



**General Certificate of Secondary Education
2023**

Geography

Unit 1

Understanding Our Natural World

[GGY11]

MONDAY 22 MAY, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCSE Geography.

Candidates must show they are able to:

AO1 Demonstrate geographical knowledge and understanding of:

- Places, environments, processes and concepts; and
- The inter-relationships between places, environments and processes;

AO2 Apply knowledge and understanding to analyse, interpret and evaluate geographical information and issues and to make judgements; and

AO3 Select, adapt and use a variety of skills and techniques to investigate questions and issues and communicate findings.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If the answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range of any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

Threshold performance: Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.

Intermediate performance: Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.

High performance: Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below.

Level 1

Spelling, punctuation and the rules of grammar are used with some accuracy so that meaning is reasonably clear. Candidates present some relevant information in a form and using a style of writing which suits its purpose. The text is reasonably legible. A limited range of specialist terms is used appropriately.

Level 2

Spelling, punctuation and the rules of grammar are used with considerable accuracy so that meaning is clear. Candidates present relevant information in a form and using a style of writing which suits its purpose. The text is legible. A good range of specialist terms is used appropriately.

Level 3

Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. Candidates present, and organise effectively, relevant information in a form and using a style of writing which suits its purpose. The text is fluent and legible. A wide range of specialist terms is used skilfully and with precision.

- 1 (a) A drainage basin has inputs, stores, transfers and outputs.
- (i) Complete **Table 1** by writing an example of an input, transfer and output which operates within the drainage basin.

Table 1

Drainage Basin System:	Example:
Input	Precipitation/Rainfall/Snow, etc.
Output	Evaporation/Transpiration/Discharge to sea. Any other appropriate response.
Store	Interception (GIVEN).
Transfer	Infiltration/Percolation/Surface Runoff, etc. Any other appropriate response.

(3 × [1])

[3]

- (ii) State the meaning of the term **interception**.

Award [0] for a response not worthy of credit

Award [1] for a partial definition,
e.g. Interception is when precipitation is held in vegetation [1]

Award [2] for a full definition,
e.g. Interception is a process whereby precipitation may be caught and stored on leaves and branches. [2]

- (b) Underline the correct word in the following statements showing how a waterfall is formed. One has been completed for you.

The river flows over a layer of hard/soft rock (**given**).

This feature is common in the **lower**/upper course of a river.

The process of **deposition**/erosion helps form this feature.

The feature found at the bottom of a waterfall is called a **plunge point**/plunge pool.

Once a waterfall retreats a gorge/**cliff** is left behind.

(4 × [1])

[4]

- (c) (i) Describe **one** impact a flood event such as this could have on people.

Award [0] for a response not worthy of credit.

Award [1] for a basic description,
e.g. People's homes will be flooded.

Award [2] for a limited description,
e.g. Rising flood waters would damage people's homes. This would result in people becoming temporarily homeless.
Award [3] for a detailed description of the possible impact of flooding on people,
e.g. Rising flood waters would damage people's homes. This would cause widespread social disruption as many residents would not have been able to protect their property. This would result in people becoming temporarily homeless and having to rely on government support. [3]

- (ii) Describe and evaluate the sustainability of **one** river management method which could be used to reduce the risk of flooding.

Level 1 ([1]–[2])

A basic description relating to river management method which could have been employed,
e.g. The government could have built levees along the river banks [1]
increasing the carrying capacity of the river. [2]

Level 2 ([3]–[4])

A limited description of a potential river management method which could be used. There is limited evaluation of the sustainability of the technique in managing a potential flood,
e.g. The government could have built levees along the river banks, increasing the carrying capacity of the river. However, this method is not sustainable. [3]
e.g. The government could have built levees along the river banks, increasing the carrying capacity of the river. This would protect people's homes and local infrastructure however it is not sustainable. [4]

Level 3 ([5]–[6])

