AQA

GCSE
Geography

8035/1 Living with the Physical Environment

Mark scheme

8035

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Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Point marked questions marking instructions

The mark scheme will state the correct answer or a range of possible answers, although these may not be exhaustive. It may indicate how a second mark is awarded for a second point or developed idea. It may give an indication of unacceptable answers. Each mark should be shown by placing a tick where credit is given. The number of ticks must equal the mark awarded. Do not use crosses to indicate answers that are incorrect.

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor is linked to the assessment objective(s) being addressed. The descriptor for the level shows the average performance for the level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme. You should read the whole answer before awarding marks on levels response questions.

Step 1 Determine a level

Descriptors for the level indicate the different qualities that might be seen in the student's answer for that level. When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly Level 2 with a small amount of Level 3 material it would be placed in Level 2 but be awarded a mark near the top of the level because of the Level 3 content. For instance, in a 9 mark question with three levels of response, an answer may demonstrate thorough knowledge and understanding (AO1 and AO2) but fail to respond to command words such as assess or evaluate (AO3). The script could still access Level 2 marks. Note that the mark scheme is not progressive in the sense that students don't have to fulfil all the requirements of Level 1 in order to access Level 2.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will also help. There will generally be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example. You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Assessment of spelling, punctuation, grammar and use of specialist terminology (SPaG)

Accuracy of spelling, punctuation, grammar and the use of specialist terminology will be assessed via the indicated 9 mark questions. In each of these questions, three marks are allocated for SPaG as follows:

- **High performance** – 3 marks
- **Intermediate performance** – 2 marks
- **Threshold performance** – 1 mark

General guidance

- Mark schemes should be applied positively. Examiners should look for qualities to reward rather than faults to penalise. They are looking to find credit in each response they mark. Unless the mark scheme specifically states, candidates must never lose marks for incorrect answers.
- The full range of marks should be used. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted
- Crossed out work should be marked unless the candidate has replaced it with an alternative response.
- Do NOT add ticks to level-marked questions – use the highlight tool/brackets to signify what is relevant.
- Sometimes there are specific "triggers" in the mark scheme that enable higher level marks to be awarded. For instance, an example or case study may be required for Level 3 if it is stated within the question.
- Where a source, such as a photograph or map, is provided as a stimulus it should be used if requested in the question, but credit can often be given for inferred as well as direct use of the source.
- Always be consistent – accept the guidelines given in the mark scheme and apply them to every script
- If necessary make comments to support the level awarded and to help clarify a decision you have made
- Examiners should revisit standardise script answers as they apply the mark scheme in order to confirm that the level and the mark allocated is appropriate to the response provided.
- Mark all answers written on the examination paper.

Description of annotations

Annotation	Meaning/Use
?	Unclear
[	Left square bracket
]	Right square bracket
^	Omission mark
AO1	Assessment Objective 1
AO2	Assessment Objective 2
AO3	Assessment Objective 3
L1	Level 1
L2	Level 2
L3	Level 3
DP	Developed point
DEV	Development
EG	Example / reference
EVAL	Evaluation
HLINE	Horizontal Line
JUST	Level or point just awarded
MAX	Max
Vertical Wavy Line	Not relevant
NC	Nothing Creditworthy
NAQ	Not answered the question
REP	Repeat
SEEN	Reviewed but no marks awarded
Tick	Correct point
TV	Too vague
Highlight	Highlight Box
On Page comment	On Page Comment
Off Page Comment	Off page Comment

Section A

Qu	Pt	Marking guidance	Total marks
01	1	**Using Figure 1, which one of the following statements is true?** One mark for the correct answer: C. There are many active volcanoes around the edge of the Pacific Ocean No credit if two or more statements are shaded AO4 - 1 mark	1
01	2	**Describe the movement of plates along plate margin X.** This question requires application of knowledge to the source. Plates are coming together/coverging /colliding One plate is pushed (subducted, sinks) under the other. The ocean floor is moving under the continental plate No credit for explanations of plate movement or for stating destructive margin AO3 - 1 mark	1
01	3	**Using Figure 2, how long will it take for the plates to move 100 metres?** One mark for the correct answer: D 4000 years No credit if two or more answers are circled AO4 - 1 mark	1

