



*Rewarding Learning*

**General Certificate of Secondary Education  
2015**

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## **Geography**

Unit 1:  
Understanding Our Natural World

Higher Tier

**[GGG12]**

**TUESDAY 19 MAY, AFTERNOON**

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**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. The mark schemes should be read in conjunction with these general marking instructions.

### ***Assessment objectives***

Below are the assessment objectives for GCSE Geography.

Candidates must show they are able to:

- recall, select and communicate their knowledge and understanding of places, environments and concepts (AO1);
- apply their knowledge and understanding in familiar and unfamiliar contexts (AO2); and
- select and use a variety of skills, techniques and technologies to investigate, analyse and evaluate questions and issues (AO3).

### ***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 15- or 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 15- or 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.

### ***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.

### ***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.

### ***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 limited

Level 2: Quality of written communication is satisfactory

Level 3: Quality of written communication is of a high standard.

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

**Level 1 (Limited):** Candidates present some relevant information in a form and using a style of writing which suits its purpose. The text is reasonably legible. Spelling, punctuation and the rules of grammar are used with some accuracy so that meaning is reasonably clear. A limited range of specialist terms is used appropriately.

**Level 2 (Satisfactory):** Candidates present relevant information in a form and using a style of writing which suits its purpose. The text is legible. Spelling, punctuation and the rules of grammar are used with considerable accuracy so that meaning is clear. A good range of specialist terms is used appropriately.

**Level 3 (High Standard):** Candidates present, and organise effectively, relevant information in a form and style of writing which suits its purpose. The text is fluent and legible. Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. A wide range of specialist terms is used skilfully and with precision.

***Assessment of spelling, punctuation and the accurate use of grammar.***

Marks for spelling, punctuation and the accurate use of grammar will be allocated to specific questions where there is a requirement for sufficient extended writing to enable the accurate application of Performance descriptions (see below). These marks will be identified to candidates on the question papers.

**Performance descriptions**

**(i) Threshold performance**

Candidates spell, punctuate and use the rules of grammar with reasonable accuracy in the context of the demands of the question. Any errors do not hinder meaning in the response. Where required, they use a limited range of specialist terms appropriately.

**(ii) Intermediate performance**

Candidates spell, punctuate and use the rules of grammar with considerable accuracy and general control of meaning in the context of the demands of the question. Where required, they use a good range of specialist terms with facility.

**(iii) High performance**

Candidates spell, punctuate and use the rules of grammar with consistent accuracy and effective control of meaning in the context of the demands of the question. Where required, they use a wide range of specialist terms adeptly and with precision.

As shown by the performance descriptions, SPaG marks are awarded in the context of the demands of the question. If the candidate's response does not address the question then no SPaG marks are available. However, if the candidate has attempted to answer the question but produced nothing of credit, SPaG marks may still be awarded.

**Theme A: The Dynamic Landscape**

**AVAILABLE  
MARKS**

- 1 (a) (i) Complete the key for **Fig. 1** in **Table 1**.

<b>Key</b>
Watershed
Precipitation or rainfall
Throughflow, groundwater flow or percolation – Do not credit infiltration
Tributary ( <b>given</b> )

(3 × [1])

[3]

- (ii) Describe **one** transfer by which rainwater reaches the river in any drainage basin.

Award [1] for a brief statement,

e.g. The rain falls on the ground, flows over it to the river/surface runoff.

Award [2] for a statement which uses accurate terms to describe the transfer,

e.g. The rain falls onto the ground, sinks into the soil and flows as throughflow into the river,

e.g. The rain falls onto the ground, sinks through the soil and into the rock and flows through the rock to the river as groundwater flow,

e.g. surface runoff is when the rainwater runs over the ground into the river.

[2]

- (b) Using **Fig. 2** to help you, explain the formation of a waterfall.

**Level 1 ([1])**

Brief accurate statements,

e.g. The hard rock makes a waterfall/the river runs over a hard rock and drops down/the soft rock is eroded/the water falls into a pool.

**Level 2 ([2]–[3])**

Accurate reasons relating to undercutting of the hard rock and the fall of water into a plunge pool,

e.g. There is a layer of hard rock over a layer of softer rock and the softer rock is more easily eroded so the hard rock is undercut and a step is formed by the processes of erosion. The river falls into a plunge pool and the hard rock overhangs this pool.