A detailed description of a potential river management method which could be used. There is clear evaluation of the sustainability of the technique in managing a potential flood. To achieve top Level 3 a concluding sentence is required,
e.g. The government could have built levees along the river banks. This would increase the height of the river bank and enable the river to carry and store more water (increasing the carrying capacity of the river). This would reduce the risk of flooding in the area and protect people's homes and local infrastructure. However, levees can encourage silt to be deposited onto the river bed and therefore require continual maintenance. They are also quite expensive and are not sustainable for future generations. [5]
e.g. The government could have built levees along the river banks. This would increase the height of the river bank and enable the river to carry and store more water (increasing the carrying capacity of the river). This would reduce the risk of flooding in the area and protect people's homes and local infrastructure. However, levees can encourage silt to be deposited onto the river bed and therefore require continual maintenance. They are also quite expensive and are not sustainable for future generations. In conclusion the government may wish to use both hard and soft engineering approaches to reduce impacts of future flooding events. [6]

- (d) For a named river in the British Isles, describe and explain the physical and human reasons why it flooded.

Award [0] for a response not worthy of credit.

No mark for name of river in the British Isles, e.g. Derwent.

Max Level 1 if river outside British Isles or if no named river.

Level 1 ([1]–[2])

A basic response relating to either a physical and/or human cause of flooding. There may be no reference to a named river in the British Isles, e.g. It flooded in England due to heavy rain. [1]

e.g. It flooded in England due to heavy rain, building and peat extraction. [2]

Spelling, punctuation and the rules of grammar are used with some accuracy so that meaning is reasonably clear. Candidates present some relevant information in a form and using a style of writing which suits its purpose. The text is reasonably legible. A limited range of specialist terms is used appropriately.

Level 2 ([3]–[5])

A limited description and explanation of both the physical and human causes of flooding for a named river in the British Isles. One cause may be explained in greater detail than the other. A max. of 4 marks if only physical or human factors are explained in good detail.

e.g. The river Derwent flooded in March. There were several physical causes such as the heavy rainfall at the time of the flood, also there was a lack of infiltration as this rainfall fell onto ground that was almost saturated from previous rainfall events. Human factors also played a part. Areas of the floodplain were being urbanised and this reduced infiltration and increased surface run-off. [5]

Spelling, punctuation and the rules of grammar are used with considerable accuracy so that meaning is clear. Candidates present relevant information in a form and using a style of writing which suits its purpose. The text is legible. A good range of specialist terms is used appropriately.

Level 3 ([6]–[7])

A detailed description and explanation for a named river in the British Isles which addresses both physical and human factors,

e.g. In March 1999 people living near the River Derwent experienced severe flooding. There were several physical causes such as the heavy rainfall, at the time of the flood over 250 mm of rain fell on the North York Moors; also there was a lack of infiltration as this rainfall fell onto ground that was almost saturated from previous rainfall events. Human factors also played a part. Areas of the flood plain were being urbanised, such as the new estate built at Malton; this reduced infiltration and increased surface run-off. [7]

Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. Candidates present and organise effectively relevant information in a form and using a style of writing which suits its purpose. The text is fluent and legible. A wide range of specialist terms is used skilfully and with precision.

- 2 (a) (i) Complete **Table 2** by using a tick (✓) to show **three** statements which are correct about constructive waves.

Table 2

Statements about constructive waves	Tick (✓) only three correct statements
They break frequently around 15 times per minute.	
They help build up a beach through deposition.	✓
They have a powerful swash and weak backwash.	✓
They have a weak swash and a powerful backwash.	
They have a long wavelength.	✓

[3]

Note:

If 5 are ticked, deduct [2]

If 4 are ticked, deduct [1]

- (ii) Study **Fig. 3** which shows a process that occurs on the coastline

Name and describe the process which is shown in **Fig. 3**.

Award [1] for naming the process – Longshore drift

Award [1] for describing the process – material/sediment being moved by the waves/along the beach [2]

- (b) Study **Fig. 4** which shows landforms found in a coastal environment. Answer the questions which follow.

- (i) Complete **Table 3** by writing in the name of the coastal feature which is found at each number. One has been completed for you.

Table 3

Number	Coastal feature
1	Arch [1]
2	Stump [1]
3	Stack [1]
4	Cave (given)

(3 × [1])

[3]

- (ii) Explain how a sea cave forms.

