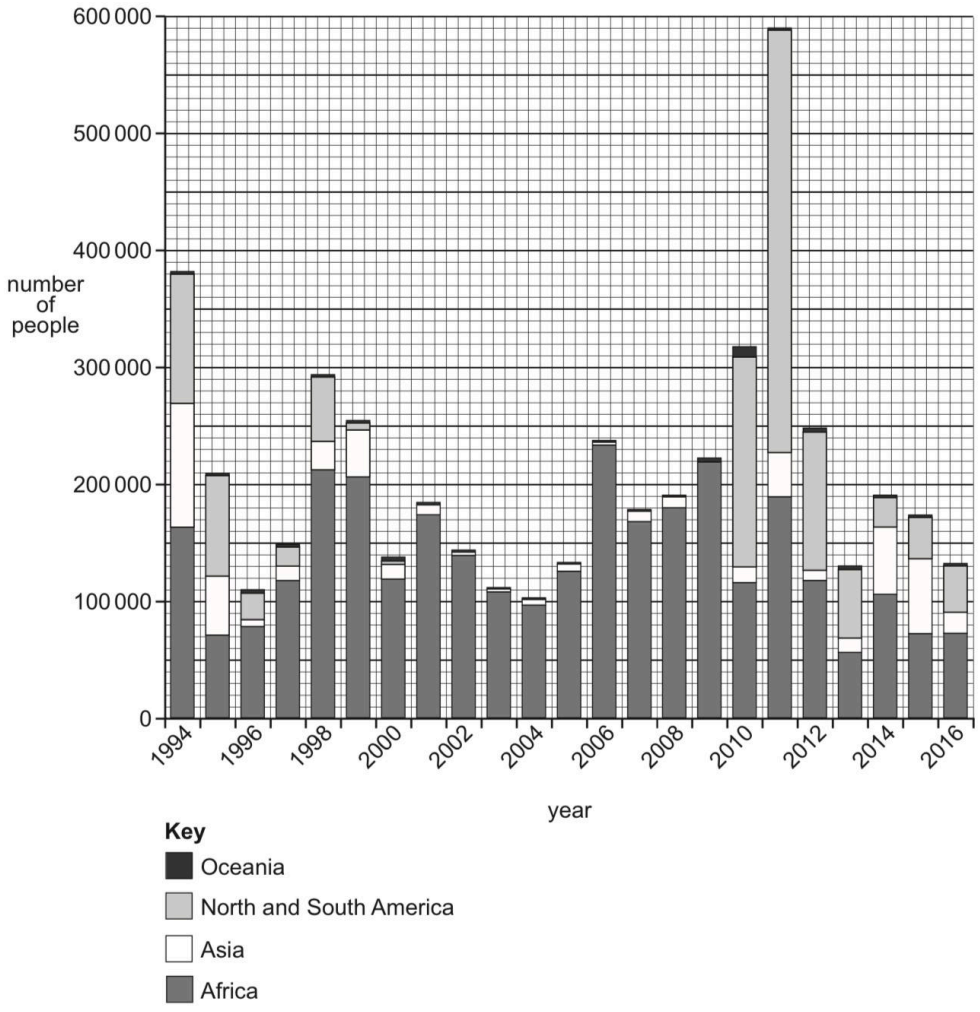
.....

3 .....

.....

[3]

(b) The bar chart shows the number of people infected with cholera in different continents from 1994 to 2016.



(i) Identify the **year** with the total highest number of people infected with cholera.

..... [1]

(ii) Identify the **continent** with the highest number of people infected with cholera between 1999 and 2009.

..... [1]

(iii) Suggest what the bar chart shows about the total number of people infected with cholera between 1994 and 2016.

.....

..... [1]

(c) Suggest reasons why there can be an outbreak of cholera after a natural disaster.

.....

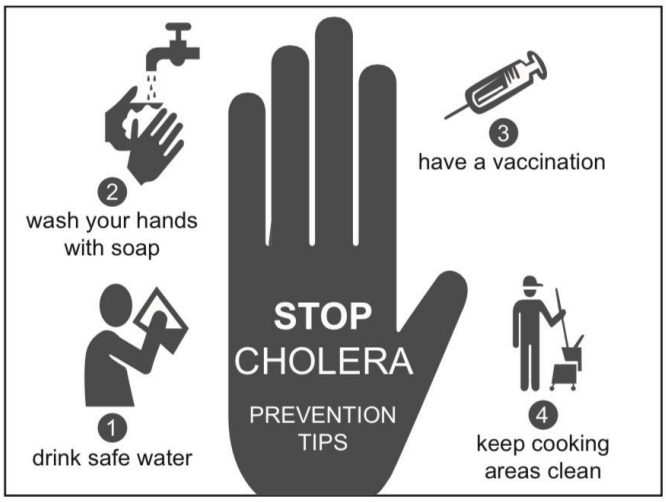
.....

