

General Certificate of Secondary Education 2013

Geography

Unit 1: Understanding Our Natural World Higher Tier

[GGG12]

TUESDAY 4 JUNE, 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. 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 skillfully and with precision.

3

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.

1 (a) (i) Complete the key for Fig. 1 by labelling features A–E.

A = mouth or estuary, B = source, C = watershed, D = confluence, E = tributary

Do **not** accept tributary for D.

 $(5 \times [1])$

[5]

(ii) Name **two** stores of water within the drainage basin system.

[1] per correctly identified store, such as groundwater, soil, surface, vegetation, lake or reservoir, or rock. (2 × [1])

[2]

Do not accept sea or river.

(iii) State the meaning of the term **infiltration**.

Award [1] for a partially correct answer, e.g. Water soaking away.

Award [2] for a correct definition, e.g.

The movement of water from the surface into the soil **or** Water soaking into the soil during a period of rainfall.

[2]

(b) (i) Describe how load size varies along the Colin River.

Level 1 ([1])

A simple correct statement regarding the graph or bed load change in general, e.g.

The load gets smaller.

Level 2 ([2]-[3])

A correct statement and elaboration that relates to this graph.

For [2] It must contain at least one figure on size.

The load gets smaller, it starts large and then reduces to 16 cm.

For [3] it must contain at least two figures on size.

Level 3 ([4])

A correct statement regarding trend, referring to at least two figures on size and recognising that from 4 km the load size reduces faster than before, e.g.

The load gets smaller, it starts large at 58 cm and then reduces to 16 cm. This trend is not continuous; between 4 and 5 km there is a sudden drop in load size.

- trend
- sudden drop and
- two figures on size

[4]

(ii) Underline the **two** types of erosion in the list below which could account for the variation seen in **Fig. 2**.

<u>Abrasion</u>	Hydraulic Pressure	Weathering	<u> Attrition</u>
(2 × [1])			[2]

5

[1] per correct reason such as: river slows down, slope becomes flatter, load of river has suddenly increased. $(2 \times [1])$ [2]

(ii) Name **two** river features which are formed by the process of deposition.

Award [1] for each correct depositional feature – meander is acceptable, or slip-off slope, floodplain or levee or ox-bow lake. (2 × [1]) Do not accept beach. [2]

(d) With reference to a river in the British Isles, explain the physical and human causes of a flood on your named river.

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

Note: no mark for name of river in the British Isles.

Max I evel 1 if:

- river outside British Isles
- no named river

Level 1 ([1]-[2])

Causes of a river flooding are stated or described, but without explanation. e.g. It flooded in England due to heavy rain, building and peat extraction.

Level 2 ([3]-[5])

The causes of flooding are described and some explanation is included, but no specific facts or figures are included relating to a river in the British Isles, e.g. In March in England there was flooding. 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 flood plain were being urbanized and this reduced infiltration and increased surface run-off.

Max [4] if only physical **or** human factors used.

Level 3 ([6]-[7])

The causes of flooding are described in detail with full explanations for the full [7] including two facts or figures relating to a river within the British Isles, e.g. In March 1999 people 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 urbanized, such as the new estate built at Malton; this reduced infiltration and increased surface run-off. [7]

Only **one** specific fact/figure = [6]

(e) State two facts about constructive waves.

Award [1] per correct fact related to constructive waves such as: low, far apart, not frequent, more common in summer, strong swash, weak backwash, deposit material on a beach.

 $(2 \times [1])$ [2]

(f) Identify the two land uses (X and Y) shown in Fig. 3.

AVAILABLE MARKS

X = Transport

Y = Industrial/Industry
(2 × [1])

[2]

(g) Explain the formation of a spit.

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

Level 1 ([1]-[2])

Candidates make reference to the movement of sand, e.g. A spit is formed when sand moves along a beach.

Level 2 ([3]-[4])

Reference is made either to the conditions required for a spit to develop **or** the process involved, e.g.

Sand is moved along the beach by longshore drift, this sand or shingle builds up to form a ridge.

Level 3 ([5]-[6])

Explanations of **both** the conditions required for a spit to develop and processes involved, e.g.

Sand is moved along the beach by longshore drift, fuelled by angled waves hitting the coastline. Sand is washed up the beach at an angle and comes down straight in the backwash. This means over time material moves along the coast until it reaches a gap in the coast, e.g. where the mouth of a river is. The sand or shingle accumulates and forms a narrow ridge where the direction of the coastline changes. All spits need a constant supply of sand to be deposited or they will be washed away.