Award [1] for a simple statement,
e.g. Caves are formed through erosion.
e.g. Caves form when waves attack the cliff.

Award [2] for a limited explanation on how a cave forms mentioning erosion and the sequence from crack to cave,
e.g. Caves are formed through erosion. The waves attack the cliff causing cracks to appear. Eventually these cracks join to produce a cave.

Award [3] for a detailed explanation on how a cave forms. The candidate should name one type of erosion and sequence from crack to cave, need reference to cliff or headland for 3 marks
e.g. Caves are formed through erosion. The waves attack the cliff through abrasion or hydraulic action causing cracks to appear at the base of a cliff. Eventually these cracks become bigger and eventually will join to produce a cave. [3]

- (c) Coastal defences are needed to combat the threat of rising sea levels.

Study **Fig. 5** which shows the largest cities in each continent at risk from rising sea levels by 2050. Answer the questions which follow.

- (i) Using **Fig. 5**, complete **Table 4** by naming one city in each continent listed. One example has been completed for you.

Table 4

Continent	Name of one city in Fig. 5 threatened by rising sea levels
Asia	Dhaka (given)
Europe	London [1]
South America	Buenos Aires or Lima [1]

[1] each for one correct city named in Europe and South America [2]

- (ii) Using the data presented in **Table 5**, complete **Fig. 6** to show the number of cities in **South America** threatened by rising sea levels.

Award [1] for drawing the bar to the correct height (2)

Award [1] for shading the bar fully [2]

- (iii) Suggest **one** other reason (apart from rising sea levels or residential reasons) why coastal defences are needed.

Do not credit answers which refer to residential reasons/people's homes or answers which refer to rising sea levels.

Answers may focus on industry/fishing/harbours/agricultural land/
tourism/ more storms and erosion

Award [1] for a basic statement,
e.g. Coastal defences are needed to protect industrial areas at the
coast.

Award [2] for a statement with some elaboration,
e.g. Coastal defences are needed to protect industrial areas at the
coast. [1] These factories and businesses employ thousands of people
who rely on these for a salary. [2] [2]

- (d) Evaluate the sustainability of the coastal management strategy used to
protect a named area of coastline in the British Isles.

Award [0] for an answer not worthy of credit, e.g. a river strategy.

Maximum Level 1 if no named coastline.

Reference to only one coastal management method in very good detail with
facts and figures and good evaluation max Level 2. [5]

Level 1 ([1]–[2])

A basic description of a coastal management strategy. The answer may not
make reference to a specific coastline in the British Isles. No evaluation or
reference to sustainability, e.g. A sea wall was built to stop the sea eroding
the coastline. Groynes and gabions are also used. [2]

Spelling, punctuation and the rules of grammar are used with some accuracy
so that meaning is reasonably clear. Candidates present some relevant
information in a form and using a style of writing which suits its purpose.
The text is reasonably legible. A limited range of specialist terms is used
appropriately.

Level 2 ([3]–[5])

A limited or unbalanced evaluation of a coastal management strategy for a
named coastline in the British Isles.

Good detail on one method only used for coastal management but no
evaluation of sustainability. [3]

Answer with some limited evaluation but lacking in factual detail on a number
of methods. [4]

Good depth of information in a detailed answer but one which is one-sided
and deals with the positive aspects or the negative aspects. Sustainability
not addressed. [5]

Possible responses might include:

e.g. In Newcastle, Co. Down there have been a number of developments
over the years which have been part of a strategy to manage the coast.
The main method was the building of a sea wall. In 2007 a new Newcastle
promenade development was built which included a sea wall which was built
1 metre higher than the old sea wall. The programme cost £4 million and it

was designed to stop the sea from flooding the town. Groynes and gabions have also been used to good effect. [5]

Spelling, punctuation and the rules of grammar are used with considerable accuracy so that meaning is clear. Candidates present relevant information in a form and using a style of writing which suits its purpose. The text is legible. A good range of specialist terms is used appropriately.

