Example Candidate Responses
Paper 1

Cambridge IGCSE™
Environmental Management 0680

Cambridge O Level
Environmental Management 5014

For examination from 2019

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Contents

Introduction

The main aim of this booklet is to exemplify standards for those teaching Cambridge IGCSE Environmental Management 0680 and Cambridge O Level Environmental Management 5014, and to show how different levels of candidates' performance (high, middle and low) relate to the subject's curriculum and assessment objectives.

In this booklet candidate responses have been chosen from June 2019 scripts to exemplify a range of answers.

For each question, the response is annotated with a clear explanation of where and why marks were awarded or omitted. This is followed by examiner comments on how the answer could have been improved. In this way, it is possible for you to understand what candidates have done to gain their marks and what they could do to improve their answers. There is also a list of common mistakes candidates made in their answers for each question.

This document provides illustrative examples of candidate work with examiner commentary. These help teachers to assess the standard required to achieve marks beyond the guidance of the mark scheme. Therefore, in some circumstances, such as where exact answers are required, there will not be much comment.

The questions and mark schemes and pre-release material used here are available to download from the School Support Hub. These files are:
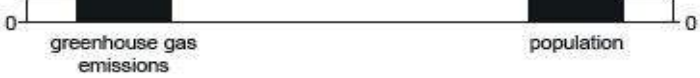
> **June 2019 Question Paper 12**
>
> **June 2019 Paper 12 Mark Scheme**

Past exam resources and other teacher support materials are available on the School Support Hub:

www.cambridgeinternational.org/support

How to use ...

This booklet goe... ...- and low-level response for each question. T... ...andidate answers, and in the right-hand c...

in 2012.

(a) State the percentage of greenhouse gas emissions from the rest of the world in 2012.

..........(64%) 37%.......... % [1]

(b) Identify the country that produced the most greenhouse gas emissions in 2012 **and** state the percentage of greenhouse gas emissions it produced.

country ....China..........

percentage of greenhouse gas emissions ....(24%) 22%..........

(c) State the name of **two** greenhouse gases.

Example Ca...		**...xaminer comments**
	1	**1** The candidate crosses out their initial, incorrect calculations clearly both in question (a) and (b) to avoid confusion. Correct answers are provided for both questions. Mark for (a) = 1 out of 1
1 **(a)** State t...		
(b) Identify...		

> **Answers** are by real candidates in exam conditions. These show you the types of answers for each level. Discuss and analyse the answers with your learners in the classroom to improve their skills.

> **Examiner comments** are alongside the answers. These explain where and why marks were awarded. This helps you to interpret the standard of Cambridge exams so you can help your learners to refine their exam technique.

How the candidate could have improved their answer

The candidate successfully attained full marks on this question. The text in part **(d)** was correct but could have been easier to read.

> This section explains how the candidate could have improved each answer. This helps you to interpret the standard of Cambridge exams and helps your learners to refine their exam technique.

Common mistakes candidates made in this question

• The most common mistakes were the inaccuracy in knowledge or identification of greenhouse gases and the inaccuracy in reading off data from the chart to state the level of gas emissions.
• Some candidates had weak knowledge of the sources of greenhouse gases.

> Often candidates were not awarded marks because they misread or misinterpreted the questions.

> Lists the common mistakes candidates made in answering each question. This will help your learners to avoid these mistakes and give them the best chance of achieving the available marks.

Question 1

2

Example Candidate Response – high	Examiner Comments

Section A

1 The divided bar chart shows percentage of greenhouse gas emissions and percentage population in 2012.

(a) State the percentage of greenhouse gas emissions from the rest of the world in 2012.

.................(67%) 37%.........% [1]

(b) Identify the country that produced the most greenhouse gas emissions in 2012 **and** state the percentage of greenhouse gas emissions it produced.

country ....China.................

percentage of greenhouse gas emissions ......(94%) 22%........

[1]
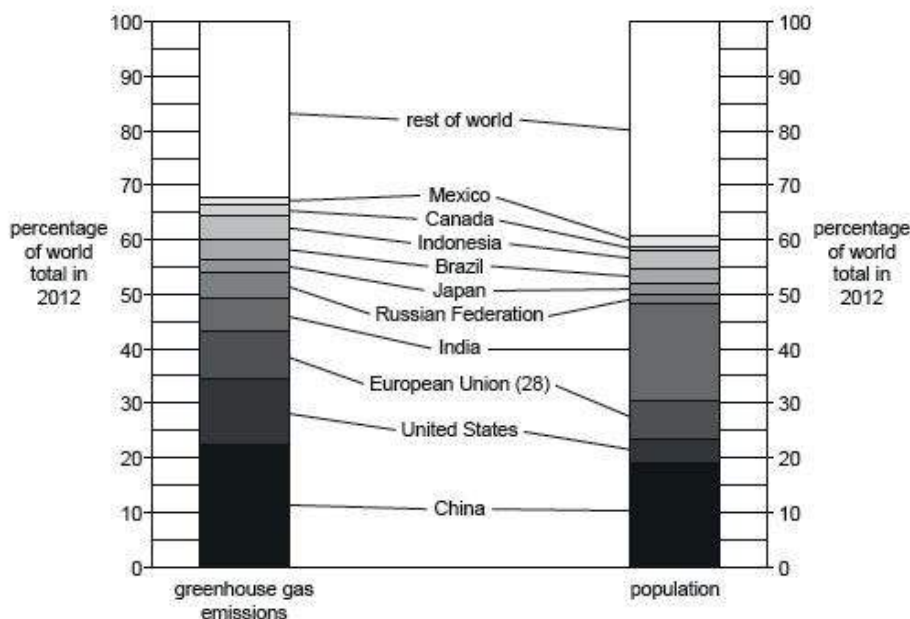
(c) State the name of **two** greenhouse gases.

1 ....Carbon Dioxide.................

2 ....Methane.........................

[2]

1 The candidate crosses out their initial, incorrect calculations clearly both in question (a) and (b) to avoid confusion. Correct answers are provided for both questions.

Mark for (a) = 1 out of 1

Mark for (b) = 1 out of 1

2 Two correct responses here gain the two marks.

Mark for (c) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments
(d) India contains nearly 19% of the world's population, but contributes only 6% of the world's greenhouse gases.	**3** Here, the candidate clearly identifies three distinct reasons to gain full marks: limited industry; many people are poor; vehicle ownership is low. The question requires the candidate to 'suggest', so alternative, valid responses would also have been credited, as it is not a requirement within the syllabus for the candidate to study a specific country.

Suggest reasons why.

3 It's industry, although expanding, (it) is not of the size of China, USA, Europe therefore requires less fuel to be burt, so less emissions. India has several H.E.P and wind generation plants that do not emit greenhouse gasses. As many people are poor, fewer cars are owned so less emission from fumes. The government may have introduced legislation to reduce emissions. [3]

[Total: 7]

Mark for (d) = 3 out of 3

Total mark awarded = 7 out of 7

How the candidate could have improved their answer

The candidate successfully attained full marks on this question. The text in part **(d)** was correct but could have been easier to read.

Example Candidate Response – middle	Examiner Comments

Section A

1   The divided bar chart shows percentage of greenhouse gas emissions and percentage population in 2012.
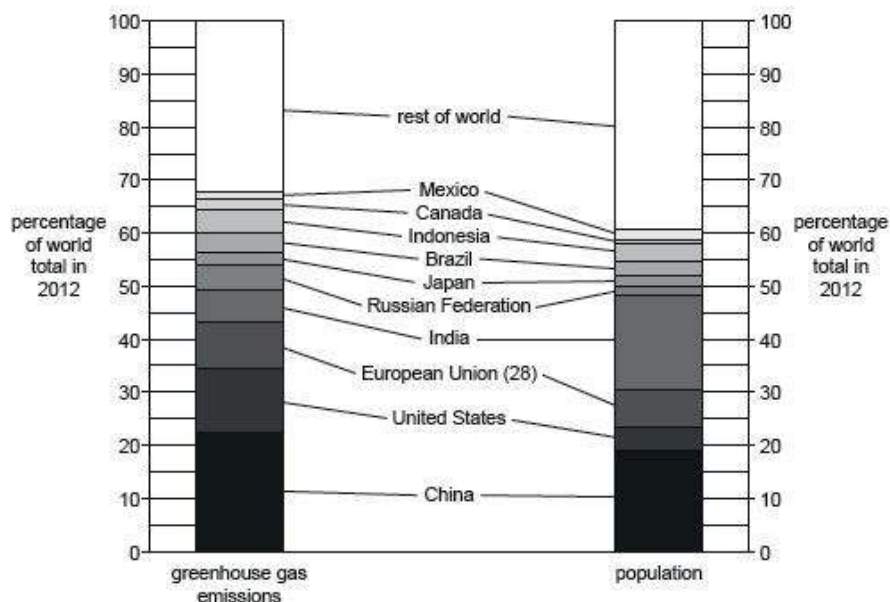
1   (a) State the percentage of greenhouse gas emissions from the rest of the world in 2012.
100-68: 32·/.

....32...................................% [1]

2   (b) Identify the country that produced the most greenhouse gas emissions in 2012 **and** state the percentage of greenhouse gas emissions it produced.

country ....China...........................

percentage of greenhouse gas emissions ....22·/..........................

[1]

3   (c) State the name of **two** greenhouse gases.

1 ...Methane...

2 ...Carbon monoxide..........................

[2]

1   It is good practice to show your working out in this way, in case there should be any concern over the legibility of the response on the answer line. The response given is correct.

Mark for (a) = 1 out of 1

2   The candidate has read the bar chart correctly to gain the point.

Mark for (b) = 1 out of 1

3   Methane is a recognised greenhouse gas, but carbon monoxide is not. Carbon dioxide would gain the additional point.

Mark for (c) = 1 out of 2

Example Candidate Response – middle, continued	Examiner Comments
(d) India contains nearly 19% of the world's population, but contributes only 6% of the world's greenhouse gases. Suggest reasons why. ④ Its government may have applied several policies to reduce emissions of greenhouse gases such as replacing fossil fuels with CNG (Compressed Natural Gas). It produce a small amount of carbon dioxide therefore being more efficient. It also limits <u>they</u> the use of CFC containing products. Other than that the government may have restricted the entry of certain cars into the city on high smog days. [3] Upgrading public transport may also be a suitable alternative so people would be more willing to travel by public transport [Total: 7] due to its facilities /costs.	④ Three marks are available here but some of the suggested reasons are alternatives of each other, for example, reducing the number of cars by congestion charges / upgrading public transport. Two out of the three marks are awarded. The response is well written and clear. Mark for (d) = 2 out of 3 **Total mark awarded = 5 out of 7**

How the candidate could have improved their answer

The candidate could have named two correct greenhouse gases in part **(c)** and included a broader approach to the suggestions within part **(d)**.

