Level 1/Level 2 Certificate

Geography

8031/1 Dynamic Physical World

Specimen Mark Scheme

The specimen assessment materials are provided to give centres a reasonable idea of the general shape and character of the planned question papers and mark schemes in advance of the first operational examinations.

Set and published by the Assessment and Qualifications Alliance.

GENERAL GUIDANCE FOR GEOGRAPHY EXAMINERS

Quality of Written Communication

Where candidates are required to produce extended written material in English, they will be assessed on the quality of written communication.

Candidates will be required to:

present relevant information in a form and style that suits its purpose;
ensure that text is legible and that spelling, punctuation and grammar are accurate;
use specialist vocabulary where appropriate.

Levels Marking - General Criteria

Where answers are assessed using a level of response marking system the following general criteria should be used.

Level 1: Basic

Knowledge of basic information
Simple understanding
Little organisation; few links; little or no detail; uses a limited range of specialist terms
Reasonable accuracy in the use of spelling, punctuation and grammar
Text is legible.

Level 2: Clear

Knowledge of accurate information
Clear understanding
Organised answers, with some linkages; occasional detail/exemplar; uses a good range of specialist terms where appropriate
Considerable accuracy in spelling, punctuation and grammar
Text is legible.

Level 3: Detailed

Knowledge of accurate information appropriately contextualised and/or at correct scale
Detailed understanding, supported by relevant evidence and exemplars
Well organized, demonstrating detailed linkages and the inter-relationships between factors
Clear and fluent expression of ideas in a logical form; uses a wide range of specialist terms where appropriate
Accurate use of spelling, punctuation and grammar
Text is legible
Level 3 does not always equate to full marks; a perfect answer is not usually expected, even for full marks.

Annotation of Scripts

One tick equals one mark, except where answers are levels marked (where no ticks should be used). Each tick should be positioned in the part of the answer which is thought to be credit worthy.

Where an answer is levels marked the examiner should provide evidence of the level achieved by means of annotating 'L1', 'L2' or 'L3' in the left hand margin.

The consequent mark within this level should appear in the right-hand margin.

Ticks must not be used where an answer is levels marked.

Examiners should add their own brief justification for the mark awarded e.g. *Just L3, detail and balance here*.

Where an answer fails to achieve Level 1, zero marks should be given.

The following is a list of the unit-specific annotations available on the CMI+ system:

c	- case study	m	- managed
desc.	- describe	r	- restored
exp.	- explain	ev.	- evidence
adv.	- advantages	env.	- environmental
dis.	- disadvantages	ec.	- economic

General Advice

It is important to recognize that many of the answers shown within this mark scheme are only exemplars. Where possible, the range of accepted responses is indicated, but because many questions are open-ended in their nature, alternative answers may be equally creditworthy. The degree of acceptability is clarified through the standardization process and subsequently by telephone with the Team Leader as necessary.

Diagrams are legitimate responses to many questions and should be credited as appropriate. However, contents which duplicate written material or vice versa should not be credited.

Quality of Written Communication (QWC) is part of the award of marks in levels marked answers only. In levels marked answers the quality of the geography is assessed and a level and mark awarded according to the geography. As is sometimes the case, the geography may be sound at a particular level but the examiner may not be sure as to whether there is quite enough to raise the mark within that level. In this case the examiner should consider the QWC of the answer. QWC that fulfils the criteria for the level should lead to the rise in the mark but where the QWC does not fulfil the criteria, the answer should remain at the mark first thought appropriate. In cases where QWC has been used in the award of marks, the examiner should indicate this with QWC and arrows that indicate either an upward or downward trend according to its impact on the final award of the mark.