(h) Explain the formation of a wave-cut platform.

Level 1 ([1]-[2])

A simple correct statement about wave-cut platform formation or description of the feature, e.g.

They are formed by erosion [1], they are flat areas in front of cliffs formed by erosion [2]

Level 2 ([3]-[4])

A partial explanation relating to wave-cut platform formation, e.g. They are formed by erosion when a wave-cut notch is undercut and collapses [4]

Level 3 ([5])-[6])

A full explanation of how a wave-cut platform is formed, noting process of erosion, notch undercutting and repetition to create the flat area of the platform, e.g.

It is caused by erosion when a notch is firstly created by erosion, mostly corrosion and hydraulic action. The upper cliff is undercut and eventually collapses. This process is repeated to create a flat exposed area of rock at the base of a cliff, called the wave-cut platform.

[6]

(i) With reference to a case study from the British Isles, evaluate the sustainability of a coastal management strategy you have studied.

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

Level 1 ([1]-[2])

A simple description or evaluation of coastal management which may not name a location.

E.g. Groynes were built to protect the beach at Newcastle.

Level 2 ([3]-[5])

The coastal management strategy is evaluated but there is a lack of detail,

E.g. Some parts of coastlines erode very quickly, so coastal protection is needed to stop the beach being completely eroded at Newcastle. Groynes were put in place along the beach to stop the sand being moved northwards along the coast. However these groynes were made of wood and have been eroded so they no longer trap sand and they no longer protect the beach. Gabions were used to protect the recreation grounds and they also trap sand but cut off access to the beach and are not very environmentally-friendly. A sea wall and promenade were built more recently and this sea wall protects homes and businesses from high waves in winter along the sea-front at Newcastle.

Level 3 ([6]-[8])

The sustainability of a named coastal management strategy is clearly evaluated for [8], including two facts/figures/places relating to the named coastal area within the British Isles. Some judgement or conclusion is needed for full evaluation.

E.g. Some parts of coastlines erode very quickly, so coastal protection is needed to stop the beach being completely eroded, e.g. at Newcastle, Co. Down. Groynes were put in place along the beach to stop the sand being moved northwards along the coast towards Murlough Bay. however these groynes were made of wood and have been eroded so they no longer trap sand and they no longer protect the beach. They are expensive to build at over £1000 per metre and only last about 20 years so are not very sustainable but they are more environmentally-friendly than other methods of management; however groynes can reduce the amount of sand carried further along the coast and this could lead to the beach being eroded further north towards Dundrum Bay.

Gabions were used to protect the recreation grounds and they also trap sand and protect the recreation land at the mouth of the River Shimna, but they cut off access to the beach and are not very environmentally-friendly.

A sea wall and promenade were built more recently to protect homes and businesses from high waves in winter along the sea-front at Newcastle.

The sea wall has a re-curved 'wave-return' design to prevent waves from splashing over onto the promenade, but a wall is not very visually attractive for tourists and it cost over £4 million. It will need to be replaced eventually and so it is not very sustainable in the long term.

In conclusion, more sustainable methods of management may be required at Newcastle such as beach nourishment which is environmentally-friendly but it requires continual addition of sand onto the beach. All of the strategies are expensive and require a lot of maintenance for them to be successful at protecting the beach at Newcastle and helping to keep it attractive to tourists as well as protecting businesses.

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]

AVAILABLE

54

2 (a) (i) Using Fig. 4 complete Table 1 by writing the names of the instruments that could be used to collect each of these readings.

Table 1

Weather Element	Instrument
А	THERMOMETER
В	ANEMOMETER
С	WIND VANE
D	RAIN GAUGE

 $(4 \times [1]) \tag{4}$

(ii) State the name of the air mass that is most likely to be responsible for this weather.

TROPICAL CONTINENTAL

[1]

(iii) Explain why there will be no rain.

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

Award [1] for an answer that has a simple statement, e.g.

There are no clouds.

Air is sinking.

It is high pressure.

Award [2] for an answer that has a simple statement with a consequence.

There are no clouds developing because air is sinking in an anticyclone.

Award [3] for an answer that has a statement, consequence and elaboration.

There are no clouds in the sky because air is sinking.

As air sinks it warms up. This means that condensation doesn't occur. Clouds therefore can't develop.

Answers related to the nature of the TC air mass are also creditworthy

[3]

(b) (i) Explain how satellites help to create a weather forecast.

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

Award [1] for an answer that has a simple statement, e.g. It takes a picture of the weather from above/from space.

Award [2] for an answer that has a simple statement with a consequence.