**Level 3 ([4]–[5])**

Accurate reasons with use of accurate geographical terms, e.g. processes of erosion and links to the collapse of the overhang and the retreat of the waterfall,

e.g. There is a layer of hard rock over a layer of softer rock which is more easily eroded so the hard rock is undercut; a step is formed by erosion processes of abrasion (corrasion) and hydraulic action; the river falls into a plunge pool, and the overhanging hard rock eventually collapses due to this undercutting and so the waterfall retreats backwards/upstream.

[5]

- (c) (i) Describe and explain how the river load changes downstream.

For Level 3 there should be good descriptions of both size and shape, with figures and descriptions of shape quoted, clear explanations and references to processes of attrition and abrasion/corrasion.

**Level 1 ([1]–[2])**

Brief statements with focus on description or explanation only with no figures or shapes quoted from the table,  
e.g. The stones/pebbles are eroded and become smaller.

**Level 2 ([3]–[5])**

Statements of description with some use made of figures and shapes from table provided and some explanation **or** very detailed description/ explanation for both shape and size for bottom Level 2. Good description but no figures and excellent explanation for top Level 2.  
e.g. The stones are larger at site 1, average size is 150 mm or 135 mm at site 2 and become smaller downstream because they bump into each other and hit off the channel beds and banks; they become more rounded downstream, changing from angular at site 1 to well-rounded at site 7 because the sharp edges have been knocked off. Mention of either shape or size and mention of process for bottom Level 2. Both processes mentioned but no explanation of these and good explanation for top Level 2 **or** only 1 process and definition outlined with good description for top Level 2.

**Level 3 ([6]–[7])**

Good description with figures and shapes described and detailed processes (with names of terms accurately used for top Level 3),  
e.g. The stones and pebbles become smaller and more rounded downstream. They change from large rocks of 150 mm to smaller stones of 31 mm at site 7. They change from angular shapes at sites 1, 2 and 3 to more rounded or well-rounded by site 7. The reasons for the decrease in size are that the stones and pebbles are eroded by hitting off each other and bouncing against the bed and banks so they break up; this process is called attrition. The load becomes more rounded because as pebbles and stones bang into each other their sharp edges are knocked off. The load becomes more smooth as it hits off the bed and banks as the river uses its load to abrade the bed and banks through the process of corrasion. [7]

- (ii) Suggest **one** reason how this stone came to be at this site.

Award [0] for a response not worthy of credit geographically, e.g. rock was thrown into river.

Award [1] for a simple valid suggestion,  
e.g. The large stone may have just fallen into the river.  
e.g. The large stone may be made of very hard rock.

Award [2] for a more detailed valid reason,  
e.g. The large stone may have just fallen into the river as it has just been removed from the banks at site 5 and so has not had time to be eroded yet.  
e.g. The stone may well have been carried down the river during times of flood and therefore could be much larger than expected at this site. [2]

- (d) Explain fully **one** human cause of flooding on a river in the British Isles which you have studied.

Award [1] for a brief accurate human cause (if physical cause is fully described – maximum Level 1, no named river max. Level 1)  
 e.g. More building of houses, etc. on the floodplain.  
 e.g. Deforestation or peat cutting on the hills.

Award [2] for an accurate human cause with explanation,  
 e.g. Peat was removed and so its sponge effect was lost; this meant the soil could not hold all the rain and it travelled quickly onto the floodplain causing the River Derwent to burst its banks.

Award [3] for an accurate human cause explained and elaborated with a fact/figure/place related to named river,  
 e.g. On the River Derwent in 1999, peat was cut on the North York Moors and so its sponge effect was removed; this meant the soil lost its capacity to hold all the rain and it travelled quickly onto the floodplain causing the River Derwent to burst its banks and flood towns. [3]

- (e) (i) Draw arrows to show whether the impacts of flooding affect people or the environment.

People	Impact	Environment
←	Floods can spread diseases in stagnant water	
←	Roads and railways washed away	
← (given)	Floods provide fertile farmland for farmers to grow crops	
	Wild animals may drown	→

(3 × [1]) [3]

- (ii) Compare the sustainability of **one** hard and **one** soft engineering strategy. If candidate discusses two hard engineering or soft – can still achieve top Level 3.  
 e.g. The Mississippi.

**Level 1 ([1]–[2])**

Brief accurate statements which may deal with only one type of strategy, good answers about a river in the British Isles or answers without a named river are limited to Level 1,  
 e.g. Levees were used to prevent floods but did not work.  
 e.g. Levees were used to prevent floods but they were breached in 2001.