Question 1 Tectonic Activity and Hazards

1 (a) (i) Any 3 facts from Figure 1 ***(3 marks)***

e.g. Volcanoes occur in linear clusters (1), many occur on plate boundaries (1) especially destructive and/or constructive plate boundaries(1); with example (1). Clustering around edge of Pacific plate (1) or in East Africa (1). Some not located near plate boundaries (1) for instance Atlantic Ocean/ Madagascar (1)
3x1

AO1 – 1
AO2 – 1
AO3 – 1

1 (a) (ii) Diagram should show plates moving in opposite directions; should label to show the denser oceanic plate going below the lighter continental crust ; melting of the subducted crust as it is pushed into the mantle; a pool of magma and an increase in pressure; eruption at the surface where magma escapes along a crack.
An example may be used – such as Nazca-South American plate margin. Diagram(s) should show a cross section of the crust.
Credit eruptions along boundary between 2 oceanic plates ***(4 marks)***

AO1 – 2
AO2 –1
AO3 –1

Level 1 (Basic) (1–2 marks)
A partial diagram – piecemeal –one or two labels-offers some back up to text
Sequence incomplete.
No diagram – text only
Level 2 (Clear) (3–4 marks)
Diagram is clear and fully labelled
Sequence complete.
Develops points.

1 (b) (i) Use of scale or use of direction (1) E.g. 100km north of Sendai (accept 80 – 110 km).
Do not accept 'in a mountainous region' but accept 'a mountainous region in the centre of Honshu Island' (not Honshu alone).

(1 mark)

AO3 – 1

1 (b) (ii) 4 x 1 Max 1 mark for each box in the table
Primary effects - 12 people died, 358 were injured, homes destroyed, damaged roads, bridge collapsed, dam cracked (accept landslide)
Accept 'infrastructure destroyed' once only. Accept 'windows shattered' but once only.
Secondary effects – landslides caused car and bus accidents, blocked roads, buried 7 people, communities cut off, motorways closed, trains were stopped. 2,000 passengers were trapped inside three trains for nine and a half hours, 117,000 passengers were delayed. Evacuation, homelessness/in shelters.
('Death' could be primary or secondary) – credit only once.
The effects must be from Figure 2 (or can be inferred from Figure 2)

(4 marks)

AO2 – 2
AO3 – 2

1(b) (iii) Content will depend on the example chosen. Answers may refer to methods of prediction, protection and preparation. Prediction is generally unreliable but involves forecasting based on foreshocks, animal behaviour, even seismic gap theory. Protection includes the construction of buildings safely and with little risk of collapse. Preparation involves hospitals, emergency services and inhabitants practising for major disasters, including having drills in public buildings, planning evacuation routes etc.
In rich areas, immediate response will be rapid, emergency drills may be put into effect, services mobilised including helicopters, hospitals, fire service. Contingency plans for ensuring supplies of clean water, medical supplies, blankets, shelters.
If example chosen from poor area, there may be reference to the need to rescue people, using basic equipment or by hand, a need to put out fires, to provide medical equipment, to ensure clean water and food supplies. This may require international aid, teams of sniffer dogs, heavy equipment, medical staff, water purifying tablets, blankets, shelters, tents etc. Longer term plans to minimise the effects may be included.

(4 marks)

AO1 - 3
AO2 - 1

Level 1 (Basic) 1-2 marks
Describes methods of reducing damage generally, perhaps in random order. Knowledge of basic information. Simple understanding. Few links, limited detail. Few specialist terms. No/limited reference to case study.
Buildings have rubber shock absorbers.
Buildings have steel frames that can sway during earthquakes.
Flexible gas, water and power lines are constructed
There are regular earthquake drills in Japan.
Risks can be reduced by building stronger houses and making sure people are prepared.

Level 2 (Clear) 3-4 marks
Describes methods of reducing damage clearly with reference to a case study. Statements are linked. Knowledge of accurate information. Clear understanding. Answers have some linkages. Uses specialised terms where appropriate
In Tokyo people are advised to keep supplies of water, food and blankets as well as a first aid kit and emergency tools. To reduce the effects of fire, smart meters are installed to shut down gas supplies automatically.
In some urban areas like San Francisco earthquake proof buildings are built and people are educated about what to do if an earthquake strikes. Even in poor areas buildings can be built with cross-bracing so they don't collapse. Emergency services can also be trained to deal with hazards.

1(c) (i) Secondary effect is an effect that occurs later/is a knock-on effect (1) resulting from the earthquake a primary effect (1). ***(1 mark)***

AO1 – 1

1 (c) (ii) Actual content will depend on the case study being used – Japan tsunami of 2011 is likely to be used. Expect reference to either whole area affected or a focus on just one district – either approach is permissible. ***(8 marks)***

AO1 – 5
AO2 – 3

There may be some categorisation – such as the initial impact of the wave – speed/height of approach – People being injured, number of deaths, trying to save people, large numbers missing and people searching for lost relatives and friends – Many people homeless, vast amount of property damaged; whole settlements wiped out; risk of disease; impact on farming, tourism.