It take pictures of cloud patterns which help us determine the types of weather we will have.

10

AVAILABLE MARKS

Award [3] for an answer that has a statement, consequence and elaboration.

It is a small spacecraft which carries weather instruments.

It takes pictures of cloud patterns and records wind speeds which help us determine the types of weather we will have. [3]

(ii) State the type of satellite which is fixed in the same location in space.

Stationary **or** Geostationary/static.

[1]

- (c) Study Fig. 5 which shows the number of barrels of oil consumed per day in a selection of countries.
 - (i) Complete **Fig. 5** by inserting the correct symbol for the number of barrels of oil consumed per day in India.

3 barrels of oil are drawn onto the graph for India.



[1]

(ii) State the number of barrels of oil consumed per day in the USA.

19 million (must have million in answer).

[1]

(iii) With reference to a named country that you have studied, describe the likely effects of climate change on the society and economy of that country.

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

Do **not** credit description of the environmental effects of climate change on their own; answers must be specific to people (society) and the economy. Effects can be positive or negative.

Award max Level 1 if no named country.

Level 1 ([1]-[2))

Candidates provide a limited factual account of effects either on society or the economy. Answers that don't refer to a named country are limited to this level.

Higher temperatures [1] could lead to an increase in the number of pests and diseases in the UK [1]. Low lying areas could be flooded [1] due to rising sea levels destroying home and businesses[1]. [2]

Level 2 ([3]-[4])

Candidates describe both social and economic effects; however one may be more detailed than the other. A valid case study must be used.

11

Higher temperatures could lead to an increase in the number of pests and diseases in the UK. More insect pests could attack crops and therefore lower a farmer's profit.

Low lying areas could be flooded due to rising sea levels. This will lead to losses in property and possessions. [4]

Level 3 ([5]-[6])

Both social and economic effects are addressed. A valid case study needs to be used. At least two facts/figures/places must be included to access top Level 3 marks.

A temperature increase of 2 °C could lead to an increase in the number of pests and diseases in the U.K. More insect pests, e.g. aphids and mites, could attack crops and therefore lower a farmer's profit. Diseases such as malaria could spread into the U.K as mosquitoes could survive in the higher temperatures.

Higher temperatures will lead to glaciers melting. Low lying areas such as the Fens, Somerset and London could be flooded. This will lead to losses in property and possessions. Millions of pounds will have to be paid out by insurance companies. Governments may have to raise taxes to help strengthen coastal defences. [6]

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]

State the name of the city where the 2011 international agreement on climate change was discussed. Durban [1] (ii) Outline two challenges associated with securing international co-operation to deal with climate change. Challenges may include dependence on fossil fuels, development of economy, public resistance to greener technology, financial cost to governments of implementing these agreements. Award [0] for a response not worthy of credit. Candidate must refer to two challenges. If only one challenge is discussed then award maximum [2]. Each challenge must have some elaboration. Countries are heavily dependent on fossil fuels [1]. It is expensive to implement new green technologies to create the same amount of power to sustain the current energy demand. Therefore it's hard to fulfil these agreements. [1]

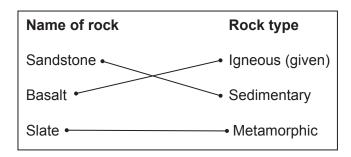
Many governments have good intentions when it comes to reducing carbon emissions. [1] However some MEDCs such as the USA refuse to sign these treaties as they think it will harm their economy by raising unemployment levels. [1]

Many individuals recognise that climate change is a problem. [1] However, not everyone will exercise responsibility when it comes to energy efficiency or waste reduction. People need to make these personal choices if these agreements are to work. [1] (2 × [2])

29

[4]

3 (a) (i) Complete Fig. 7 by matching the name of each rock to its rock type.



[2]

[2]

(ii) Explain how basalt is formed.

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

Award [1] for a simple accurate statement, e.g.

Molten magma rises from the mantle **or** molten magma flows to the surface.

Award [2] for a statement with a consequence which refers to lava cooling on the surface, e.g.

Molten magma rises from the mantle and flows to the surface where it cools and hardens into basalt.

Award [3] for a statement with a consequence and elaboration which refers to cooling and small crystals forming, e.g.

Molten magma rises from the mantle and flows to the surface where it cools quickly forming small crystals as it hardens into basalt. [3]

(b) (i) Name the features X and Y.

X is an Ocean Trench.

Y is a Mid Ocean Ridge/Volcano/Ridge. (2 × [1])

(ii) Use Fig. 8 to help you to explain why plates move.