Example Candidate Response – low	Examiner Comments

Section A

1   The divided bar chart shows percentage of greenhouse gas emissions and percentage population in 2012.
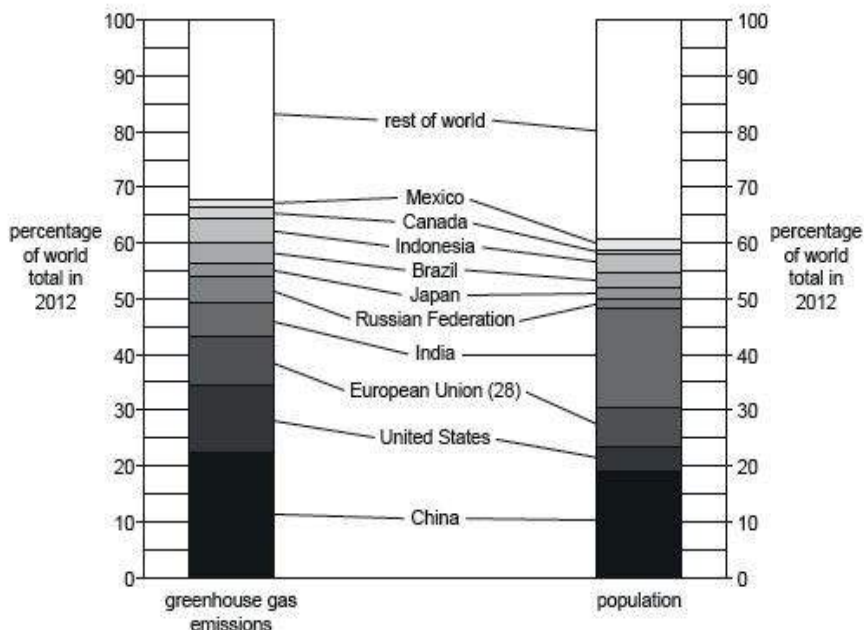
1 **(a)** State the percentage of greenhouse gas emissions from the rest of the world in 2012.

..........................33........................% [1]

2 **(b)** Identify the country that produced the most greenhouse gas emissions in 2012 **and** state the percentage of greenhouse gas emissions it produced.

country ....rest of World

percentage of greenhouse gas emissions ....33 % ....

[1]

3 **(c)** State the name of **two** greenhouse gases.

1 ....Nitrogen......................................

2 ....Hydrogen..............................

[2]

1 This response is outside the accepted range. No marks are awarded.

Mark for (a) = 0 out of 1

2 This response does not mention a specific country (rest of world = many countries).

Mark for (b) = 0 out of 1

3 Neither of these responses are greenhouse gases.

Mark for (c) = 0 out of 2

Example Candidate Response – low, continued	Examiner Comments
(d) India contains nearly 19% of the world's population, but contributes only 6% of the world's greenhouse gases. Suggest reasons why. **4** Because they have a lot of pollution it the Enter Country. [3] [Total: 7]	**4** This response does not explain the large difference between the percentages for population (19%) and greenhouse gases (6%). Mark for (d) = 0 out of 3 **Total mark awarded = 0 out of 7**

How the candidate could have improved their answer

- The candidate should have read the questions carefully. For example, part **(b)** required the candidate to name a country.
- There was a lack of any detail within part **(d)**. The command word 'suggest' allowed candidates to provide possible reasons based on their general knowledge even if they were unfamiliar with the specific scenario in the question.

## Common mistakes candidates made in this question

- The most common mistakes were the inaccuracy in knowledge or identification of greenhouse gases and the inaccuracy in reading off data from the chart to state the level of gas emissions.
- Some candidates had weak knowledge of the sources of greenhouse gases.

Question 2

Example Candidate Response – high

Examiner Comments

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.

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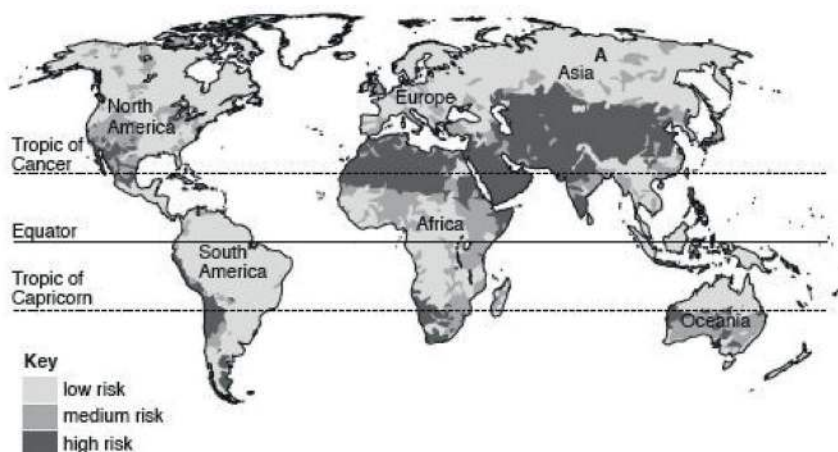
(a) Describe the location of the areas with a high risk to water supplies in South America.

1 They are mostly concentrated towards the west went coast with places like Peru and Chile and then further south with the south-east side of Argentina and the Falkland Islands and some in central Brazil and P.N.G. [2]

1 The candidate correctly identifies the west of South America and the south-eastern part of Argentina. The reference to Papua New Guinea (P.N.G.) is incorrect but the two marks have already been attained.

Mark for (a) = 2 out of 2

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

2 It is located in (the) Northern Russia and has a very cold and inhospitable climate therefore most water sources are frozen so energy is needed to consume it, precipitation is low and mostly snow and there is a risk of contamination from [2] industry waste.

2 Here, the candidate correctly identifies the impact of the climate on water reserves but does not identify that the area is also less likely to be populated because of the cold climate.

Mark for (b) = 1 out of 2

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

3 Certain parts of the world have massive industries like China requiring abundant water for cooling machines, dissolving chemicals. Intensive agricultural practices need plenty irrigation water to maintain yields, MEDCs with high populations use great sums in Heating, [2] flushing.

3 Two causes of overuse of water are successfully identified: high water-use industries and large-scale irrigation.

Mark for (c) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments
(d) State **two** strategies farmers can use to prepare for the impacts of drought. **4** 1 Store water sources in underground wells, reservoirs, clay pots to reduce water loss as evaporation, maintain supply 2 Switch to alternate, drough resitive crops requiring less water so growing beans instead of rice etc. [2] [Total: 8]	**4** Two strategies are successfully identified: the use of wells and reservoirs; and the use of drought-resistant crops. Mark for (d) = 2 out of 2 **Total mark awarded = 7 out of 8**

How the candidate could have improved their answer

- While successful, the candidate did misquote the location of countries. Without the additional information defining the locations, there was a risk of candidates not achieving full credit.
- The candidate could also have provided greater clarity on the ways of reducing water use for part **(d)**. Clay pots were useful to reduce water loss during irrigation but would not have been an effective way of storing water in any volume.

Example Candidate Response – middle	Examiner Comments

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.

Key
- low risk
- medium risk
- high risk
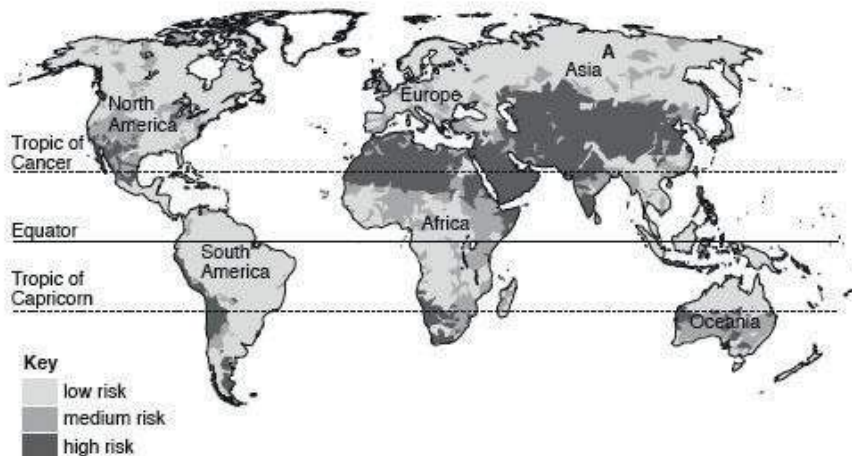
(a) Describe the location of the areas with a high risk to water supplies in <u>South America</u>.

1 high risk to water supplies is located at west of of South America. also south of south America

[2]

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

2 Because at location A there has high rainfall everyp years. environment there are not p.polluted so the water there are very clean

[2]

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

3 Because of the development of country countries dey need use water for company also the increase of population is the main factor so the water we increase that came overuse of water.

[2]

1 A concise response correctly identifying the west of South America and the south of South America.

Mark for (a) = 2 out of 2

2 Here, the candidate identifies the high level of precipitation for one mark, but the second reason given is incorrect.

Mark for (b) = 1 out of 2

3 Increase in population is a valid explanation for overuse of water here, but the point about development needs further expansion to clearly indicate high water use by industry. This would gain the second mark.

Mark for (c) = 1 out of 2

| Example Candidate Response – middle, continued	Examiner Comments

(d) State **two** strategies farmers can use to prepare for the impacts of drought.
 	
4   1 .... collect ~~water~~ a lot of water when rainfall ....
 	
....
 	
2 .... move to other place with high rainfall ....
 	
....
 	
                                                      [2]
 	
                                                    [Total: 8]
	4 The candidate needs to provide more detail in the first answer and the second answer is not a practical solution. No marks are gained.
	
	Mark for (d) = 0 out of 2
	
	Total mark awarded = 4 out of 8

How the candidate could have improved their answer

While short comments or answers were provided, further expansion would have provided clarity regarding the points made. This would have resulted in the opportunity to award a greater number of marks.

Example Candidate Response – low	Examiner Comments

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.