01	4	**Using Figure 2 and your own understanding, suggest how plate movements cause tectonic hazards in Iceland.**	6

Level	Marks	Description
3 (Detailed)	5-6	AO2 Shows thorough geographical understanding of processes causing tectonic hazards. AO3 Demonstrates coherent application of knowledge and understanding in analysing why tectonic activity occurs in Iceland.
2 (Clear)	3-4	AO2 Shows some geographical understanding of the processes causing tectonic hazard(s). AO3 Demonstrates reasonable application of knowledge and understanding in analysing why tectonic activity occurs in Iceland.
1 (Basic)	1-2	AO2 Shows limited geographical understanding of the processes causing tectonic hazard(s). AO3 Demonstrates limited application of knowledge and understanding in analysing why tectonic activity occurs in Iceland.
	0	No relevant content

- Level 3 (detailed) responses will be developed. Some geographical terms will be applied.
- Level 2 (clear) responses are likely to have linked or elaborated statements and some use of geographical terms.
- Level 1 (basic) responses may comprise simple/partially inaccurate statements with very limited subject vocabulary. Partial sequence or random points made.

<u>Indicative content</u>

- The command word is “suggest” so responses should set out the likely causes of volcanoes and earthquakes from the source provided, showing an understanding of the processes involved and the hazards.
- Accept explanations that refer to ridge push and slab pull processes.
- The more likely explanation is movement of plates and subduction caused by convection currents
- Understanding of processes causing volcanic activity at margins. Two plates move apart. Magma rises through the crust, and some can erupt producing volcanoes.
- Understanding of earthquakes at margins as plates move apart. Faults are formed at the margin and earthquakes can occur here. They are usually of low magnitude, although some can be high as stated in the source. Some may be linked to volcanic activity. Most happen at

		shallow depths below the surface where the plates are moving apart. • Hazards include huge amounts of volcanic ash; glacial floods caused by heat from volcanic activity, lava flows, mudflows (lahars). Earth tremors and quakes can cause sudden movement of the land. • Credit focus on hazards as events affecting people eg indirect hazards such as famine due to crop damage • Credit knowledge and understanding of specific events, such as the eruption under Eyjafjallajökull in 2010. • Application of knowledge and understanding to **Figure 2**. Iceland lies on the plate margin. Molten lava from beneath the Earth´s crust wells up, and is pushed away from the ridge at a rate of 2.5 cm per year. Volcanoes are mostly confined to the ridge in a linear belt where 2 plates are separating. • Max L1 for explanation of tectonic activity at destructive or conservative margins. • Top L2 for explanation of one hazard only. Note however that volcanoes (and earthquakes) may be associated with more than one hazard. • Max 1 mark for description of pattern in isolation. • There should be some (implied) reference to **Figure 2** to access Level 3. AO2 - 3 marks AO3 - 3 marks	

01	5	**Using Figure 3, which one of the following statements is true?** One mark for the correct answer: C. The 15 hottest years were all recorded between 1995 and 2015 No credit if two or more statements are shaded AO4 - 1 mark	1

01	6	**Give one natural cause of changes in global temperatures.** One natural cause should be identified. The specification includes: (Changes to the) earth's orbit/ (1) (Changes in) volcanic activity (1) (Variations in) solar output/ sunspot activity (1). Accept other valid natural causes such as movement of tectonic plates, shifts in ocean currents/El Nino effects. Reject human causes such as the enhanced greenhouse effect. AO1 - 1 mark	1

01	7	**Give two pieces of evidence, other than the change in global temperature, that show climate change has taken place.** Eg Shrinking ice sheets/glaciers/reduced Arctic or sea ice/less snowfall (1) Sea level rise (1) Extreme weather events/more droughts/ more tropical storms (1) Ocean acidification (1) Desertification (1) Increased concentration of greenhouse gases/higher CO2 concentration Accept longer term evidence such as ice cores, tree rings, ocean sediments, rocks and fossils, pollen analysis. AO1 - 2 marks	2