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

Award [1] for a simple accurate statement, e.g. Plates float on the mantle.

Award [2] for a statement with a consequence which refers to convection currents, e.g.

Plates float on the mantle which has convection currents which move molten magma upwards towards the crust.

Award ([3]) for a statement with a consequence and elaboration relating to the plates being moved, e.g.

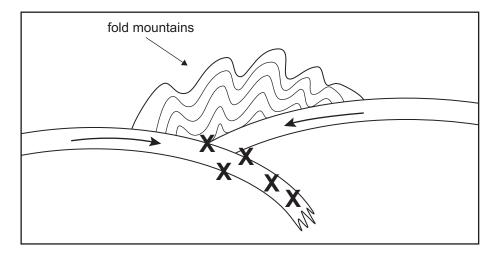
Plates float on the mantle which has convection currents which move molten magma upwards towards the crust. These currents spread out at the surface and carry the plates above them.

The molten material cools and sinks back down again dragging plates along like a conveyor belt. [3]

14

(iii) Complete **Fig. 9** by drawing an arrow to show the direction of plate movement and mark the likely position of an earthquake focus with **X**.





Award [1] for each correct colliding arrow
Award [1] for labelling earthquake focus (one only required)
[3]

(iv) Name this type of plate boundary.

Collision boundary/Destructive Boundary [1]

(c) (i) State the meaning of the term tsunami.

Award [1] for a basic statement, e.g. A tsunami is a large wave.

Award [2] for a full definition, referring to earthquakes as the cause, e.g. A tsunami is a large wave, caused by an underwater earthquake. [2]

(ii) Explain why an earthquake occurred in a LEDC which you have studied.

Note: no mark for name of LEDC.

Award maximum [1] if:

- no named earthquake
- earthquake in MEDC

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

Award [1] for a simple accurate statement referring to plate movement, e.g.

Two plates collided and shaking of the rocks occurred.

Award [2] for a statement with a consequence which refers to how plates moved and friction or stress built up, e.g.

Two plates collided and 'stuck' as friction built up as the ocean plate went under the land plate and this led to shaking of the rocks causing an earthquake.

AVAILABLE

Award [3] for a statement with a consequence which refers to how plates moved and friction or stress built up to create an earthquake. There must be a fact related and accurate to the named earthquake, such as the Indian Ocean earthquake of 2004, e.g.

In the Indian Ocean earthquake of 2004, the Indo-Australian and the Sunda plates collided and the ocean plate went under (was subducted under) the European plate. The stress or friction built up between the two plates and they suddenly jerked free, creating an earthquake which sent out shock waves and a tsunami.

(d) For an earthquake in a MEDC which you have studied, evaluate the success of the precautions put in place before the earthquake happened.

Note: no mark for name of MEDC.

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

Award a max of low Level 2 [3] for good description with no evaluation.

Level 1 ([1]-[2])

Simple statements outlining at least two precautions for top level one, e.g. Water was stored in underground cisterns and there were earthquake drills so people knew what to do. [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 the meaning is clear. A limited range of specialist terms is used appropriately.

Level 2 ([3]-[4])

Some description of at least two precautions and either how they were successful or did not work, e.g. to reduce loss of life.

E.g. Earthquake drills took place so that people knew what to do when an earthquake happened, such as have a kit ready with a bucket to put out fires, a torch and head protection to keep people safe. There were also buildings constructed to withstand earthquakes by having cross beams, springs and rubber pads to absorb the shaking so that the buildings did not collapse and kill people.

Candidates present 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 the meaning is clear. A good range of specialist terms is used appropriately.

Level 3 ([5]-[6])

Good descriptions of at least two precautions and discussion of both how they were successful and some reference to their limitations with knowledge shown by at least two specific facts/places related to the named earthquake for top Level 3. Some judgement or conclusion needed for full evaluation. E.g. Earthquake drills took place every 1st September in Kobe so that people knew what to do when an earthquake happened, such as have a kit ready with a bucket to put out fires, a torch and head protection to keep people safe. There were also buildings constructed to withstand earthquakes by having cross beams, springs and rubber pads to absorb the shaking, so that they did not collapse and kill people. However, despite these precautions, many buildings collapsed, 5500 people died and 40000 were injured in the Kobe earthquake of 1995.

Despite all their efforts Japan has not been able to fully reduce the problems
resulting from earthquakes.

Candidates present, and organise efficiently, 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 flawless accuracy so the meaning is clear. A wide range of specialist terms is used skilfully and with precision.

AVAILABLE MARKS
25

Total

100