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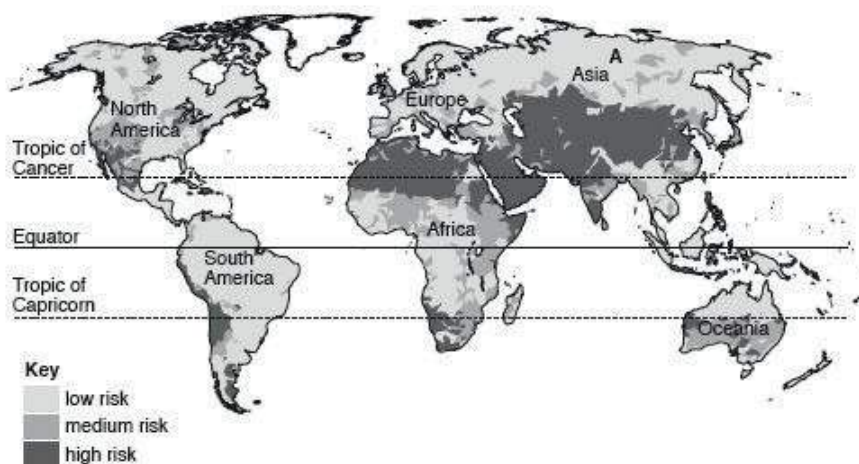
(a)   Describe the location of the areas with a high risk to water supplies in South America.

The areas with a high risk to water supplies in South America lies on the Tropic of Capricorn, below the Equator and they are on the coast lines.

[2]

1 This response, despite its length, lacks accuracy. It does not state which coasts they are referring to, as not all are affected. No marks are gained.

Mark for (a) = 0 out of 2

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

Because location A is near to the ocean and probably have enough money to desalinate the saltwater very near to that location.

[2]

2 The candidate incorrectly identifies the area as being near the coast and the reason offered is therefore invalid.

Mark for (b) = 0 out of 2

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

Because people are not educated enough to not save water and people might not be aware of how much water they are using everyday or wasting it or how the government is struggling to get water supplies.

[2]

3 The candidate does not identify a reason why there is overuse of water in some parts of the world. The reason given would not impact water use on a large scale.

Mark for (c) = 0 out of 2

Example Candidate Response – low, continued	Examiner Comments

(d) State **two** strategies farmers can use to prepare for the impacts of drought.
 	
 4   1 Have they her their own water storage system, either from the rain or by digging your own well.
 	
 2 Plant crops that ~~should~~ require very little amount of water.
 	
                                              [2]
 	
                                              [Total: 8]
	4 The response successfully identifies two strategies and both marks are gained.
	
	 Mark for (d) = 2 out of 2
	
	 Total mark awarded = 2 out of 8

How the candidate could have improved their answer

Greater detail and accuracy within the locations would have provided additional marks.

Common mistakes candidates made in this question

- Candidates should have described locations using the points of the compass (such as south of the Equator, rather than under the Equator).
- There was a lack of awareness of how the location of an area may have been influenced by different weather conditions.

Question 3

Example Candidate Response – high	Examiner Comments

3 The photograph shows soil erosion on an arable farm in the wet season.

(a) State **one** piece of evidence in the photograph that the soil has been eroded.

1 There are cracks and holes in the photograph that happened as a result of erosion.

[1]

1 This response mentions that cracks have appeared. One mark is achieved.

Mark for (a) = 1 out of 1

(b) Suggest **two** reasons why soil erosion has occurred in the area shown on the photograph.

1 There is little vegetation left to bind the soil together, hence wind and water were able to slowly erode the soil.

2 Overgrazing and overcultivation resulted in the destruction of the topsoil and plants, which gave way to erosion.

[2]

2 The candidate refers to lack of vegetation to bind the soil, overgrazing and over cultivation to achieve both marks.

Mark for (b) = 2 out of 2

(c) Describe what could be done to reduce soil erosion in the area shown on the photograph.

Drought-resistant crops can be replanted in the area to improve the soil structure and act as natural wind breaks. Furthermore, rotational grazing and multiculture can be used on the farm here to reduce the depletion of soil and vegetation.

[2]

[Total: 5]

3 The use of multiculture will improve the soil structure and provide windbreaks. Both marks are achieved.

Mark for (c) = 2 out of 2

Total mark awarded = 5 out of 5

How the candidate could have improved their answer

Candidates should have taken care to identify clear, independent reasons or observations when asked to provide a set number of them. The outcome or result of any two items should have been easily identifiable as different to demonstrate understanding. Here, the candidate mentioned wind breaks and the use of vegetation to provide cover. They could also have mentioned terracing, contour ploughing or bunds to make a clearer difference between their suggested methods of reducing soil erosion.

Example Candidate Response – middle	Examiner Comments

3 The photograph shows soil erosion on an arable farm in the wet season.

(a) State **one** piece of evidence in the photograph that the soil has been eroded.

① There are no plants in the area and the surface seems very dry and barren. .... [1]

(b) Suggest **two** reasons why soil erosion has occurred in the area shown on the photograph.

② 1 Deforestation had been done in the area, causing lands to get direct contact with sunlight. ....

2 Monoculture or overcultivation, as well as shifting cultivation may have been done, leaching the nutrients out, drying it. .... [2]

(c) Describe what could be done to reduce soil erosion in the area shown on the photograph.

③ — Adding organic matter to the soil to improve its ability to store water, which may then be transferred to the eroded soil.
— Crop rotation could be done instead to allow replacement and replenishment of soil nutrients. .... [2]
— Grass covers or bushes can be grown in the area to act as interception.
[Total: 5]

① The candidate needs to identify the effects of soil erosion that can be seen in the image. No marks are achieved.

Mark for (a) = 0 out of 1

② Deforestation and over-cultivation are alternatives for each other. One mark is achieved.

Mark for (b) = 1 out of 2

③ Two valid suggestions are made which could reduce soil erosion. Both marks are achieved. The responses give a good description rather than simply stating methods. The addition of organic matter is a particularly good answer with a description of the impact this would have.

Mark for (c) = 2 out of 2

Total mark awarded = 3 out of 5

How the candidate could have improved their answer

This candidate needed to pay greater attention to accuracy to obtain the remaining two marks in parts **(a)** and **(b)**. It is always good practice to explain the impact (within the written answer) of the reasons or observations decided on, as this would also help to determine when two reasons might have proven to be simply alternatives of each other rather than having two separate effects.

Example Candidate Response – low	Examiner Comments

3 The photograph shows soil erosion on an arable farm in the wet season.

(a) State **one** piece of evidence in the photograph that the soil has been eroded.

① The soil rock has moved from one location to another and they got seperated. [1]

(b) Suggest **two** reasons why soil erosion has occurred in the area shown on the photograph.

1 The soil There was no root to hold the water. It was
② It didn't have a deforsted area.

2 The land had no irrigation, it was completely dry. [2]

(c) Describe what could be done to reduce soil erosion in the area shown on the photograph.

③ Reducing the soil erosion can be done by using crop rotation and using fertilisers. Irrigatio methods should be used. [2]

[Total: 5]

① This is an incorrect answer.
Mark for (a) = 0 out of 1

② One mark is awarded for observing deforestation but the second response, 'no irrigation' is incorrect.
Mark for (b) = 1 out of 2

③ Crop rotation improves the soil structure and, implicitly, the planting of a crop helps bind the soil via the roots. Only one valid method is suggested here for one mark.
Mark for (c) = 1 out of 2

Total mark awarded = 2 out of 5

How the candidate could have improved their answer

The candidate could have achieved greater clarity in their responses by providing slightly longer answers. The short responses provided do not fully cover the answer, as in part **(b)**.

Common mistakes candidates made in this question

Some candidates identified that the addition of fertilisers or pesticides would have prevented soil erosion. While they may have improved fertility or productivity, they would not have reduced the erosion risk. There was a lack of responses which identified the role of wind breaks or terracing.
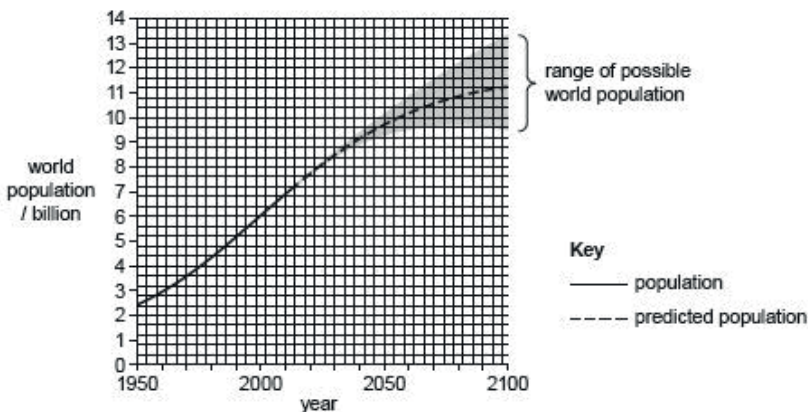
Question 4

Example Candidate Response – high	Examiner Comments

Section B

4 (a) The graph shows the world population from 1950 to 2015 and the predicted world population from 2016 to 2100.

(i) Calculate the increase in world population from 1950 to 2015.

7·2 − 2·4 = 4·8 billion increase

.... 4·8 billion .... [1]

(ii) Describe how the predicted rate of population growth changes after 2050.

The population growth is predicted to slowly decline in speed instead of growing steadily higher. .... [1]

(iii) Explain why there is a range of possible world population figures between 2050 and 2100.

— There is no real way to predict exact figures, a family may have more than one child no real than has happened, way to predict birth/death.

— Possibilities of sudden wars and epidemics may change the population in the future. .... [2]

Examiner Comments

1️⃣ The candidate achieves full marks for part (a) and all sub-parts. Data is correctly read from the graph showing the rate of growth is decreasing. The uncertainties outlined in 4(a)(iii) are clearly stated.

Mark for (a)(i) = 1 out of 1

Mark for (a)(ii) = 1 out of 1

Mark for (a)(iii) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments

(b) The table shows the populations of the continents in 2015 and their predicted populations in 2100.

continent	population in 2015 /million	predicted population in 2100 /million
Africa	1186	4387
Asia	4393	4889
Europe	738	664
Oceania	39	71
North America	358	500
South America	634	721

(i) Place the continents in rank order of their predicted populations in 2100, starting with the largest.

largest .... Asia ....

.... Africa ....

.... ~~Europe~~ South America ....

.... ~~South~~ ~~America~~ Europe ....

.... North America ....

smallest .... Oceania ....

[2]

2 The candidate correctly ranks the continents by population size.

Mark for (b)(i) = 2 out of 2

(ii) State which continent is predicted to have a smaller population in 2100 than in 2015.

.... Europe .... [1]

3 The candidate identifies the correct continent for one mark.

Mark for (b)(ii) = 1 out of 1

(iii) Calculate the predicted percentage increase in population for Oceania from 2015 to 2100.

$$\frac{71-39}{39} \times 100$$

$$= \frac{32}{39} \times 100$$

$$= 82 \cdot 1\%$$

.... 82·1 .... % [2]

4 This is the correct response. Showing the calculation in full helps support the answer. Full marks are achieved.

Mark for (b)(iii) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments

(iv) Explain the reasons for rapid population growth in some parts of the world.