01	8	**Explain how the increasing use of fossil fuels and changes in agriculture may have contributed to global changes in temperature.** Level / Marks / Description 2 (Clear) / 3-4 / AO1 Demonstrates accurate knowledge about recent climate change. AO2 Shows a clear understanding of the human factors that help to account for changes in climate. Explanations are developed. 1 (Basic) / 1-2 / AO1 Demonstrates limited knowledge about recent climate change. AO2 Demonstrates limited understanding of the human-induced factors that help to account for recent changes in climate. Explanations are partial. 0 / No relevant content	4

		• Level 2 (clear) responses will be clear explanation(s) or linked statements. Some accurate use of geographical terms • Level 1 (basic) responses are likely to be simple random statements. Limited subject vocabulary used. <u>Indicative content</u> • The command word is "explain" which requires an account as to how and why the human factors of use of fossil fuels and changes in agriculture may contribute to climate change • Knowledge and understanding of the greenhouse effect. • Understanding the contribution of increased use of fossil fuels. Fossil fuels account for over 50% of global greenhouse gas emissions. Burning these releases carbon dioxide into the atmosphere. Fossil fuels are used in transportation, building, heating homes, manufacturing industry, and generating electricity. • Understanding of the contribution of changes in agriculture. Producing food uses fossil fuels in the production of fertiliser and pesticides, and in transporting. Changing forest cover to farmland also releases greenhouses gases. Increases in meat, dairy and rice production create more methane. • Expect both factors to be explained for top of Level 2, but a clear explanation of one factor gains access to low Level 2. AO1 – 2 marks AO2 – 2 marks	

01	9	**Using Figure 4, describe the track of Hurricane Irma between 6 September 2017 and 12 September 2017.** Credit use of direction, starting point, distances, dates and named locations. Eg Hurricane had a change of direction (1) of W/WNW initially, then N/NNW (1)/ Its movement was in a W/WNW/ NW direction (1) It passed to the north of Puerto Rico/Dominican Republic/Cuba (1) It reached landfall over Florida and moved towards Georgia (1) Max 1 mark for list of countries/places No credit for changes in intensity. AO4 - 2 marks	2

01	10	**Using Figure 4, what happened to the wind speed of Hurricane Irma between 8 and 12 September 2017?** The wind reduced (1) It fell from a category 5 (1) It dropped from over 252 km per hour.(1) The wind speed halved in this time (1) Wind speed remained very high then reduced (1) AO4 - 1 mark	1

01	11	**Give one reason why the wind speed of a tropical storm (hurricane) may change as it reaches land.** It loses its source of energy ie (warm) water/less moisture over land (1) Slower movement due to winds in contact with land /rough terrain (1) AO2 - 1 mark	1

01	12	**Assess the extent to which tropical storms have effects on people and the environment.** **Use Figure 5 and an example you have studied.**	9

Level	Marks	Description
3 (Detailed)	7-9	AO1 Demonstrates detailed knowledge of the impacts of tropical storms on people and the environment, with good use of exemplification AO2 Shows thorough geographical understanding of places, environments and processes. AO3 Demonstrates application of knowledge and understanding in a reasoned way in evaluating the impacts of tropical storms on people and the environment, using source and example.
2 (Clear)	4-6	AO1 Demonstrates clear knowledge of the impacts of tropical storms on people and/or the environment, with some use of exemplification. AO2 Shows some geographical understanding of places, environments and processes. AO3 Demonstrates reasonable application of knowledge and understanding in evaluating some impacts of tropical storms on people and/or the environment, using source and/or example
1 (Basic)	1-3	AO1 Demonstrates limited knowledge of impacts of tropical storms on people and/or the environment, with little or no exemplification. AO2 Shows slight geographical understanding of places, environments and processes. AO3 Demonstrates limited application of knowledge and understanding in evaluating impact(s) of tropical storms on people and/or the environment, using source and /or example
	0	No relevant content

- Level 3 (detailed) responses will be developed and include impacts affecting people and those affecting the environment (some may be interlinked). Impacts related to a named example and **Figure 5**, with some assessment.

- Level 2 (clear) responses are likely to have linked statements, with some accurate use of geographical terms. May refer to named example. May start to evaluate impacts.