**Level 2 ([3]–[5])**

Accurate statements relating to the sustainability of both types of strategy. Two strategies well discussed with up to 1 fact/figure for top Level 2 maximum,  
 e.g. Levees are a hard engineering strategy but they failed in 2001 as the river level rose higher than 15m so they are not sustainable when river levels rise very high; trees were planted as soft engineering and they intercept rain but take a long time to grow. [4]

**Level 3 ([6]–[7])**

Accurate comparison of the two types of strategy with facts/figures/ places relating to both strategies and good discussion of sustainability. One fact/figure for both strategies for top Level 3. If candidate gives two facts/figures for one strategy but no fact/figures for the second maximum bottom Level 3.

e.g. Levees are a hard engineering strategy which help to keep rising water levels in the river channel, but they failed in 2001 as the river level rose higher than 15 m; they were not sustainable in the long term as the river bed rose due to silt being deposited. Trees were planted in the Tennessee Valley as a soft engineering strategy to reduce flooding by increasing the interception of rain, but they take a long time to grow and may not help to protect important cities on the floodplain such as St Louis. [7]

**Assessment of spelling, punctuation and the accurate use of grammar.**

If the answer does not address the question then no SPaG marks are available. If the candidate has attempted to answer the question but produced nothing of credit, SPaG marks may still be awarded.

**Threshold performance ([1])**

Candidates spell, punctuate and use the rules of grammar with reasonable accuracy in the context of the demands of the question. Any errors do not hinder meaning in the response. Where required, they use a limited range of specialist terms appropriately.

**Intermediate performance ([2]–[3])**

Candidates spell, punctuate and use the rules of grammar with considerable accuracy and general control of meaning in the context of the demands of the question. Where required, they use a good range of specialist terms with facility.

**High performance ([4])**

Candidates spell, punctuate and use the rules of grammar with consistent accuracy and effective control of meaning in the context of the demands of the question. Where required, they use a wide range of specialist terms adeptly and with precision. [4]

- (f) Explain how stacks are formed.

**Level 1 ([1])**

Brief statements on the process and some of the stages are outlined, e.g. Caves are eroded on a headland and the caves become an arch and then a stack.

**Level 2 ([2]–[3])**

An explanation which accurately refers both to the stages **or** the processes, e.g. Caves are formed on either side of a headland because a notch is eroded at the foot of a cliff. The caves are eroded right through the headland to make an arch which collapses and leaves a stack.



**Level 3 ([4]–[5])**

A full explanation of all stages and named processes, indicating clear understanding that a stack is a pinnacle of rock left behind when a headland is eroded,

e.g. Caves are formed on either side of a **headland** because a notch is eroded by hydraulic pressure and corrosion/abrasion. The caves are eroded right through the headland to make an arch; the roof of the arch becomes unstable and collapses, leaving a stack or pinnacle of rock.

One erosional process named for bottom Level 3. Two processes named for top Level 3. [5]

- (g) Outline how **two** human activities could be in conflict on a named stretch of coastline.

Award [1] for each of two human activities (actions not viewpoints) which refer to a valid named place. Award up to [2] for an outline of the conflict (place must be relevant to conflict),

e.g. More tourists means more hotels are built on the seafront either forcing local people to leave or pricing them out, for example Costa del Sol.

Good description of human activities and conflict but no place [3].

Accept valid alternatives. [4]

- (h) (i) Give **two** reasons why a stretch of coastline may need to be protected against erosion.

An explanation which is developed with an example of what needs to be protected,

e.g. The coastline may have valuable buildings such as an oil terminal which needs to be protected.

e.g. There may be hotels along the coast and a sandy beach which needs to be maintained to attract tourists.

(2 × [1]) [2]

- (ii) Evaluate the sustainability of **two** methods used to protect a named coastline.

[0] for named stretch of coast,

e.g. Newcastle Co. Down or Lyme Regis or north Norfolk.

Award maximum low Level 2 if only one method is well evaluated.

**Level 1 ([1]–[2])**

A simple description of up to two methods,

e.g. There was a sea wall built but it needed to be replaced and groyne helped to maintain sand on the beach.

Two strategies named but no development for bottom Level 1.

**Level 2 ([3]–[5])**

Some evaluation of at least two methods,

e.g. There was a sea wall built but it needed to be replaced because the old one collapsed and the new one was expensive but protects the promenade at Newcastle. Groyne were placed to stop the sand being moved along the beach but they were made of wood which weathered and so they no longer stop the sand drifting northwards away from Newcastle beach; gabions protect the coast but these cages of stones do not last.