Level 1 (Basic) (1–4 marks)
Describes effects of a tsunami.
Statements are general in a random order.
Lots of people died, a lot were drowned or hurt by the water's power. Buildings were destroyed. People tried to run out of the way. In some areas whole places were destroyed.

Level 2 (Clear) (5–6 marks)
Effects are clearly described, in an organised way.
Statements are linked.
There is clear reference to the case study named – must be present.
In Sendai in NE Japan, the huge wave – over 10m – wiped out complete settlements. People fled as the wave approached. Lots died – over 20,000. People began to try to find relatives and friends, often searching the streets littered with dead bodies. The risk of diseases such as cholera grew rapidly.

Level 3 (Detailed) (7–8 marks)
Effects are described in detail.
Statements are linked and detailed.
Case study is specifically referred to and points made relate to this.

Officials put the death toll at 25,000 people with many missing. Over 150,000 had to live in shelters. A 10m wave struck Sendai, a port city in Miyagi prefecture, deluging farmland and sweeping cars across the airport's runway. Fires broke out in the centre of the city. Thousands of people living near the Fukushima nuclear plant were ordered to evacuate as the wave engulfed the four reactors. A major explosion hit a petro chemical plant in Sendai, further south a huge blaze swept an oil refinery in Inchihara city. A dam burst in north east Fukushima sweeping away homes. Four trains and a ship carrying 100 people were swept away. The tsunami moved across the Pacific at a speed of 500mph before hitting Hawaii and the US West Coast. The biggest waves of more than 2m were recorded near California's Crescent City.

Total for Question 1: 25 marks

Question 2 Ecosystems and Global Environments

2 (a) Explanation should relate to the tree itself in contrast to other parts of the food web. Recognition of how the tree underpins food web. The fact that the tree makes its own food via the process of photosynthesis and so is a producer whereas other insects, birds etc. rely on the plants either directly or indirectly and are therefore consumers.

(4 marks)

AO1 – 2
AO2 - 1
AO3 - 1

Level 1 (Basic) (1–2 marks)
Simple statements.
These are generalised and separate.

Level 2 (Clear) (3–4 marks)
Begins to develop points and to link ideas.
There is a recognition of the relationships between the different elements that make up the food web and the importance of the tree, as a producer, in underpinning the whole system.

2 (b) (i) Oak trees adapt to the climate by losing their leaves in winter (1) in order to reduce water loss/transpiration (1). Bark on the trees is thick (1) to protect against frost in the winter (1). The leaves are broad in shape/large (1) as rainfall is not high enough to damage them and increases photosynthesis (1).
1+1 for adaptation and purpose.

(2 marks)

AO1 – 1
AO2 – 1

2 (b) (ii) Roots are long (1) as soil is relatively deep and nutrients are leached down / fertile (1). They are also quite extensive (1) to give the tree support in the soil (1)
1+1 for adaptation and purpose.

(2 marks)

AO1 – 1
AO2 – 1

2 (c) Any 3 valid points relating to the layering and other features of the vegetation. Allow 1 mark for recognition of layering. The tallest trees- the emergents/ 50m (1) stand above the continuous canopy layer (1). Trees have few branches until the crown at the top of the tree (1). The undercanopy consists of trees about half the height of the canopy (1). There is limited growth in the shrub layer nearest the ground (1). Some larger trees have wide bases/buttressed roots (1). Climbing plants and creepers (lianas) are attached to the trees (1)

(3 marks)

AO1- 1
AO3- 2

2(d)(i) 50%

(1 mark)
(1 mark)
AO3 - 1

2(d)(ii) Decrease, only 33% left. 2/3 gone

(1 mark)
AO3 - 1

2 (d)(iii) Credit any valid reasons for deforestation-likely to include logging, mining, HEP schemes, ranching, subsistence farming, settlement, road building, recreation and tourism. Extension of commercial agriculture-where forest is cleared for cattle ranches. Timber extraction –hardwood exported to richer countries. Road construction-new roads allow easier access in and out of the forest. Population growth-government resettlement schemes of urban poor alongside new roads. Exploitative recreation and tourism-new hotels and leisure complexes. Credit reference to case studies such as Amazonia.