- Level 1 (basic) responses are likely to consist of simple statements, with very limited use of subject vocabulary. May be limited to generic statements. May be limited to a single impact.

		Indicative content • The command is "to what extent", so the focus of the question is an evaluation of the degree to which a tropical storm has effects on people and on the environment eg devastating, considerable, slight, limited. Responses may also consider their relative importance. • Credit only effects (not causes). Answers should refer to **Figure 5** as well as a named example, although the two do not have to be balanced in coverage. • Effects of storms may be categorised into people and the environment/ /primary and secondary effects /social and economic effects. • Effects on people may include: people being killed or injured, bereavement, shock. homes being destroyed transport and communication links not working infrastructure destroyed, so rescue efforts more difficult money needed urgently to rebuild shops and businesses damaged or destroyed looting and other crime local economy disrupted, including manufacturing and tourism reduced trade longer term health effects, insurance claims destruction of crops, loss of livestock(overlaps environmental effects) water pipes burst and water supplies contaminated (overlaps with environmental effects). May lead to disease risk. • Effects on the environment may include: storm flooding large areas of the coast damage to coastal and river defences coastal habitats disrupted/disruption of ecosystems removal of forest changing the landscape near coastal areas heavy rainfall leading to mud/landslides sewage leaks, water pollution • Credit damage to built environment as well as natural environment • Credit positive effects on the environment eg tropical storms can bring rain to dry areas and move heat from the tropics to poles. • Knowledge and understanding of specific example of a tropical storm eg Typhoon Haiyan. Wind speeds of up to 300 kilometres per hour. Effects on people. Strong winds destroyed homes. Over 6,000 people died. 4 million were made homeless. Power was interrupted, the airport was badly damaged and roads were blocked by trees. Tacloban was destroyed. Damage to rice and seed stocks. Farmers and fishers lost their income. Huge recovery costs for agriculture and fishing. Looting problems. Increased food prices. Risk of infection and spread of disease.	

		• Effect on Haiyan on environment. Five-metre storm surge along coast, fish were killed and forests destroyed, ecosystems were damaged by leaking sewage. Poor sanitation led to water pollution. Loss of forests and widespread flooding. • Evaluation of **Figure 5**. Allow any reasonable inference from the photograph. Shows effects on people: eg roofs and walls of buildings blown away, some buildings destroyed, disruption to roads and other communications, damage to local economy, containers damaged, vehicles smashed and flooded, buildings under water, people made homeless/unemployed, effects on environment include flooding, risk of landslides, vegetation destroyed, pollution risk. • Newspaper clip shows loss of human life, disruption of local community and widespread nature of destruction • Application of knowledge and understanding may include factors affecting effects on people and environment: eg intensity of the storm, speed of movement, distance from the sea, physical geography of coastal zone, the wealth of the country, population density, strength of coastal defences, degree of preparedness, local awareness, available technology, forecasting, storm warnings/monitoring systems, accessibility of location, quality of infrastructure and building design. The extent of impacts on people may depend on many of these factors. • A purely generic answer without clear exemplification is limited to Level 2 • An answer that lacks consideration of extent of impacts is limited to Level 2 AO1 - 3 marks AO2 - 3 marks AO3 - 3 marks **Spelling, punctuation and grammar (SPaG)** **High performance** • Learners spell and punctuate with consistent accuracy • Learners use rules of grammar with effective control of meaning overall • Learners use a wide range of specialist terms as appropriate **Intermediate performance** • Learners spell and punctuate with considerable accuracy • Learners use rules of grammar with general control of meaning overall • Learners use a good range of specialist terms as appropriate **Threshold performance** • Learners spell and punctuate with reasonable accuracy • Learners use rules of grammar with some control of meaning and any errors do not significantly hinder meaning overall • Learners use a limited range of specialist terms as appropriate	**3** **2** **1**

		No marks awarded • The learner writes nothing • The learner's response does not relate to the question • The learner's achievement in SPaG does not reach the threshold performance level, for example errors in spelling, punctuation and grammar severely hinder meaning.	**0**