Level 3 ([6]–[8])

A detailed response based on a coastal management strategy for a named case study in the British Isles. The answer has an evaluation which clearly analyses the ways that this strategy has attempted to be sustainable.

Differentiation in this level is based on the breadth of evaluation in relation to sustainable development. The answer will also include a full evaluative comment and conclusion,

e.g. In Newcastle, Co. Down there have been a number of developments to sustainably manage the coast in Newcastle. The main feature has been the building of a sea wall. In 2007 a new promenade was built which included a sea wall 1 metre higher than the old sea wall. The programme cost £4 million and it was designed to stop the sea from flooding the town. The sea wall is a long-term hard engineering solution. It is hoped that it will last 50 years and will require minimal maintenance but many people consider this unsustainable due to the cost. In addition, gabion cages, rock armour in front of Royal County Down Golf course and groynes are used in sensitive areas to reduce the impact of the waves and to help the beach build up deposited material. [6] The promenade was designed to fit in with the character of the local area, however many locals find the groynes and gabions unaesthetically pleasing to look at. However, some local people are concerned that these are unsustainable and the changes to the beach front have had an impact on animal life along the shore. [7] In my opinion the programme has been successful, although it cost a lot of money. [8]

Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. Candidates present and organise effectively relevant information in a form and using a style of writing which suits its purpose. The text is fluent and legible. A wide range of specialist terms is used skilfully and with precision.

- 3 (a) Complete **Table 6** below which provides information about three weather recording instruments.

Table 6

Weather Instrument	Name of instrument	Weather element recorded
	Anemometer (given)	Windspeed [1]
	Barometer [1]	Air Pressure (given)
	Rain Gauge [1]	Precipitation, e.g. rain/snow (given)

(3 × [1])

[3]

- (b) (i) Complete **Fig. 7** by drawing a line to join each factor that can affect climate with its correct description. One has been completed for you.

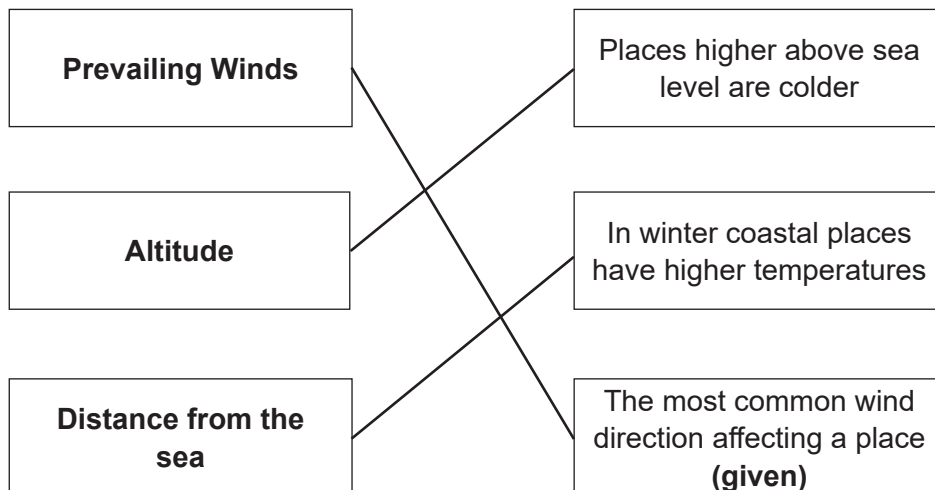


Fig. 7

(2 × [1])

[2]

- (ii) Study **Fig. 8** which shows how latitude affects temperatures.
Answer the question which follows.

Using **Fig. 8** to help you, explain why temperatures fall with distance from the equator.

Award [0] for a response not worthy of credit.

Level 1 ([1])

A basic statement relating to **Fig 8**,

- e.g. Closer to the equator there is more solar energy/insolation.
- e.g. It is colder nearer the poles because they receive less solar energy.
- e.g. The angle that the Sun's rays hit Earth at the poles makes it cooler.
- e.g. the heat is spread over a greater surface area at the poles

Level 2 ([2]–[3])

A limited explanation

- e.g. The more directly the Sun's rays hit Earth, the warmer the average temperature. [2]
- e.g. Due to the earth's curve the sun's rays travel longer distance to reach the pole so more energy is lost and it is colder [2] but at the Equator the sun's rays have less distance to travel so it is warmer [3].