(4 marks)

AO1– 2
AO2 – 2

Level 1 Basic (1-2 marks)
Simple statements, perhaps list like.
There may be reference to one reason only.
Simple understanding
Few links, limited detail
Trees are cut down for timber
Rainforests are cleared for mining operations
Dams and reservoirs are built which flood the forest

Level 2 Clear (3-4 marks)
Develops points. Clear understanding.
Answers have linkages. Use of specialist terms where appropriate.
Refers to more than one reason
Timber, mainly hardwoods, is cut by logging companies which sell the wood to richer countries. Hydro-electricity is an important renewable source of energy but the building of dams and creation of lakes has led to large areas of forest being flooded. Commercial cattle ranching is run by large TNCs which sell beef mainly to fast food chains in richer countries. New roads are built to develop the forest area and to transport timber, minerals and other raw materials to the coast for export.

2 (e) Case studies likely to be dependent on those appearing in related texts – South West US likely to be used, perhaps western Australia. Management should focus on water supply and how it is managed, such as dams along the Colorado, provision for commercial farming – supplying water to California, possible provision of a power source to facilitate development – such as tourism; development of tourism on a large scale, such as Las Vegas, building areas for retirement such as Sun city in Phoenix.
Question demands a focus on management but also requires a link to sustainability.

(8 marks)

AO1 – 5
AO2 – 3

Level 1 (Basic) (1–4 marks)
Simple statements, perhaps list like at lower end.
Describes ways in which areas used.
Some reference about management.
Information is general.
Max L1 If poorer part of world shown.
There are dams built. This gives a water supply. People have a lot of water. There is tourism in some areas.

Level 2 (Clear) (5–6 marks)
Develops statements.
Links are made between uses of the area and management.
There is some linking to sustainability.
Some reference is made to the case study.
Dams hold back rivers, like the Colorado. The Hoover Dam means there is water for big resorts like Las Vegas. This allows lots of tourists to go there, and lots of jobs have been developed. These jobs should be long term if the area is looked after carefully.

Level 3 (Detailed) (7–8 marks)
Fully developed statements.
Links are clearly made between uses of the area and management.
There is clear linking to sustainability – may question the extent to which it can be sustainable.
Specific, detailed reference is made to the case study.
Dams hold back rivers, like Colorado. The Hoover Dam and Lake Mead means there is water for big resorts like Las Vegas. This allows lots of tourists to go there and lots of jobs have been developed. These jobs should be long term if the area is looked after carefully – and it should be sustainable. However, there have been problems – there are other dams such as Glen Canyon at Lake Powell and little water reaches the lower reaches of the river. In Phoenix, there are larger retirement areas and an increasing demand for water. Lots of homes have pools in an area that is very dry. It is uncertain whether this can continue forever.

Total for Question 2: 25 marks

Question 3 River Processes and Pressures

3 (a) Near the source, the cross profile is narrow, steep sided and relatively deep valley (1). As movement occurs downstream, the cross profile becomes wider, less deep and the valley sides are less steep (1). Nearest the mouth, the valley is especially broad, the sides are a long way from the river and these are gentle and very low lying. (1)
There should be 3 statements that convey change downstream. The above is one strategy – going site by site, other approaches may refer to stages or the characteristic of an individual change that takes place downstream. Accept river channel changes as well as valley.
3 x 1 per stage or overall change from source to mouth.

(3 marks)

AO3 – 3

3 (b) (i) Any valid point relating to landform – e.g. steep/vertical drop, descends in two steps/falls, plunge pool visible at base; white water, covers width of valley; gorge visible in foreground / steep sided / v-shaped
3x1/1 + (1+1)

(3 marks)

AO2 – 2
AO3 – 1

3 (b) (ii) Diagrams likely to be drawn – probably two – to show horizontal band of hard rock over underlying band of soft rock, erosion of softer rock at a faster rate causes an overhang to develop, abrasion and hydraulic action are particularly important erosion processes; material from overhang collapsing increases rate of erosion and waterfall – which plunges over steep drop to retreat (leaving a gorge).