Section B

Qu	Pt	Marking guidance	Total marks
02	1	**Using Figure 6, which one of the following statements is true?** One mark for the correct answer: B. The largest single area of tropical rainforest is in South America. No credit if two or more statements are shaded AO4 - 1 mark	1
02	2	**Outline one reason for the distribution of tropical rainforest.** One mark for basic point and 2nd mark for development of that point. Eg Rainforest areas all have high humidity/high rainfall (1) They are areas with high temperatures (all year round) (1), They have a continuous growing season (1) Heat from the sun causes the air to rise (1) leading to heavy convectional rain/thunderstorms all year round (d)(1) High temperatures (and heavy all seasonal rain) (1) create ideal conditions for the growth of trees all year round (d)(1) Rainforest areas all have high humidity/rainfall (1) so they are found near the equator where there is lots of convectional rain (d)(1). They are in areas with low air pressure (1), which are associated with high rainfall (d) (1) AO1 - 2 marks	2
02	3	**Which global ecosystem is most likely to have the temperature and precipitation pattern shown in Figure 7?** The question requires application of knowledge and understanding to **Figure 7**. One mark for the correct answer: B. Tundra No credit if two or more statements are shaded. AO3 - 1 mark	1

02	4	**State the minimum temperature shown in Figure 7.** One mark for the correct answer: C. -30° C No credit if two or more statements are shaded AO4 - 1 mark	1

02	5	**Give one reason why polar regions have low temperatures throughout the year.** (The low angle of the sun means) energy is more dispersed (less concentrated) on the earth's surface (1). The sun's energy is scattered and reflected by the atmosphere (1). Ice, water and snow are good reflectors of solar radiation (1). Because of the tilt of the earth, polar regions receive no sunlight for up to 6 months of the year (1). Reject idea that polar regions are further from sun than equatorial regions. AO1 - 1 mark	1

02	6	**Using Figure 8 and your own understanding, explain how development in tropical rainforests creates economic advantages but at a cost to the environment.**	6

Level	Marks	Description
3 (Detailed)	5-6	AO2 Shows thorough geographical understanding of the economic advantages and environmental costs of deforestation AO4 Relevant reference made to the information about economic advantages of deforestation and environmental costs shown in **Figure 8**.
2 (Clear)	3-4	AO2 Shows some geographical understanding of the economic advantages and/or environmental costs of deforestation AO4 Some reference made to the information about economic advantages of deforestation and/or environmental costs shown in **Figure 8**.
1 (Basic)	1-2	AO2 Shows limited geographical understanding of the economic advantages of deforestation and/or the environmental costs AO4 Limited or partial reference made to the information about economic advantages of deforestation and/or environmental costs shown in **Figure 8**.

	0	No relevant content

- Level 3 (detailed) responses will be developed. Some use of **Figure 8** (direct or inferred) and specific own understanding.

- Level 2 (clear) responses are likely to be linked statements with some elaboration. Some use of **Figure 8** (direct or inferred) and/or own understanding.

- Level 1 (basic) responses are likely to consist of simple statements, with limited use of subject vocabulary. May only use information in **Figure 8** or own understanding.

<u>Indicative content</u>

- The command word "explain" is used, which means to provide a reasoned account of the economic advantages and environmental costs.

- Understanding of economic advantages.
  Eg Development of land for mining, farming and energy leads to jobs such as construction and farming
  Companies pay taxes; public services, such as education and water supply are improved.
  Forest is cleared to make space for cattle grazing, so large companies can make profit.
  Improved transport opens up new areas for industrial development and tourism. Products such as oil palm, soya and rubber provide raw materials for processing industries.
  Hydro-electric power provides cheap energy, which can be used by all types of industry.
  Commercial logging companies and paper making can make profits.
  Minerals such as gold and cobalt are very valuable, and may support industry.

- Use of **Figure 8** (1st photo) – indicating environmental damage. Image shows severe soil erosion which may be direct result of deforestation. There is still some forestry on the right but deep gullies have formed on the sloping land with water cutting into the surface, removing entire layers of soil, making the land unusable. Soils and other sediment have washed away into rivers. Likely cause is removal of forestry, possibly for grazing or cultivation-roots no longer able to hold soil in place, surface unprotected, exposed to heavy rain, leading to gully erosion.