Good description but no fact/figures [4].

**Level 3 ([6]–[7])**

Evaluation of at least two methods, with at least one fact/figure/place for both methods and there must be some judgement or conclusion as to which were more sustainable (costs/effectiveness/maintenance). Fact on one strategy and conclusion but no fact/figure on second for bottom Level 3,

e.g. There was a sea wall built with the new promenade but it needed to be replaced because the old one collapsed in 2002. The new one was expensive at £4 million but protects the promenade at Newcastle because it has a re-curved 'wave-return' design which deflects the waves. However, this causes more erosion of the beach below. Groynes were placed to stop the sand being moved along the beach towards Murlough Bay, but they were made of wood which weathered and so they no longer stop the sand drifting northwards away from Newcastle beach. However, new groynes are costly (over £1000 per metre and last only 20 years) and they may reduce the sand available further down the coast at Dundrum Bay.

Fact on one strategy but no fact/figure on second and no conclusion [5]. In **conclusion**, groynes may stop longshore drift at Newcastle and are fairly environmentally friendly but can cause problems of sand loss elsewhere so are not sustainable. Sea walls may last but are not always visually attractive and are costly. [7]

**Assessment of spelling, punctuation and the accurate use of grammar.**

If the answer does not address the question then no SPaG marks are available. If the candidate has attempted to answer the question but produced nothing of credit, SPaG marks may still be awarded.

**Threshold performance ([1])**

Candidates spell, punctuate and use the rules of grammar with reasonable accuracy in the context of the demands of the question. Any errors do not hinder meaning in the response. Where required, they use a limited range of specialist terms appropriately.

**Intermediate performance ([2]–[3])**

Candidates spell, punctuate and use the rules of grammar with considerable accuracy and general control of meaning in the context of the demands of the question. Where required, they use a good range of specialist terms with facility.

**High performance ([4])**

Candidates spell, punctuate and use the rules of grammar with consistent accuracy and effective control of meaning in the context of the demands of the question. Where required, they use a wide range of specialist terms adeptly and with precision. [4]

**Theme B: Our Changing Weather and Climate**

**AVAILABLE  
MARKS**

- 2 (a) (i)** Name the weather element which this instrument measures.

Wind speed. Do not accept wind on its own. [1]

- (ii)** Explain how this instrument records the weather element.

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

Award [1] for a simple statement,  
e.g. The cups spin around.

Award [2] for a statement with a consequence,  
e.g. This instrument is placed in the air, the cups catch the wind and spin around.

Award [3] for a statement, consequence and elaboration on either  
a – placed high/in open  
b – method of recording  
c – detail of device,  
e.g. The cups on the anemometer catch the wind and spin around. The reading is displayed on the instrument in knots/mph. [3]

- (b) (i)** State the distance between weather buoys D and E.

145 km–155 km. [1]

- (ii)** List **three** sources of data other than weather buoys which can be used to create a weather forecast.

Any **three** from:  
land based stations, balloons, weather ships, satellites.  
Credit both if named – Geostationary/Polar.  
Do **not** credit measuring instruments.

(3 × [1]) [3]

- (c) (i)** Complete **Table 3**.

<b>Weather conditions</b>
2(°C)
Clear sky or 0/8 or 0 oktas
1–2 <b>knots</b> (must include unit)
Westerly or West
1032 <b>mb</b> (must include unit)

(5 × [1]) [5]

- (ii) Explain the following weather conditions experienced in a winter anticyclone.

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

Credit valid alternative reasons.

Several simple statements, award up to Level 2.

No marks awarded for stating weather conditions.

### Low temperatures

Award [1] for a simple statement,

e.g. The days are short/influenced by a polar continental air mass/low angled sun or radiation heat loss.

Award [2] for a statement with a consequence,

e.g. The days are short so there is little time to heat the ground.

Award [3] for a statement, consequence and elaboration,

e.g. The days are short so there is little time to heat the ground, which in turn, heats the air. [3]

### Absence of cloud cover

Award [1] for a simple statement,

e.g. Air is sinking in an anticyclone.

Award [2] for a statement with a consequence,

e.g. Air is sinking in an anticyclone. As the air is warming up, clouds cannot develop.