(4 marks)

AO1 – 2
AO2 – 1
AO3 – 1

Level 1 (Basic) (1–2 marks)
Simple diagram (s) probably partial.
Simple labels.
Order not correct – jumps about.
Sequence may be incomplete.
There is no diagram

Level 2 (Clear) (3–4 marks)
Complete, clear, diagram (s).
Diagrams illustrate clear labels – that are developed and linked.
Sequence and formation of waterfall is clear.

3 (c) (i) Peak rainfall for both streams:**15**mm,
Peak discharge for Clapham Beck: **10** cumecs,
Lag time (the time difference between the peak rainfall and the peak discharge) for Austwick Beck: **5½ -6** hours.
3×1

(3 marks)

AO1 – 3

3 (c) (ii) Any valid reason. E.g. Relief is steeper at Austwick Beck, so runoff will be rapid over the surface reducing time it takes to get to stream, possibly impermeable rock at Austwick Beck means water cannot soak in and so flows over land; lack of vegetation in drainage basin of Austwick Beck so that there is no interception, roots do not take up water so runoff is rapid. Urbanisation, dams valid reasons. ***(4 marks)***

AO1 – 2
AO2 – 2

Level 1 (Basic) (1–2 marks)
Simple, listed points.
States valid factors.
Steep slopes may cause difference. The rock type may be different – one may not let water soak in.

Level 2 (Clear) (3–4 marks)
Points are developed – aware of the significance of the factors.
Makes the link between feature and storm hydrograph.
The slopes in the drainage basin for Austwick Beck may be steeper and so the rainfall will runoff faster giving a shorter lag time. The rock type here may be impermeable, so that the water runs over the surface giving a flashier hydrograph.

3 (d) Demand increases as population increases – so more people will use more water. There is an increase in the number of households, so more of these with more people living separately will increase demand as washing up and cooking and other tasks are carried out more times. ***(8 marks)***

AO1 – 5
AO2 – 3

Level 1 (Basic) (1–4 marks)
Describes 1 or 2 reasons for increasing demand, with tentative explanation.
Statements may be in a random order and/or separate.
There are more people living in UK. People wash their cars. They water their gardens. Hosepipes are used. Most people own washing machines and dishwashers. Dishwashers use more water than washing up in a bowl.

Level 2 (Clear) (5–6 marks)
The description is followed by clear attempt to explain.
Refers to two reasons at least.
Statements are developed and linked.
Allow reference to industrial use (e.g. cement, breweries etc), power stations.
The population of the UK is going up, especially as people move in from other countries. This will mean more water is needed for everyday use such as drinking, cooking, washing. Many households own washing machines and dishwashers. These use much more water than doing these jobs by hand. As people get married later and there are many old individual households, the demand for water goes up as there are fewer savings due to people sharing houses and having some common use of water.

Level 3 (Detailed) (7–8 marks)
Detailed description is followed by a detailed attempt to explain.
Refers to more than two reasons.
Fully developed statements that are linked and show evidence of detailed knowledge.
Increased wealth means more people have labour-saving devices such as machines/dishwashers resulting in an increasing use of water. Similarly, there has been an increase in luxury items such as jacuzzis, hot tubs, steam rooms and swimming pools. Expecting longer growing seasons for products such as strawberries, means growing under cover and the need for irrigation. Increased development requires more building increasing the demand for cement, a particularly water demanding industry.

Total for Question 3: 25 marks

Question 4 Coastal Processes and Pressures

4 (a) (i) First diagram- Water enters a crack in the rock
Second diagram- Temperature drops, water freezes and expands
Fourth diagram- Repeated freeze thaw over many years will cause the rock to weaken and bits of rock will break off

(3 marks)

AO1 – 1
AO2 –1
AO3 - 1

4 (a) (ii) Reference may be made to a range of features including steep cliff, rocky beach, wave cut platform, rockfall, sea stack or stump. Max 1 for list. The coast consists of steep cliffs (1), with a narrow beach (1) or wave cut platform at the base (1). A small jagged stump is immediately offshore (1) Allow developed points.
3×1 or 2+1

(3 marks)

AO2 – 1
AO3 – 2

4 (a) (iii) There may be 2 or 3 diagrams showing stages in the sequence.. Diagram(s) may be cross section(s) or plan view. Labelling should show the sequence of formation. Waves hit the bottom of the cliff between hwm and lwm / waves attack the end of a headland. Wave cut notch is formed at the base of the cliff. Crack in the rock is widened into a wave-cut notch by hydraulic action. Erosion continues, the notch gets bigger and forms a cave. Arch is formed when the cave breaks through the headland. Roof of the arch collapses to form a sea stack. The stack is a piece of rock isolated from the main coastline.