Level 3 ([4])

A detailed explanation of one aspect well developed referring to both pole and equator or two aspects covering either the pole or equator.

- e.g. Near the equator, the sun's rays hit the earth directly. This heats a smaller surface area [as the rays are more concentrated] and means it is warmer at the equator. At the pole B, due to the earth's curvature, the sun's rays hit the earth at a more oblique angle so the same energy will cover a larger surface area. This causes the temperature to be colder at B [the pole]

Due to the earth's curve the sun's rays travel a longer distance to reach the pole. This means more energy is lost via reflection etc. This curvature also causes the rays to cover a larger surface area causing the temperatures to be lower than the equator. [4]

- (c) Study **Fig 9** which shows a synoptic chart of North West Europe in winter.
Answer the questions which follow.

- (i) Using **Fig 9** underline the correct answer to complete the sentences below.

- The pressure at A is high/low
- The lowest pressure is in Southern England/North West of Scotland
- Area B is at the warm front/at the cold front

(3 × [1]) [3]

(ii) State the meaning of the term *synoptic chart*.

Award [0] for a response not worthy of credit.

Award [1] for a partial definition,
e.g. a synoptic chart is a weather map

Award [2] for a full definition,
e.g. a synoptic chart is a weather map which shows the weather
conditions such as temperature or wind speed, rainfall etc. [2]

(iii) Explain why the weather at **B on **Fig. 9** is likely to be wet and windy.**

A top level answer will explain why the weather is both wet and windy and should refer to both the rain and the wind with rising air at the cold front and the closely spaced isobars, making the pressure gradient steep. Credit answers referring to cold air pushing up warm air along the cold front and credit answers referring to cold mP air forced up the warm mT airmass at the cold front.

Level 1 ([1]–[2])

A basic explanation of only one aspect or both aspects at a basic level,
e.g. it is likely to be wet because Area B is in a depression. [1]
e.g. it will be windy in a depression. [1]
e.g. it is likely to be windy and wet as Area B is in a depression where air is rising [2]

Level 2 ([3]–[4])

A limited explanation which explains only one element well or both elements in limited detail,
e.g. it is likely to be wet because Area B is at the cold front of a depression where air is rising; it is will also be windy as the pressure changes very quickly from a higher to lower value. [4]

Level 3 ([5]–[6])

A detailed explanation which refers to both weather elements and explains in some detail why wet and windy weather is likely,
e.g. it is likely to be wet because Area B is at the cold front of a depression where warm (Tropical) air is forced to rise (pushed up along the cold front), the rising air cools and the water vapour condenses to form rain; it is will also be windy as the isobars are very close together so the wind blows fast as the pressure changes very quickly from a higher to lower value (the pressure gradient is steep). [6]

(d) Study **Fig. 10** which shows the track of Hurricane Sally, an example of an extreme weather event outside the British Isles. Answer the questions which follow.

(i) Underline the direction in which Hurricane Sally was travelling over the Gulf of Mexico. Choose your answer from the list below.

North East North West East [1]

(ii) Name the city which lies closest to the path of Hurricane Sally.

New Orleans [1]

(iii) With reference to your case study of an extreme weather event outside the British Isles, describe **one** impact it had on people.

Extreme weather event can be a case study relating to any one of the following:-

Drought Tornado Hurricane

Award [0] for a response not worthy of credit,
e.g. an impact on the environment.

Award [1] for no clearly named extreme weather event.

Award [1] for a basic description of an impact on people,
e.g. people died in a tornado.

Award [2] for a limited description of an impact on people in a named extreme weather event,
e.g. 8 people died in a tornado from Oklahoma into Texas and Mississippi on 22 April 2020.