Award [3] for a statement, consequence and elaboration,

e.g. Air is sinking in an anticyclone. As the air sinks it is warming up, so therefore clouds cannot develop. **Condensation** is prevented from happening so water droplets cannot develop and form clouds. [3]

- (d) Award [0] for a response not worthy of credit. If no named city – max. Level 1

### Level 1 ([1]–[2])

A simple accurate statement referring to either investing in public transport and/or congestion charging as ways to deal with climate change,

e.g. Congestion charging may stop people taking their cars into towns and cities. [1]

e.g. Congestion charging may stop people taking their cars into towns and cities; public transport such as buses and trams can help cut down the number of cars on the road. [2]

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

**Level 2 ([3]–[4])**

A statement with a consequence which refers to two strategies affecting car use as ways to deal with climate change. Award top Level 2 if one strategy fully explained. No clear link to climate change for max. top Level 2, e.g. Congestion charging may stop people taking their cars into towns and cities, whereas public transport such as buses and trams can help cut down the number of cars on the road. This is good as it cuts down on the levels of greenhouse gases that are responsible for global warming. [3]

e.g. Congestion charging is the paying of money when you drive into a city. This had the effect of reducing the number of people taking their cars into towns and cities as people do not want to pay high charges; public transport such as buses and trams can help cut down the number of cars on the road. This is good as it cuts down on the levels of greenhouse gases that are emitted into the atmosphere that are responsible for global warming. [4]

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

**Level 3 ([5]–[6])**

Detailed statements with consequences which refer to two strategies affecting car use as ways to deal with climate change. **At least one city needs to be stated** with specific fact/figures for Level 3. At least two facts/figures for top Level 3. Level 3 needs a clear link to climate change, e.g. Congestion charging was introduced in London in 2007. Drivers pay £8 each time they enter the city. This had the effect of reducing the number of people taking their cars into London by 15%. Public transport such as buses and trams can help cut down the number of cars on the road. This is good as it cuts down on the levels of greenhouse gases, such as nitrous oxide, emitted into the atmosphere that are responsible for global warming.

Candidates present, and organise effectively, relevant information in a form and style of writing which suits its purpose. The text is fluent and legible. Spelling, punctuation and the rules of grammar are used with almost faultless accuracy so that meaning is clear. A wide range of specialist terms is used skilfully and with precision. [6]

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Theme C: The Restless Earth

AVAILABLE  
MARKS

- 3 (a) (i) Complete the cross section of the Earth by labelling boxes **A** and **B**.

**A** = Convection currents or convection [1]

**B** = Mantle [1]

(2 × [1])

[2]

- (ii) Describe **one** characteristic of the Earth's core.

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

Accept any valid alternative.

To access [2] there must be a specific fact,

e.g. It is very hot [1] at 5000 °C [1]. Accept anything between 4000°–6000°C.

e.g. It is solid [1] made from nickel and iron [1].

[2]

- (b) (i) Describe the distribution of earthquakes and volcanoes in **Fig. 7**.

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

No marks are available for explanation.

**Level 1 ([1])**

A simple statement referring to the distribution of earthquakes and/or volcanoes,

e.g. There are only volcanoes on the North Island.

e.g. There are volcanoes on the North Island but earthquakes all over New Zealand.

**Level 2 ([2]–[3])**

A more detailed statement referring to the distribution of both earthquakes and volcanoes. Reference to numbers or use words “more/few” on North or South Island.

e.g. There are only 7 volcanoes on the North Island and a total of 14 earthquakes all over the country. The majority of earthquakes are on the South Island.

e.g. There are only (7) volcanoes on the North Island and a total of (14) earthquakes all over the country. They occur all along a plate boundary.

**Level 3 ([4]–[5])**

A very detailed answer that includes the distribution of earthquakes and volcanoes along with a reference to latitude and longitude and to the distance from the plate boundary. Answers which focus on latitude and longitude or scale bottom Level 3. Answers which address both latitude/longitude and scale, top Level 3.

e.g. There are only 7 volcanoes on the North Island and a total of 14 earthquakes all over the country. There are no volcanoes on the South Island; however, many earthquakes have occurred on the South Island of New Zealand. They seem to occur in a linear pattern going from the SW to the NE (or vice versa) of New Zealand extending to approximately 1000 km in length. They occur from 44°S to 38°S and 166°E to 176°E.

[5]

- (ii) Explain why earthquakes and volcanoes occur at this type of plate boundary.