5 —They are less developed / developing and therefore have limited access to education and knowledge about family planning.

—The tradition of early marriages still take place / because of religion and ~~distri~~ distrust in contraceptives.

—Highr infant mortality rate, leading to more children being born to make up for ones that are (lack of healthcare)

—Agriculturally intensive, especially in less developed countries, causing the birth of more children to help at the farm. [4]

(v) Migration affects population size.

State **two** factors that cause migration.

6 1 Push factors (negative aspects)

2 Pull factors (positive aspects) [2]

(vi) 'Education is the best strategy for managing human population size.'

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

7 ① Education helps women and men alike, understand the importance of family planning. This helps them realize the financial burden that would arise from having many children. ② Education in women helps them understand more about children, bearing them and see the potential future they may have from having children early. This helps them plan better and sometimes pursue higher studies instead, which helps their career. Careers for women cause them to ignore marriage, reducing their fertility and ability to have children due to late marriages. ③ Education would also help women to realize the benefits of contraceptives and birth control methods like sterilisation, which may help them reduce their chances of having children. ④ However, as education would most likely reduce births, it would reduce the future working population which would recede an economy's growth as the population would be filled with older people, who are expensive to care for (pensions, support payments) ⑤ ~~However~~, some countries still ban the use of contraceptives while some less developed countries ~~are~~ lack access to education, which may reduce the effectiveness / ~~are~~ go against the statement. Women are also still forced to marry young and have children if their tradition includes such an act, making even education worthless. However, I do agree with the statement. [6]

[Total: 21]

5 Four clearly distinct reasons are given. Full marks are obtained.

Mark for (b)(iv) = 4 out of 4

6 These responses are too vague to gain credit. Examples of the push and pull factors are needed for marks to be obtained.

Mark for (b)(v) = 0 out of 2

7 The candidate makes five strong points and offers effective evaluation. The candidate provides an articulate report showing a depth of knowledge and is also able to provide a summative conclusion. Some examples are needed for the sixth mark. Five marks are awarded.

Mark for (b)(vi) = 5 out of 6

Total mark awarded = 18 out of 21

## How the candidate could have improved their answer

The candidate could have ensured that opinions within the 6-mark (level of response) question were supported by examples. The candidate should have provided examples of factors that impacted migration.

Example Candidate Response – middle	Examiner Comments

Section B

4 (a) The graph shows the world population from 1950 to 2015 and the predicted world population from 2016 to 2100.
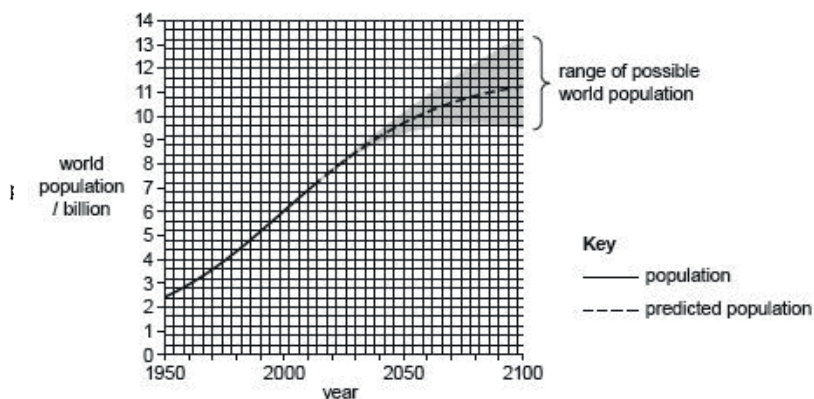
(i) Calculate the increase in world population from 1950 to 2015.

1 .... 7.2 billion .... [1]

(ii) Describe how the predicted rate of population growth changes after 2050.

.... It is decreasing. It is having a slow decrease .... [1]

(iii) Explain why there is a range of possible world population figures between 2050 and 2100.

2 ...... Because it is predicted. Predicted as population could rise if there is better provision for health care on at the same time it could decrease if there is no better living standards. .... [2]

1 This response is outside the expected range. No mark is awarded here.

Mark for (a)(i) = 0 out of 1

2 The candidate correctly identifies that the rate of growth would slow down. One mark is awarded.

Mark for (a)(ii) = 1 out of 1
Mark for (a)(iii) = 1 out of 2

Example Candidate Response – middle, continued	Examiner Comments

(b) The table shows the populations of the continents in 2015 and their predicted populations in 2100.

continent	population in 2015 /million	predicted population in 2100 /million
Africa	1186	4387
Asia	4393	4889
Europe	738	664
Oceania	39	71
North America	358	500
South America	634	721

(i) Place the continents in rank order of their predicted populations in 2100, starting with the largest.

largest ....Asia..............................

.............Africa.......................

...........South America.....................

..........Europe.......................

...........North America...............

smallest ....Oceania........................

[2]

(ii) State which continent is predicted to have a smaller population in 2100 than in 2015.

...........Europe.. [1]

(iii) Calculate the predicted percentage increase in population for Oceania from 2015 to 2100.

$$\frac{358}{500} \times 100 = 71.6\%$$

.................71.6%....................% [2]

Examiner Comments:

③ One mark is achieved for being able to rank the continents in order.

Mark for (b)(i) = 2 out of 2

④ One mark is achieved for correctly identifying the continent with a predicted reduction in population.

Mark for (b)(ii) = 1 out of 1

⑤ Both the calculation and the outcome here are incorrect. No marks are awarded.

Mark for (b)(iii) = 0 out of 2

Example Candidate Response – middle, continued	Examiner Comments

(iv) Explain the reasons for rapid population growth in some parts of the world.

6 This could be due to decrease in infant mortality

Increase in fertility rate.

Better healthcare and living standards might be provided.

Woman getting married or earlier on at a young age.

Could be even due to more emigration.

[4]

6 The reasons given here for rapid population growth are not explained. Only two of the available four marks are achieved.

Mark for (b)(iv) = 2 out of 4

(v) Migration affects population size.

State **two** factors that cause migration.

7 1 Job.

2 Living standards like better provision for healthcare.

[2]

7 Two clear examples of factors that affect migration. Two marks are achieved.

Mark for (b)(v) = 2 out of 2

(vi) 'Education is the best strategy for managing human population size.'

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

8 Education is a best strategy because mostly when woman are educated. They may not tired to get married in a younger age and will starting statworking. This could manage human population size. In Education they go may get thought about family planning this could make it more efficient to manage human population size. But at the same time there may be some of those who can not afford eduction as they may be poor so there can't be anything done with the managment of human population in this situation. But education would atleast try managing the human population size than if it's not provided.

[6]

[Total: 21]

8 This response demonstrates the candidate's understanding better by using relevant examples. Other factors could also be included. Only 3 out of the 6 marks are achieved.

Mark for (b)(vi) = 3 out of 6

Total mark awarded = 12 out of 21

## How the candidate could have improved their answer

- The candidate could have increased the number of examples given within the level of response question and arrived at a more defined conclusion. This would have ensured a range of factors, which might have impacted on population growth, were considered.

- The candidate could have ensured that opportunities were taken to explain statements, particularly where these were specifically asked for within a question, for example, in part **(b)(iv)**.

Example Candidate Response – low	Examiner Comments

Section B

4 (a) The graph shows the world population from 1950 to 2015 and the predicted world population from 2016 to 2100.
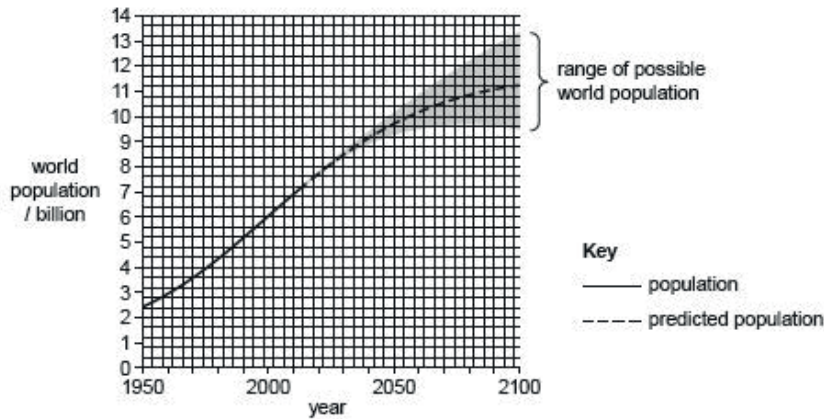
1 (i) Calculate the increase in world population from 1950 to 2015.

1950= 2.4   7.2-2.4 =4.8   4.8
2015= 7.2   [1]

2 (ii) Describe how the predicted rate of population growth changes after 2050.

It is predicted to not rise as fast as before but still increase. It is also possible it decreases or continues [1] a sharp increase

3 (iii) Explain why there is a range of possible world population figures between 2050 and 2100.

Because there might be less deaths and more births than expected or more deaths and less births than expected so there is a range for it. [2]

1 The candidate does not use the graph correctly and omits the units 'billion'.

Mark for (a)(i) = 0 out of 1

2 This response correctly identifies the change in the rate of population growth for one mark.

Mark for (a)(ii) = 1 out of 1

3 Here, the candidate only gives one reason for the future range of possible world population so does not achieve both marks.

Mark for (a)(iii) = 1 out of 2

Example Candidate Response – low, continued	Examiner Comments

(b) The table shows the populations of the continents in 2015 and their predicted populations in 2100.

continent	population in 2015 /million	predicted population in 2100 /million
Africa	1186	4387
Asia	4393	4889
Europe	738	664
Oceania	39	71
North America	358	500
South America	634	721

(i) Place the continents in rank order of their predicted populations in 2100, starting with the largest.

largest ...... Asia ......

...... Africa ......

...... South america ......

...... Europe ......

...... North america north america ......

smallest ...... Ug. Oceania ......

[2]

4 The candidate successfully ranks the continents in order for two marks.

Mark for (b)(i) = 2 out of 2

(ii) State which continent is predicted to have a smaller population in 2100 than in 2015.

...... Europe ...... [1]

5 Europe is the correct answer achieving one mark.

Mark for (b)(ii) = 1 out of 1

(iii) Calculate the predicted percentage increase in population for Oceania from 2015 to 2100.

$\frac{39}{71} \times 100 = 54.9$

...... 54.9 ......% [2]

6 Both the calculation and result are incorrect, so no marks are awarded. It should be

$\frac{32}{39} \times 100 = 82\%$.

Mark for (b)(iii) = 0 out of 2

(iv) Explain the reasons for rapid population growth in some parts of the world.

Not many families are sexually educated. Nett migration to their country is a lot. Good medical services so low death rate. No policies to control the amount of children a family is allowed to have

[4]

7 This is a limited response, but it does make three distinct points, each of which gains credit. Lack of detail and explanation limits the mark here.