.....

..... [2]

[Total: 10]

3 The poster shows a health campaign about preventing the spread of cholera.



(a) Explain how these prevention tips can reduce the spread of cholera.

.....

.....

.....

.....

.....

..... [3]

(b) Suggest why there are more outbreaks of cholera in less economically developed countries (LEDCs) than in more economically developed countries (MEDCs).

.....

.....

.....

..... [2]

[Total: 5]

9 **(a)** In 2020, over 2 billion people did **not** have access to safe drinking water.

By 2050, the world population is predicted to increase by 2 billion people.

Suggest why an increase in world population will affect access to safe drinking water.

.....

.....

.....

.....

.....

..... [3]

(b) Water samples are taken at three locations along a river.

The table shows the concentrations of some ions in the river water at each location.

ion	**concentration of ion / mg per litre**		
	location 1	location 2	location 3
iron	0.4	0.6	0.5
nitrate	5.4	5.8	33.0
phosphate	0.2	0.4	1.2
potassium	2.6	3.0	11.8
zinc	0.1	0.2	0.1

(i) State the location of the sample with the lowest concentration of iron.

..... [1]

(ii) Calculate the range in concentration for potassium.

..... mg per litre [1]

(iii) At one of the locations, the river flows through a farm that uses fertiliser.

State which location. Explain your answer.

location .....

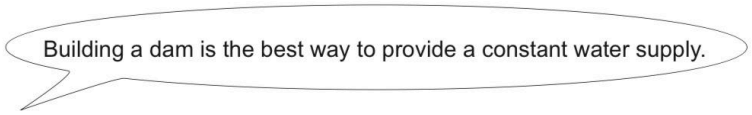
explanation .....

.....

.....

[2]

(c) A student says:



To what extent do you agree with this statement? Give reasons for your answer.

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..... [6]

[Total: 13]

6 The map shows countries where people are at risk of malaria.

(a) (i) Describe the distribution of countries where people are at risk of malaria.

.....

.....

.....

.....

.....

..... [3]

(ii) Suggest a reason why some countries are **not** affected by malaria.

.....

..... [1]

(b) (i) Describe how malaria is spread from one person to another.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(ii) Scientists in some countries have identified that insecticides are no longer effective in the control of malaria.

State **two** other control methods that can be used.

1 .....

.....

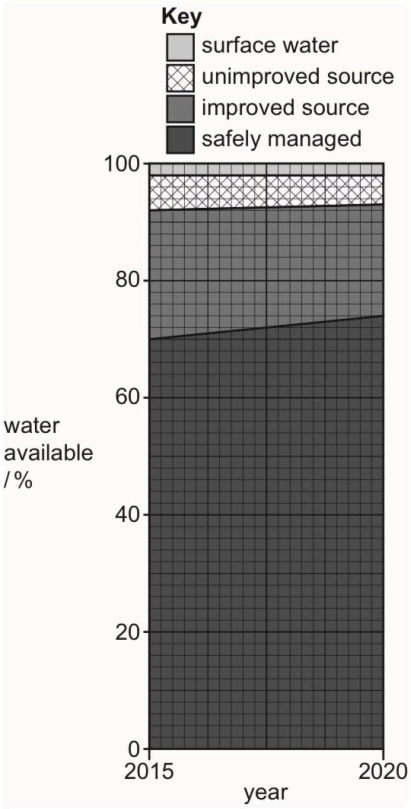
2 .....

.....

[2]

[Total: 10]

6 The graph shows the global availability of drinking water supplies in 2015–2020.



(a) State the percentage of the world population who had access to safely managed water in 2020.

.....% [1]

(b) Suggest **three** reasons why some people do **not** have access to safely managed water.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) Cholera is an infectious disease that can enter drinking water.

(i) State **two** strategies to treat drinking water which is contaminated with cholera.

1 .....

2 .....
[2]

(ii) Describe how cholera enters drinking water.

.....

.....

.....

.....

.....

..... [3]

(d) Suggest **two** reasons why some fresh water sources are **not** used for drinking water, other than contamination.

1 .....

.....

2 .....

.....
[2]

[Total: 11]