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

**Level 1 ([1]–[2])**

Simple statements that refer to earthquakes and/or volcanoes, e.g. They are formed because plates are moving together. [1]  
e.g. Earthquakes occur because plates are moving and the ground shakes. Magma escapes through a volcano because the plates move. [2]

**Level 2 ([3]–[4])**

A more detailed description of why both earthquakes and volcanoes occur here. Award bottom Level 2 for good description relating to either earthquakes or volcanoes. One aspect may be covered in more detail than the other,

e.g. Earthquakes occur here because plates are moving. The plates are moving slowly and from time to time they stick. Pressure begins to build up and when the pressure is released an earthquake occurs. Volcanoes occur here as magma escapes due to pressure building up. [3]

e.g. Earthquakes occur here because plates are moving. The plates are moving slowly and from time to time they stick. When the pressure is released an earthquake occurs.

Volcanoes occur here as magma escapes due to pressure building up. As one plate gets forced under another the heat produced from friction melts the rock into magma which rises to form volcanoes. [4]

**Level 3 ([5]–[6])**

A very detailed statement on how both earthquakes and volcanoes occur. To achieve this level candidates should make clear reference to what happens at a destructive boundary. Specialist terms will be evident, e.g. Earthquakes occur here because plates are moving towards each other. It is a destructive plate boundary. The plates move slowly and from time to time they stick. Pressure begins to build up and when the pressure is released shock waves are emitted from the focus, creating an earthquake. Volcanoes occur here as one plate is subducted under another plate [5]. The edge of the plate is destroyed and turns to magma. The magma rises to form a volcano which may erupt due to pressure building up. [6]

- (c) (i) State the name of the rock type to which basalt belongs.

Igneous. [1]

- (ii) Explain how one other volcanic feature in the British Isles was formed.

Accept lava plateau or volcanic plug.

**Lava plateau**

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

Award [1] for a basic explanation that could relate to any igneous feature,  
e.g. Molten material cools to make the plateau.

Award [2] for a more detailed explanation that stops short of all steps in the formation,  
e.g. Molten material comes to the Earth's surface, flowing onto a flat surface rather than making a volcano shape, and cools to make a plateau.

Award [3] for a full explanation of the formation of a lava plateau, e.g. Molten magma from the mantle rises to the surface, where it can come through lines of weakness in the crust called fissures. Large outpourings of lava occur, which will harden into a lava plateau made of basalt.

**or**

### **Volcanic plug**

Award [1] for a basic explanation that could relate to any igneous feature, e.g. It is made from magma.

Award [2] for a more detailed explanation that stops short of all steps in the formation, e.g. A plug is made from magma which hardens as it rises to form a volcano.

Award [3] for a full explanation of the formation of a volcanic plug, e.g. A plug is made from magma which hardens as it rises inside the vent. The surrounding rock is eventually eroded leaving the volcanic plug. [3]

- (d) Describe **one** short and **one** long term impact of an earthquake on the environment of a LEDC you have studied.

Name of LEDC earthquake.

Reference to built environment not credited

Most candidates will discuss the Indian Ocean earthquake, 26th December 2004

If no LEDC named or candidate uses a MEDC earthquake then maximum Level 1.

Accept all valid alternatives.

#### **Level 1 ([1]–[2])**

Max Level 1 for no named LEDC.

A simple statement referring to short and/or long term impacts on the environment,

e.g. A large wave travelled across the ocean. [1]

e.g. A large wave travelled across the ocean and flooded many coastal areas. [2]

#### **Level 2 ([3]–[4])**

A more detailed answer referring to both short term and long term impacts on the environment. One may be covered in more detail than the other,

e.g. The earthquake triggered a large tidal wave that circled the Indian Ocean. The seabed rose up causing sea levels to rise. Many coastal ecosystems were flooded and took months to recover. [3]

The Earth vibrated due to the energy released by this movement and the release of energy shortened the Earth's day. [4]

#### **Level 3 ([5]–[6])**

A very detailed answer referring to both short term and long term impacts on the environment. One fact/figure needed for [5]. Two facts/figures needed to access [6].



e.g. In the short term the 9.0 earthquake triggered a large tidal wave which reached 30 m in some places. It circled the Indian Ocean affecting all the countries with a coastline there. Many coastal ecosystems around the Indian Ocean, such as mangroves and forests, were flooded, and coral reefs destroyed. These will take months or possibly years to recover. [6]  
Answers relating to the shortening of the length of the day and energy released are also valid.

[6]

**Total**

**AVAILABLE  
MARKS**

25

**108**