Mark for (b)(iv) = 3 out of 4

(v) Migration affects population size.

State **two** factors that cause migration.

1 ...... Good Better medical services ......

2 ...... better education ......

[2]

8 The candidate needs to expand on what is meant by 'better education' to gain the second mark. One mark is achieved.

Mark for (b)(v) = 1 out of 2

Example Candidate Response – low, continued

Examiner Comments

(vi) 'Education is the best strategy for managing human population size.'

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

9 I I partly agree with this statement because we need to educate people before the world becomes overpopulated. Education means you you are able to teach them about the good and the bad and all the other side effects of what happens when overpopulation occurs. There is also another method called trial and error, this method is more risky but I belive people would never repeat their mistakes again if they go through this method.

[6]

[Total: 21]

9 More factual information is needed to support the opinion. There is no indication of how better education would impact on population growth. No marks are achieved.

Mark for (b)(vi) = 0 out of 6

Total mark awarded = 9 out of 21

How the candidate could have improved their answer

The candidate could have provided a greater level of explanation in answers to provide justification of points made. This was omitted within part **(b)(vi)** and limited the total mark in part **(b)(v)**.

Common mistakes candidates made in this question

- Candidates did not show the working within a calculation, which prevented a mark being awarded for the correct method.
- Lack of detail within a question that required an explanation limited the marks that were awarded.
- Some candidates did not read questions carefully. Question **(a)(ii)** related to the rate of change rather than the absolute population size.
- The six-mark question required candidates to organise their thoughts and present concepts in a logical order, preferably supporting opinions with relevant examples, and importantly to reach a conclusion which was supported by the evidence presented.

Question 5

2   2

Example Candidate Response – high	Examiner Comments

5   (a)   Describe the formation of coal.

In the Carboniferous era, swampy forest floor was filled with dead plants and organisms. Over time, pressure from sediments above hardened this into lignite and over time this hardened into peat. Due to pressure of sediments and water body above, after millions of years, the peat eventually hardened to form coal.   [3]

(b)   Describe the advantages and disadvantages of coal as an energy resource.

advantages   Coal can be in supply locally so is cheaper to purchase and is the cheapest fossil fuel. It is always availble and is not affected by weather, climatic conditions and is used for hundreds of years in industry so reliable & trusted

disadvantages   When burning coal as a fuel, Sulphur Dioxide and Carbon dioxide are produced leading to global warming, acid rain and smog. Extraction of coal in open-cast mining leads to land, air pollution. It may be expensive to import and store as it is highly flammable.   [4]

Examiner Comments

1 This is a full response with detail going beyond the requirements for the three marks. It is logically ordered and easily conveys the candidate's grasp of the subject.

Mark for (a) = 3 out of 3

2 The candidate successfully describes the advantages and disadvantages of coal as an energy resource. A comparison is made with other energy sources to clarify and strengthen the response. Credit is given for the mention of both acid rain and global warming because the specific gases involved are mentioned. All four marks are achieved.

Mark for (b) = 4 out of 4

Example Candidate Response – high, continued	Examiner Comments

(c) The graph shows energy consumption by world region from 1965 to 2015.
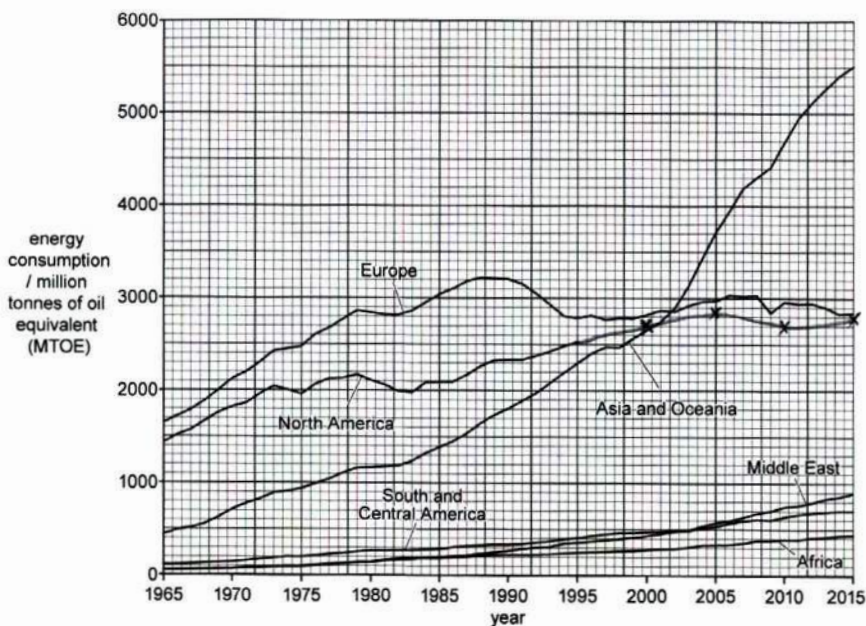
3 The graph is plotted correctly for two marks.

Mark for (c)(i) = 2 out of 2

The table shows energy consumption for North America from 2000 to 2015.

year	2000	2005	2010	2015
energy consumption for North America / MTOE	2700	2850	2700	2800

(i) Complete the graph for North America. [2]

(ii) State which world region has had the largest increase in energy consumption from 1965 to 2015.

Asia and Oceania [1]

(iii) State which region had the highest energy consumption in 1965.

Europe [1]

4 The correct data is correctly extracted for (c)(ii) and (c)(iii) for one mark each.

Mark for (c)(ii) = 1 out of 1

Mark for (c)(iii) = 1 out of 1

Example Candidate Response – high, continued	Examiner Comments

(iv) Describe the changes in energy consumption in Europe between 1965 and 2015.

5 It continued to increase until 1990 from 1650 to 3200 at a rate of 3.75% per year, after which it declined to 2800 in 1993-94 and has since levelled off and remained as such for 20 years only facing a slight increase around 2007.
[3]

5 This response identifies the trends and provides details supported by data to obtain the three marks available.

Mark for (c)(iv) = 3 out of 3

(v) Suggest reasons for the changes in energy consumption in Europe **and** in Asia and Oceania, from 2000 to 2015.

6 Europe In Europe, the population increase is very low as many families are small due to better education and family planning so energy consumption is not rising and new industries like manufacturing are not opening due to high cost of labour.

Asia and Oceania Energy demand is rising very fast as populations in Asia are high and are continuing to expand and industries like manufacturing, repair etc are being set up due to high availability of labour and cheaper costs and increased living standards in areas like China, Singapore leading to more consumption as well as intensive agriculture practices.
[5]
[Total: 19]

6 This response achieves four of the five available marks. A little more detail concerning the way in which energy consumption is being limited or how greater efficiency is being achieved is needed to score the final mark.

Mark for (c)(v) = 4 out of 5

Total mark awarded = 18 out of 19

How the candidate could have improved their answer

Additional detail of energy conservation measures in part **(c)(v)** would have given this candidate full marks across the whole question.

Example Candidate Response – middle	Examiner Comments

5 (a) Describe the formation of coal.

1 Decomposition of the remains of dead plants and animals which took place millions of years back will be formed as coal after millions of years.

[3]

1 This is an incomplete answer and does not refer to heat and pressure. It therefore achieves two of the three marks.

Mark for (a) = 2 out of 3

(b) Describe the advantages and disadvantages of coal as an energy resource.

advantages **2** · Produce fast energy.
· Less expensive for obtaining compared to the alternative resources.

disadvantages · Air pollution. / Dust pollution.
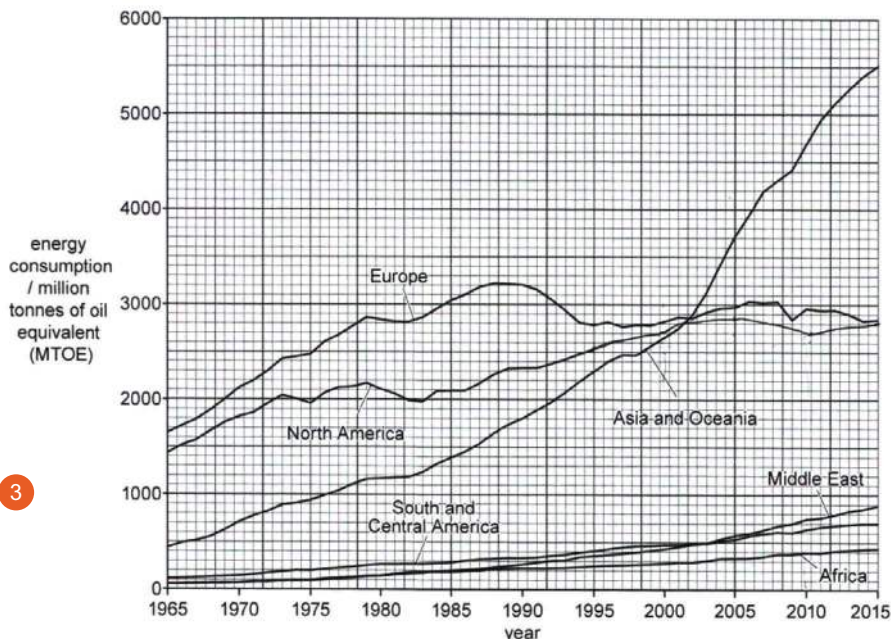· It is a non-renewable resource.

[4]

2 This response lacks details about how pollution impacts on the environment or why it is an advantage that coal is a high-yielding energy source. Only two of the four available marks are achieved.

Mark for (b) = 2 out of 4

Example Candidate Response – middle, continued	Examiner Comments

(c) The graph shows energy consumption by world region from 1965 to 2015.

③ The graph is both plotted and read correctly scoring all four available marks for (c)(i), (c)(ii) and (c)(iii).

Mark for (c)(i) = 2 out of 2

Mark for (c)(ii) = 1 out of 1

Mark for (c)(iii) = 1 out of 1

The table shows energy consumption for North America from 2000 to 2015.

year	2000	2005	2010	2015
energy consumption for North America / MTOE	2700	2850	2700	2800

(i) Complete the graph for North America. [2]

(ii) State which world region has had the largest increase in energy consumption from 1965 to 2015.

...........Asia and Oceania.. [1]

(iii) State which region had the highest energy consumption in 1965.

...........Europe.. [1]

Example Candidate Response – middle, continued	Examiner Comments

(iv) Describe the changes in energy consumption in Europe between 1965 and 2015.