(4 marks)

AO1 - 2
AO2 – 1
AO3 – 1

Level 1 (Basic) (1–2 marks)
A partial diagram – piecemeal –one or two labels-offers some back up to text
Sequence incomplete.
No diagram – text only

Level 2 (Clear) (3–4 marks)
Diagram is clear and fully labelled
Sequence complete.
Develops points.
Geographical terminology used

4 (b) (i) The clays and sands at Lulworth Cove have been eroded more than the limestones at the entrance.(1) Lulworth Cove is much wider where the sands and clays are found (1). Any sense of relative erosion is acceptable eg Eroding fastest/most eroded

(1 mark)

AO1 – 1

4 (b) (ii) 1 mark – becomes bigger/larger feature/changes shape/become like Lulworth Cove
2nd mark –on reaching softer rock there may be more rapid erosion/more easily eroded, may eventually join up with Lulworth Cove
Any notion of bigger is acceptable.

(2 marks)

AO2 - 1
AO3 - 1

4 (c) Content will depend on example used. Expect reference to London and Thames and other low lying coastal areas of England; Netherlands; Bangladesh; islands in Indian Ocean such as Maldives; area affected by Boxing Day tsunami. Nile Delta. Examples will depend on textbooks. Economic effects likely to relate to loss/damage to areas/businesses/food crops in subsistence economy; cash crops/exports; impact on tourism; need to try to protect and costs incurred in this.

(4 marks)

AO1 – 3
AO2 – 1

Level 1 (Basic) (1–2 marks)
Simple, listed points.
Will refer to some effects may be drift into non – economic ones.
Crops will be destroyed. People will lose their food supply and land. They will have nowhere to live. Parts of cities will be flooded. Businesses will be lost and people will lose their jobs.

Level 2 (Clear) (3–4 marks)
Points are developed and linked.
Focus on economic effects.
Refers to case study.
As sea level rises, low lying parts of the UK will be flooded. Parts of the fertile Fens will be lost and people will lose their businesses. Crop production will fall – cereals and vegetables will be affected. Areas next to the Thames in London, including the Houses of Parliament will be flooded. The City will be affected and jobs could be lost. It will cost a lot of money to try to protect the coast from rising sea levels – in order of £10 billion.

4 (d) Coastal areas are often protected against erosion and flooding by using hard and soft engineering methods.
Hard engineering reduces the energy of the breaking waves by building large structures between the sea and the land such as sea walls and rock armour or by building breakwaters that force waves to break before they reach the beach such as groynes.
Soft engineering method such as beach nourishment is a way of protecting and preserving the beach so that it acts as a natural defence against the sea. A wide and gently sloping beach is one of the most effective defences against storm waves because the beach is able to absorb the energy of the breaking waves.

(8 marks)

AO1 – 5
AO2 – 3

Level 1 (Basic) (1–4 marks)
Simple description of methods used to protect coastline.
Will be general.
Some brief reasons may be given.
A new sea wall, built to protect the sea front. Shingle will be put on the beach. There will be some rock armour and rip-rap.

Level 2 (Clear) (5–6 marks)
Increase in the number of methods.
Greater element of explanation how each method protects.
Some elaboration/illustration in support.
Statements are linked.

A sea wall, built to protect the sea front from the waves. A new groyne will stop the movement of the shingle. Rock armour will protect the coastline y stopping the waves hitting the base of the cliff.

Level 3 (Detailed) (7–8 marks)
Detailed description is followed by detailed attempt to explain.
Fully developed and statements that are linked and show evidence of detailed knowledge.
Sea walls are often built with a curved lip at the top of the seaward side, to deflect the force of the waves away from the promenade behind. A new groyne will stop the movement of the shingle, making the beach wider to protect the sea wall and promenade. Rock armour protects the foot of the cave or front of the se.a wall by breaking up the wave and absorbing the energy of the wave.

Total for Question 4: 25 marks