Award [3] for a detailed description of one impact on people of a named extreme weather event,
e.g. 8 people died in a tornado travelling across Oklahoma and Texas and into Mississippi on 22 April 2020; most of the deaths were caused by the winds tearing down buildings so the roofs fell in and the walls collapsed, killing people in both Texas and Mississippi. People were also killed by falling trees and flying debris. [3]

AVAILABLE
MARKS

25

- 4 (a) Study **Fig. 11** which shows the structure of the earth.
Answer the questions which follow.

- (i) Circle the letter in the list below which is the region of the earth's structure in which convection currents are located.

A **B** C D [1]

- (ii) Add the correct labels at **X** and **Y** to complete **Fig. 11**.

X Continental Plate or
Continental crust or Crust
or Volcano or Fold mountain
or Mountain

Y Outer Core

(2 × [1]) [2]

- (b) Study **Fig. 12** which shows a map of the western part of North America and a cross section at this destructive plate boundary. Answer the questions which follow.

- (i) Name the fold mountain range formed at this destructive plate margin.
Cascade Range [1]

- (ii) Name **one** feature which is formed in the sea at a subduction zone.
Ocean Trench, Island arc or [underwater] volcano [1]

- (iii) Explain why volcanoes erupt along a destructive plate margin such as this.

Award [0] for a response not worthy of credit.

Credit answers relating to any destructive plate boundary.

Maximum Level 1 for answers relating to volcanoes at a constructive boundary.

Level 1 ([1])

A basic statement relating to the location of volcanoes,

e.g. Volcanoes are found where plates move towards each other. [1]

e.g. Volcanoes are found where magma rises and escapes as lava. [1]

Level 2 ([2]–[3])

A limited explanation which shows some understanding of why volcanoes are found at a destructive plate boundary,

e.g. Volcanoes are found where one plate collides with another and magma rises from the melting edge of the sinking plate [2]

e.g. Volcanoes are found where one plate collides with another and the heavier ocean plate sinks below the lighter continental plate, melts and creates magma. [3]

Level 3 ([4])

A detailed explanation which shows understanding of why volcanoes occur at destructive plate boundaries,
e.g. Volcanoes are found where one plate collides with another and magma rises from the zone of subduction [melting edge of the sinking ocean plate] and rising magma escapes [as lava], creating volcanoes.

[4]

- (c) Discuss **one** potential global impact on the environment of a named supervolcano eruption which you have studied.

Answer could be on Campi Flegrei, Italy/Yellowstone USA, etc.

Award [0] for a response not worthy of credit or an answer relating to a human impact.

Maximum Level 1 [1] for no named supervolcano or if a local environmental impact rather than a global impact is discussed.

Award [1] for a basic statement relating to an environmental impact.
e.g. the release of a cloud of ash could destroy everything it covers.
e.g. SO₂ gas could make temperatures fall.

Award [2] for a limited discussion of one potential global impact of the eruption of a named supervolcano,
e.g. the release of a cloud of ash could destroy thousands of km² of landscape or the release of a cloud of ash could block sunlight from the earth.
e.g. SO₂ gas could block out sunlight and make temperatures fall creating a global winter.

Award [3] for a detailed discussion of one potential global environmental impact of the named supervolcano eruption,
e.g. The release of SO₂ gas from a possible eruption of the Camp Flegrei, Italy supervolcano could decrease sea surface temperatures by –0.4°C, causing cooling leading to the destruction of plant and animal habitats.
e.g. If the Yellowstone USA supervolcano erupted, the release of 2000 million tonnes of sulphur into the atmosphere would form sulphuric acid aerosols which would cover the earth, preventing sunlight passing through to the lower atmosphere and causing temperatures to drop by 10°C causing a 'Little Ice Age' [causing a...global winter.]

[3]

- (d) Select the correct term from the list below to complete the sentences about earthquakes. [4]

Seismograph Tsunami Epicentre Richter Focus Mercalli

- The **Focus** is the point in the crust where an earthquake occurs.
- A **Seismograph** is the instrument used to measure the strength of an earthquake.
- **Richter** is the scale used to measure the magnitude of an earthquake.
- The **Epicentre** is the place on the earth's surface vertically above the point where an earthquake occurs.