4 Since 1965 Europe was Consuming more energy than compared to other region it's highest consump Consumption was between 1985 and 1990 and it came down nearly to the year of 1995. This could be because Europe has consumed alot of energy from the start but not they don't have much. [3]

4 This explanation of the trends lacks clarity and only receives one out of the available three marks.

Mark for (c)(iv) = 1 out of 3

(v) Suggest reasons for the changes in energy consumption in Europe **and** in Asia and Oceania, from 2000 to 2015.

Europe : Europe may have found inexpensive Process
· May not have good workers to experienced
Or experienced workers to mine
· the As consumed alot from the start and now
are left out with very few tonnes.

5

Asia and Oceania : More oil has been found
· Better mining methods
· Could be for industrial use as well.
· Increase in Population.

[5]

[Total: 19]

5 The candidate correctly identifies the increase in population for Asia and Oceania but does not explicitly state an increase in industry. The reasons given for why the energy use in Europe has reduced are not clearly stated or detailed enough to gain credit. Only one of the five available marks is obtained.

Mark for (c)(v) = 1 out of 5

Total mark awarded = 10 out of 19

How the candidate could have improved their answer

The responses in some sections lacked enough detail to demonstrate knowledge of the topic. This was particularly the case in parts **(b)** and **(c)(iv)** where a longer response might have shown more clearly the point the candidate was attempting to make.

Example Candidate Response – low	Examiner Comments

5 (a) Describe the formation of coal.

1 800 million years ago ~~cutting~~, the sea level rose to caused by draining and buried under rocks of sediments. The plants biomass were chemically changed into peat. in a process called lignite. Over time, peat changed into a soft coal called beautiminous. Finally it changes into a hard coal called ancheriates which is used for burning fuels. [3]

(b) Describe the advantages and disadvantages of coal as an energy resource.

advantages coal is renewable energy resource. Further **2** ~~Some~~ people use coal to produce energy consumption. Finally its helpful to produce ~~Her~~ electrical power.

disadvantages Its expensive and it takes alot of time to transport coal. Further, it can destroy the scenic beauty and cause visual pollution.

[4]

1 Here, the candidate mentions a time-scale; the fact that coal is made from remains of plants and that it is covered by sediment. They do not specifically refer to pressure and heat but have included enough other details to achieve the three marks available.

Mark for (a) = 3 out of 3

2 The candidate incorrectly identifies coal as being renewable. Specific detail concerning the production of carbon dioxide and sulfur dioxide and their (named) impacts as pollutants under disadvantages would have achieved marks. No marks are scored in this response.
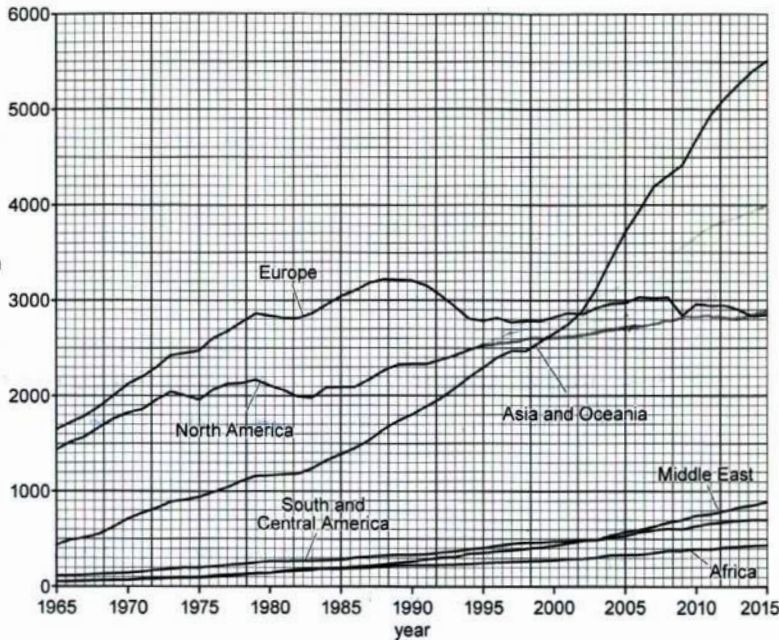
Mark for (b) = 0 out of 4

Example Candidate Response – low, continued	Examiner Comments

(c) The graph shows energy consumption by world region from 1965 to 2015.

The table shows energy consumption for North America from 2000 to 2015.

year	2000	2005	2010	2015
energy consumption for North America/MTOE	2700	2850	2700	2800

(i) Complete the graph for North America. [2]

(ii) State which world region has had the largest increase in energy consumption from 1965 to 2015.

~~Europe~~ Asia and occania [1]

(iii) State which region had the highest energy consumption in 1965.

~~Asia and Oceania~~ Europe. [1]

3 The candidate plotted this inaccurately. However, the answers to (c)(ii) and (iii) are correctly identified. Two out of the four marks available for the whole of (c) are achieved.

Mark for (c)(i) = 0 out of 2

Mark for (c)(ii) = 1 out of 1

Mark for (c)(iii) = 1 out of 1

Example Candidate Response – low, continued	Examiner Comments

(iv) Describe the changes in energy consumption in Europe between 1965 and 2015.

4 The energy consumption that was happening between 165 and 2015 was that in some countries it kept on decreasing and increasing. Further, there was more energy produced in Asia and Oceania because they had high efficiency and used the 3 ~~types of fossil fuel~~. By time the HEP was produced and that cased an increase in countries. [3]

(v) Suggest reasons for the changes in energy consumption in Europe **and** in Asia and Oceania, from 2000 to 2015.

5 Europe the energy that was being used in europe was increased in 1965. Further, they have used the different types of energies example: wind Power or tidal power

Asia and Oceania the energy here that was being used in 1965 the energy consumption kept increasing rapidly. Nuclear power has been used . Finally in 2015 the AEP was (Hydro electric power) was. dis covered. [5]

[Total: 19]

4 The candidate does not describe the trend in sufficient detail and does not make use of the data to support what they are saying. No marks are achieved.

Mark for (c)(iv) = 0 out of 3

5 This response also suffers from a lack of detail. The candidate identifies different energy generation sources and how these may change rather than changes in the consumption of energy. No marks are achieved.

Mark for (c)(v) = 0 out of 5

Total mark awarded = 5 out of 19

How the candidate could have improved their answer

Greater accuracy could have been demonstrated in plotting the information within the graph and in the use of this information to cite accurate data. Similarly, a greater understanding of the meaning of the graph (total energy use rather than the use of oil) would have gained further marks.

## Common mistakes candidates made in this question

- Some candidates did not provide enough detail or used generalist terms (such as 'causes pollution') rather than accurately naming the cause and effect.
- Candidates interpreted the graph as relating to the use of oil, meaning conclusions such as 'the change to non-renewable sources' did not answer part **(c)(v)**.
- Candidates should have stated which other sources the material was being compared to which would have showed a greater understanding of the relative merits of different energy sources.
- Candidates should have avoided merely reporting on each change rather than the overall trends.

Question 6

Example Candidate Response – high	Examiner Comments

6   The bar chart shows deforestation rates in Indonesia between 1990 and 2014.
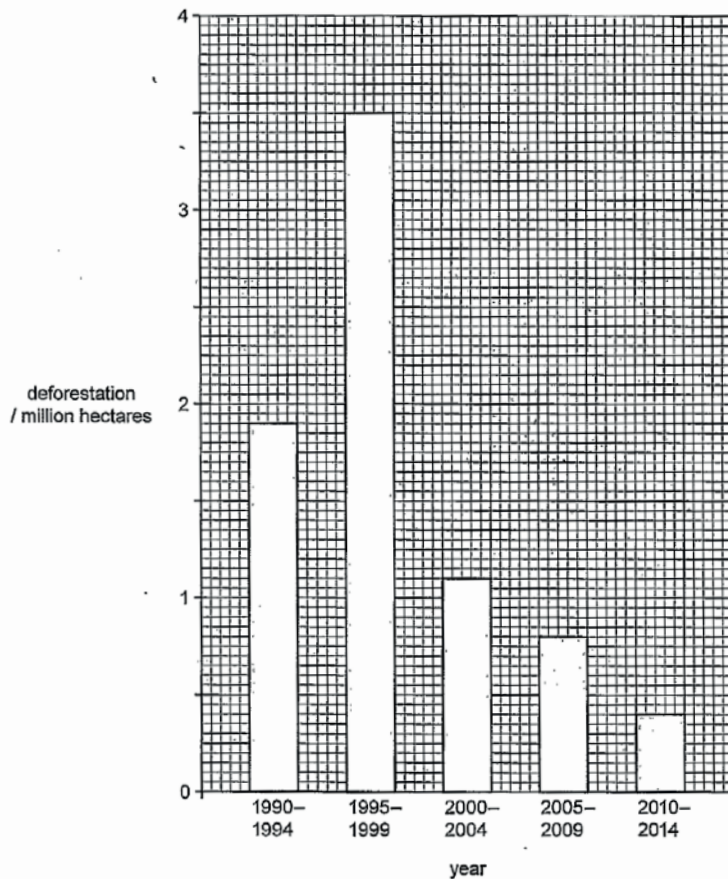
(a)   Describe the changes in deforestation rates in Indonesia shown on the bar chart.

From 1990-1994, 1.9 million hectares were cut and this rose to 3.5 million hectare in 1995-1999, a 84% increase. This fell rapidly in 2000-2004 to 1.1 million hectare, a 68% decline and the trend continued with a further 27% decline to 0.8 million hectare in 2005-2009 and 50% decline to 0.4 million hectares in 2010-2014. Overall decline in 24 years = 79%.   [3]

1 A good answer successfully describing the trends in the graph supported by relevant use of data. All three marks are achieved.

Mark for (a) = 3 out of 3

Example Candidate Response – high, continued	Examiner Comments

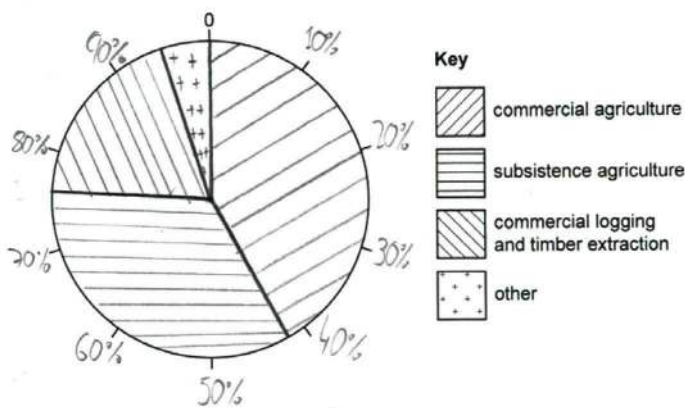**(b)** The table shows the reasons for deforestation in Indonesia.

reason for deforestation	percentage of forest cleared	
commercial agriculture	42	151.2°
subsistence agriculture	34	122.4°
commercial logging and timber extraction	19	68.4°
other	5	18°

100

(i) Complete the pie chart to show the reasons for deforestation in Indonesia.

Use the key provided.

reasons for deforestation in Indonesia

Key

commercial agriculture

subsistence agriculture

commercial logging and timber extraction

other

[3]

2 Information is accurately plotted and details from the key are presented with no ambiguity. All three marks are achieved.

Mark for (b)(i) = 3 out of 3

(ii) Define the terms *commercial agriculture* and *subsistence agriculture*.

commercial agriculture ...When a farmer grows crops with the primary aim of selling it to the market for a profit

subsistence agriculture ...When a farmer grows crops with the aim primarily based on feeding his/her own family.

[2]

3 A confident response accurately defining the terms particularly in stating the destination of the product. Both marks are obtained.

Mark for (b)(ii) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments

(iii) Suggest **one** reason for deforestation other than agriculture, commercial logging and timber extraction.

④ Clearing land of forest to make space for settlements, mostly human urban settlements. [1]

(iv) Explain why some people want to stop further deforestation.

⑤ It leads to a loss in biodiversity killing potentially useful animals as trees house plenty of habitats. It disturbs the Carbon Cycle as trees play a vital role in reducing Carbon Dioxide in air so it can lead to climate change. Trees provide transpiration so it may lead to drought. They provide anchorage to soil, release organic matter so it may cause Wind erosion. It provides interception, High plants and shade so it may lead to Water erosion [4] leaching of nutrients

(c) The diagram shows a wetland food chain.

algae → mosquito larvae → small fish → large fish → heron

⑥ **(i)** State the producer and tertiary consumer in the food chain.

producer .....algae..........

tertiary consumer .....heron.......... [1]

(ii) Complete the pyramid of energy for this food chain. The bar for algae has been completed for you.

⑦

[2]
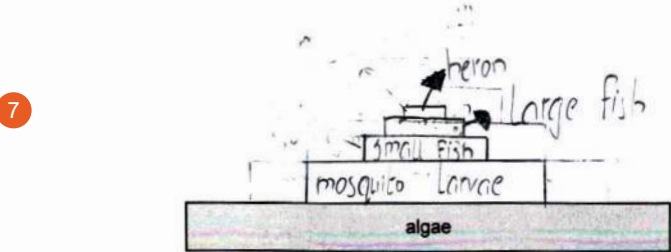
④ The need for additional settlement is a valid reason for deforestation. The mark is obtained.

Mark for (b)(iii) = 1 out of 1

⑤ The reasons provided in this response are distinct and include the impact on the carbon cycle gaining all four marks.

Mark for (b)(iv) = 4 out of 4

⑥ The candidate names the last organism in the chain rather than the tertiary consumer. No mark obtained.

Mark for (c)(i) = 0 out of 1

⑦ The pyramid is completed correctly for two marks.

Mark for (c)(ii) = 2 out of 2

Example Candidate Response – high, continued	Examiner Comments

(iii) Describe the process of photosynthesis.

8 Plants take in Carbon Dioxide (for) the the atmosphere (Stomata) and water from the roots from soil and in the presence of light and green pigment called chlorophyll, produce Oxygen and Glucose, the latter used to function in body processes. [2]

$$6H_2O + 6CO_2 \xrightarrow[chlorophyll]{Light} 6O_2 \quad 6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$$

8 This response demonstrates that the candidate has a good understanding of the process of photosynthesis. The answer is supported by including the chemical equation. Two marks are obtained.

Mark for (c)(iii) = 2 out of 2

(d) The table shows the percentage rate of loss of wetlands between 1900 and 2010 for a country.

period	percentage loss of inland wetlands per year	percentage loss of coastal wetlands per year
1900–1940	0.85	0.39
1941–1974	1.48	1.73
1975–1990	1.63	1.44
1991–2010	0.48	0.85

Compare the percentage rate of loss of inland wetlands with that of coastal wetlands between 1900 and 2010.

9 Percentage loss was greater by 0.46% inland in 1990-1994 but was greater in wetlands in 1941-1974 by 0.25%, it was then greater in (coan)inland wetlands by 0.19% in 1975-1990 before being more in coastal wetlands by 0.37% in 1991-2010 [2]

[Total: 20]

9 Both marks are achieved in this answer as the candidate correctly compares the data on the two types of wetland including timescales.

Mark for (d) = 2 out of 2

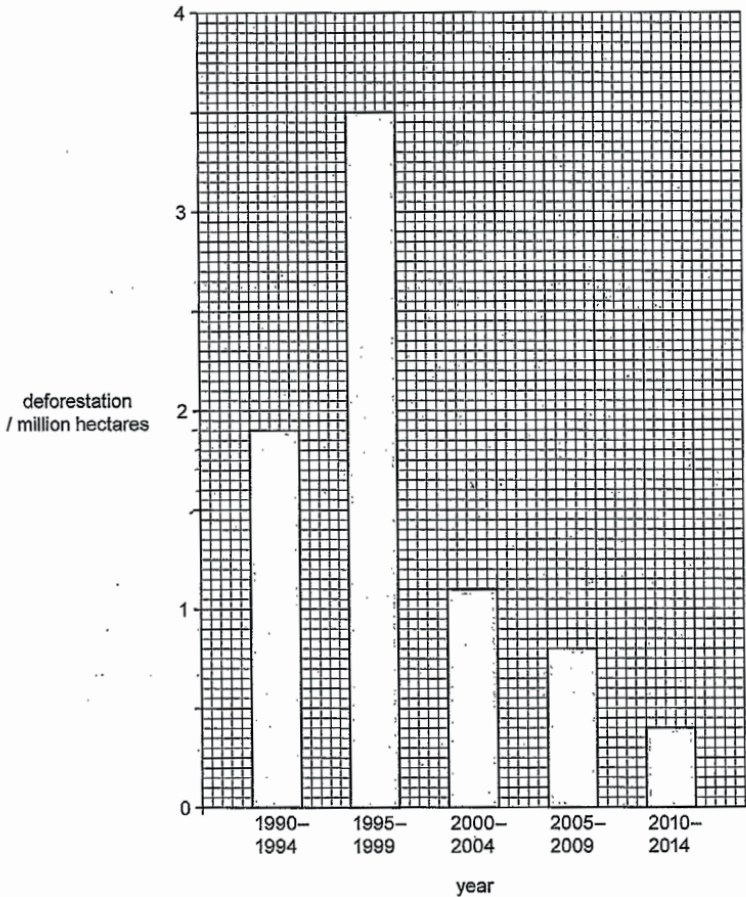**Total mark awarded = 19 out of 20**

How the candidate could have improved their answer

The candidate achieved well across the whole question. There was only one significant error in identifying the roles within the food chain.

Example Candidate Response – middle	Examiner Comments

6 The bar chart shows deforestation rates in Indonesia between 1990 and 2014.

(a) Describe the changes in deforestation rates in Indonesia shown on the bar chart.

From 1990 - 1994 the deforestation rate was 1.9 million Hectares then there was a sudden increase from 1995 to 1999 as 3.5 million hectares. By 2000-2004, 2005-2009, and 2010-2014 it has come down and decrease up to 0.9 million hectares.

[3]

1 Full marks are achieved. The candidate accurately identifies the trends and supports statements with relevant data from the graph.

Mark for (a) = 3 out of 3

| Example Candidate Response – middle, continued	Examiner Comments

(b) The table shows the reasons for deforestation in Indonesia.

reason for deforestation	percentage of forest cleared
commercial agriculture	42
subsistence agriculture	34
commercial logging and timber extraction	19
other	5

(i) Complete the pie chart to show the reasons for deforestation in Indonesia.

Use the key provided.

reasons for deforestation in Indonesia

Key

◪ commercial agriculture

▤ subsistence agriculture

▨ commercial logging and timber extraction

⊡ other

[3]
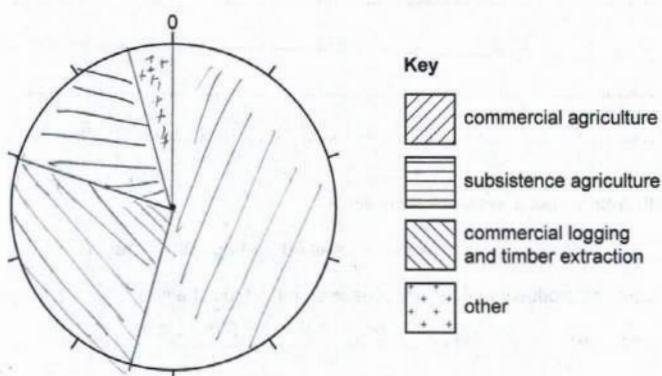
2 The candidate does not draw the pie chart accurately and the interpretation of the key is ambiguous. This response achieves one mark.

Mark for (b)(i) = 1 out of 3

(ii) Define the terms *commercial agriculture* and *subsistence agriculture*.

commercial agriculture ...... Produce for the use of the farmer and the farmers family.

subsistence agriculture ...... Produce for the use of sale.

[2]

3 In this response, the two definitions are allocated to the wrong statements. No marks are achieved.

Mark for (b)(ii) = 0 out of 2

Example Candidate Response – middle, continued	Examiner Comments

(iii) Suggest **one** reason for deforestation other than agriculture, commercial logging and timber extraction.

4 Building of dams. [1]

4 This is a valid reason for deforestation. The mark is achieved.

Mark for (b)(iii) = 1 out of 1

(iv) Explain why some people want to stop further deforestation.

5 Due to Deforestation there will be less Oxygen available and there will be more Carbon dioxide in the air.
- Soil erosion could increase
- less Rainfall as well
- Desertification could occur in that particular area.
- For Even for the sustainable development. [4]

5 This answer gains two marks. More detail and explanation are needed to achieve further marks.
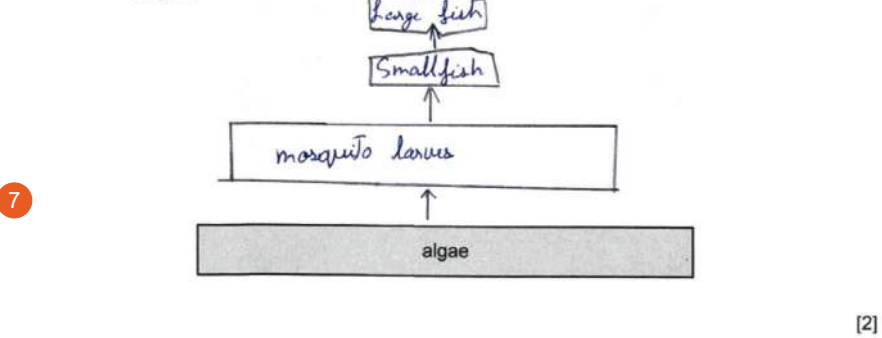
Mark for (b)(iv) = 2 out of 4

(c) The diagram shows a wetland food chain.

algae → mosquito larvae → small fish → large fish → heron

(i) State the producer and tertiary consumer in the food chain.