(4 × [1])

[4]

- (e) Liquefaction is one physical consequence of an earthquake. State the meaning of the term **liquefaction**.

Award [0] for a response not worthy of credit

Award [1] for a partial definition,

e.g. Liquefaction is when soil turns into liquid-like mud.

Award [2] for a full definition,

e.g. Liquefaction is when wet soil turns into liquid-like mud due to the soil being shaken by an earthquake.

e.g. Liquefaction is when water rises in the soil and it turns into a liquid-like mud [2]

- (f) Evaluate **one** immediate and **one** long-term strategy used to respond to a named earthquake event that you have studied.

Answer may refer to a case study from a LEDC or MEDC.

Award [0] for an answer not worthy of credit.

Maximum Level 1 if there is no named case study of an earthquake.

Level 1 ([1]–[2])

A basic statement relating to a response or responses to an earthquake.

Answers may refer to either an immediate or long term strategy only,

e.g. After the Haiti earthquake of 2010, many countries sent rescue and medical teams to dig out people from the rubble of buildings. [2]

Spelling, punctuation and the rules of grammar are used with some accuracy so that meaning is reasonably clear. Candidates present some relevant information in a form and using a style of writing which suits its purpose. The text is reasonably legible. A limited range of specialist terms is used appropriately.

Level 2 ([3]–[5])

Limited description of one immediate and one long term strategy but with limited evaluation or details relating to the named case study of an earthquake,

e.g. One immediate response after the 2010 Haiti earthquake was that rescue and medical teams and trained personnel were sent and the US government committed to helping the government of Haiti to rebuild in the long term. [3]

e.g. One immediate response to the 2010 Haiti earthquake was that many countries sent trained personnel, rescue and medical teams. In the first week after the earthquake, 130 000 packets of food and 70 000 water containers arrived. Many people received emergency aid in the first 6 months after the earthquake. In the long term, both the USA and Canadian governments committed to the re-building of Haiti with better earthquake proof construction. [4]

e.g. One immediate response to the Haiti earthquake of 2010 was that many countries sent trained personnel, rescue and medical teams. In the first week after the earthquake, 130 000 packets of food and 70 000 water containers arrived. Within the first six months after the earthquake 1.8 million people received emergency aid. However, the rescue teams were hampered by the destruction of the port and airport facilities. In the long term, the 'Haiti Toolkit' was set up by the USA building industry and committed to the rebuilding of

Haiti, but this was very slow. [5]

Spelling, punctuation and the rules of grammar are used with considerable accuracy so that meaning is clear. Candidates present relevant information in a form and using a style of writing which suits its purpose. The text is legible. A good range of specialist terms is used appropriately.

Level 3 ([6]–[7])

A detailed description of one immediate and one long term response with details related to a named case study of an earthquake, plus an overall evaluation of the success of these responses for [7],
e.g. Rescue and medical teams were immediately sent to Haiti after the January 2010 earthquake. In the first week after the earthquake, 130 000 packets of food and 70 000 water containers were distributed. In the six months following the earthquake 1.8 million people received emergency aid. However, relief was hindered by the extent of damage to the communications systems. At the port and airport, there was confusion over who was in charge and severe air traffic congestion until the USA took responsibility for ports, airports and roads and the UN began to coordinate international aid. In the long term, both the US and Canadian governments committed to rebuilding Haiti and people were relocated from Port-au-Prince to safer rural areas. The US building industry set up the 'Haiti Toolkit' to provide building technology, resources and best practices for the Haiti government to build more earthquake-proof infrastructure. However, this was slow to be implemented and much rebuilding could not take place as land was not legally registered and money was diverted elsewhere. [6]

Overall, the strategies had limited success as many people had to live in camps with poor sanitation and there was a lack of available land for permanent homes. In August 2021 when another earthquake occurred, 2248 people were killed and buildings were destroyed. This shows that the strategies following the 2010 earthquake had only limited success. [7]

Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. Candidates present and organise effectively relevant information in a form and using a style of writing which suits its purpose. The text is fluent and legible. A wide range of specialist terms is used skilfully and with precision.

AVAILABLE
MARKS

25

Total

100

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