6 producer .....Algae.....
tertiary consumer .....Heron..... [1]

6 This response is incorrect. No marks gained.

Mark for (c)(i) = 0 out of 1

(ii) Complete the pyramid of energy for this food chain. The bar for algae has been completed for you.

7
Heron
Large fish
Small fish
mosquito larvae
algae
[2]

7 These organisms are linked in the right order to gain the two marks.

Mark for (c)(ii) = 1 out of 2

Example Candidate Response – middle, continued	Examiner Comments

(iii) Describe the process of photosynthesis.

8 The Plants consume energy from the sun light to produce or ... for making of their own food is called Photosynthesis.

[2]

8 This response does not list the products or ingredients of photosynthesis and does not indicate where the reaction occurs. This means no marks are obtained.

Mark for (c)(iii) = 0 out of 2

(d) The table shows the percentage rate of loss of wetlands between 1900 and 2010 for a country.

period	percentage loss of inland wetlands per year	percentage loss of coastal wetlands per year
1900–1940	0.85	0.39
1941–1974	1.48	1.73
1975–1990	1.63	1.44
1991–2010	0.48	0.85

Compare the percentage rate of loss of inland wetlands with that of coastal wetlands between 1900 and 2010.

9 1900 – 1940 0.85% has been lost in inland where as 0.39 in coastal wetlands where as the difference bigger between them is 0.46. 1941 1941–1974 costal wetlands lost more. 1975-1990 inland lost more and then finally 1991 – 2010 costal Coastal wetland lost. [2]

[Total: 20]

9 This is a good comparison of the changes within the two wetland areas. Data is used accurately and comparisons are valid. Both marks are obtained.

Mark for (d) = 2 out of 2

Total mark awarded = 10 out of 20

How the candidate could have improved their answer

- Additional detail within explanations would have provided the opportunity to access a greater number of marks.
- Lack of detailed knowledge of the photosynthesis reaction prevented the candidate from obtaining these marks.
- A careful reading of questions might have resulted in additional marks being achieved, e.g. parts **(b)(ii)** and **(c)(i)**.

Example Candidate Response – low	Examiner Comments

6 The bar chart shows deforestation rates in Indonesia between 1990 and 2014.
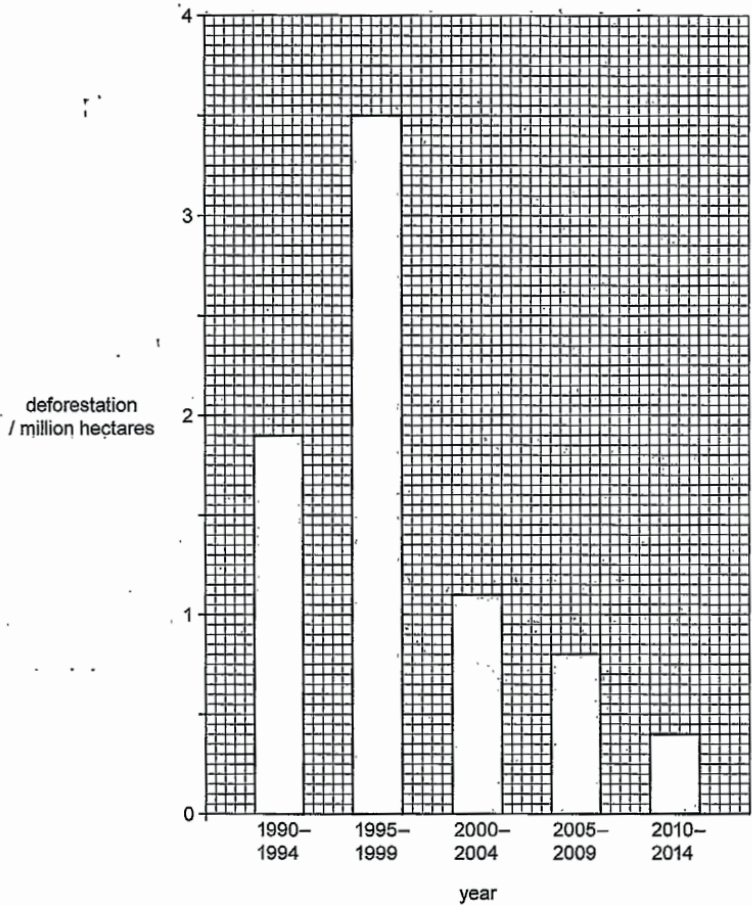
(a) Describe the changes in deforestation rates in Indonesia shown on the bar chart.

The changes that happened were in 1990-1994 there was just 1.8 million hectares, for wording to 1995-1999 the deforestation had a rapid increase into 3.5 million hectares. Further, starting by 2000-2014 deforestation has been decreasing because people would want to use irrigation or trickle drip and replant the area again. [3]

Examiner Comments

1 The candidate successfully describes the trends and supports findings with relevant data. Three marks are achieved.

Mark for (a) = 3 out of 3

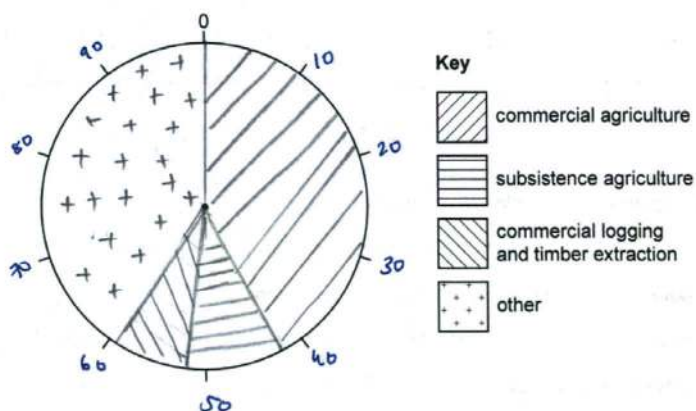| Example Candidate Response – low, continued	Examiner Comments

(b) The table shows the reasons for deforestation in Indonesia.

reason for deforestation	percentage of forest cleared
commercial agriculture	42
subsistence agriculture	34
commercial logging and timber extraction	19
other	5

53

(i) Complete the pie chart to show the reasons for deforestation in Indonesia.

Use the key provided.

reasons for deforestation in Indonesia

Key

- commercial agriculture
- subsistence agriculture
- commercial logging and timber extraction
- other

[3]

2 The plotting of this graph is incorrect, so no marks are awarded.

Mark for (b)(i) = 0 out of 3

(ii) Define the terms *commercial agriculture* and *subsistence agriculture*.

commercial agriculture ...when the farmer sell crops to get cash or income.

subsistence agriculture ...it when the farmer works for him and his family's needs.

[2]

3 The definitions offered are accurate and gain both marks.

Mark for (b)(ii) = 2 out of 2

Example Candidate Response – low, continued	Examiner Comments

(iii) Suggest **one** reason for deforestation other than agriculture, commercial logging and timber extraction.

④ ~~Desert~~ Desertification, when a greenland turns into a desert . [1]

④ The answer supplied here is incorrect. No mark is obtained.

Mark for (b)(iii) = 0 out of 1

(iv) Explain why some people want to stop further deforestation.

⑤ Deforstation has its negatives. Many people want to stop ~~it~~ defrstation because it doesn't help them for their daily needs. Cutting down trees affects the ecosystem and the biosphere reserve . Farmers are not able to use the land for irrigation or to grow crops. Further, some farmers need access from water and the land will be bo dry. Finally, the land ~~out~~ can turn into a desert ~~which~~ in the the process ~~can turn a~~ of desertification . [4]

⑤ This response does not list valid, detailed reasons for preventing further deforestation. The mention of the impact on the ecosystem obtains one mark.

Mark for (b)(iv) = 1 out of 4

(c) The diagram shows a wetland food chain.

algae → mosquito larvae → small fish → large fish → heron

(i) State the producer and tertiary consumer in the food chain.

producer ~~small~~ algae

tertiary consumer Mosquito larvae [1]

⑥ The tertiary consumer is incorrectly identified. No marks are obtained.

Mark for (c)(i) = 0 out of 1

(ii) Complete the pyramid of energy for this food chain. The bar for algae has been completed for you.

⑦

heron
↑
large fish
↑
small fish
↑
mosquito larvae
↑
| algae |

[2]

⑦ The organisms are shown in the correct order, but the candidate does not draw the diagram correctly showing decreasing bar widths with centred bars and labels. One mark is awarded.

Mark for (c)(ii) = 1 out of 2

Example Candidate Response – low, continued	Examiner Comments

(iii) Describe the process of photosynthesis.

8 Photosynthesis takes place in plants it is when the suns energy ~~gets to pl~~ lets the plants to intercept and the leaves release carbon dioxide and release glucose.

.... [2]

(d) The table shows the percentage rate of loss of wetlands between 1900 and 2010 for a country.

period	percentage loss of inland wetlands per year	percentage loss of coastal wetlands per year
1900–1940	0.85	0.39
1941–1974	1.48	1.73
1975–1990	1.63	1.44
1991–2010	0.48	0.85

Compare the percentage rate of loss of inland wetlands with that of coastal wetlands between 1900 and 2010.

9 After every 40 to 30 years there has been an increase. In 1941–1974 there was a

....

....

.... [2]

[Total: 20]

8 The candidate's understanding of photosynthesis is not clear as both carbon dioxide and glucose are stated as products. The ingredients, the products, the energy source, and the location of the reaction should be mentioned to achieve both marks. No marks are awarded.

Mark for (c)(iii) = 0 out of 2

9 This response does not offer a comparison between the two wetlands. No marks are awarded.

Mark for (d) = 0 out of 2

Total mark awarded = 7 out of 20

How the candidate could have improved their answer

- Plotting a pie graph was a common question type so should have been practised.
- An understanding of the structure of a pyramid of energy would have resulted in an improved answer and higher marks.

Common mistakes candidates made in this question

- A lack of detailed knowledge of the photosynthesis reaction limited the marks that were awarded.
- Candidates did not ensure that comparisons, where requested, linked the information giving similarities and differences.
- Candidates did not read questions carefully to ensure it was clear what was being asked, such as the tertiary consumer in part **(c)(i)**.
- Not all candidates' work was legible and followed a logical order. This would have assisted in the accurate marking of the script. Where additional pages were used, they should have been clearly and accurately labelled with the question number that was being answered.