- Credit understanding of environmental costs not shown in **Figure 8**.
  Eg The long term effect of economic development can be destruction of valuable forest products and ecosystems
  Plants (that could bring huge medical benefits and high profits) may become extinct.
  Land may be left ruined and many pollutants wash into rivers.
  Water quality is affected, shortages occur.
  Local impact of climate change-disruption to water cycle, reduced

		evaporation; wider impact-increased CO2 in atmosphere, temperature changes. • Use of **Figure 8** (2nd photo). The photograph indicates the large scale of mining operations (open cast, possibly coal), with forestry cover removed, exposed to wind and rain, some deeper terraced pits, roads built. Indicates huge investment of money, employment of workers, possibly large profits. • Conclusion may emphasise that short term economic benefits may lead to long term environmental harm. However an overall conclusion is not essential to access maximum marks. • Responses should refer to one or both photographs in **Figure 8** (directly or inferred) to access Level 3. • Max Level 2 for reference to economic advantages or environmental costs only. AO2 - 3 marks AO4 - 3 marks	

02	7	**Using Figure 9, suggest how ecotourism can help in managing tropical rainforests sustainably.** The question requires application of knowledge and understanding to **Figure 9** Answer can be 2 separate points or 1 developed idea. There should be direct or inferred use of **Figure 9**. Eg the ecotourism development appears to be small scale (1), making little impact on the rainforest (d) (1). Few trees are cut down/ people stay in wooden lodges/ resources used for building are from the local area (1) This helps to protect natural habitats and endangered species (d) (1). People may stay in the huts on holiday(1) and the money they spend may be used for conservation (d) (1), which helps to support the local economy (d) (1) No credit for links to ecotourism that cannot reasonably be inferred from the photograph. AO3 - 2 marks	2

02	8	**Explain how either international hardwood agreements or selective logging can encourage the sustainable management of tropical rainforests.** Credit explanation of one strategy only. Developed point required for 2 marks. Either: International agreements. The International Tropical Timber agreement (1) ensures that wood from tropical areas is legally sourced/sustainable (d)(1). The Forestry Stewardship Council (1) requires that products from sustainably managed forests have the FSC label (d) (1)/ aims to reduce demand for rare hardwood trees. (d)(1). Or: Selective logging Involves felling trees only when fully grown (1), and letting younger trees mature (d) (1) /and therefore continue protecting the ground from erosion (d) (1). Loggers remove the most valuable trees from the forest leaving the rest behind (1) and the area regrows as secondary forest (d) (1). Only some trees are felled(1), which helps to protect the ecosystem (d) (1) Loggers remove dead or diseased trees,(1), meaning that the vegetation is largely preserved (d) (1) AO2 - 2 marks	2

02	9	**Choose one of the following environments:** **Hot desert environment** ☐ **Cold environment** ☐ **Tick the box to show which environment you have chosen.** **Using a case study, to what extent have opportunities for economic activity been developed in your chosen environment?**	9

Level	Marks	Description
3 (Detailed)	7-9	AO1 Demonstrates detailed knowledge of economic activities in a hot desert/cold environment AO2 Shows thorough geographical understanding of places, environments and processes in the context of hot deserts/cold environments. AO3 Demonstrates application of knowledge and understanding in a reasoned way in evaluating the extent to which opportunities for economic activity are developed in a hot desert/cold

		environment.
2 (Clear)	4-6	AO1 Demonstrates clear knowledge of economic activities in a hot desert/cold environment AO2 Shows some geographical understanding of places, environments and processes in hot deserts/cold environments. AO3 Demonstrates reasonable application of knowledge and understanding in evaluating the extent to which opportunities for economic activity are developed in a hot desert/cold environment.
1 (Basic)	1-3	AO1 Demonstrates limited knowledge of economic activities in a hot desert/cold environment AO2 Shows slight geographical understanding of places, environments and processes in the context of hot deserts/cold environments. AO3 Demonstrates limited application of knowledge and understanding in evaluating the extent to which opportunities for economic activity are developed in a hot desert/cold environment.
	0	No relevant content

- Level 3 (detailed) responses will be developed. Examination of the opportunities for economic activity in the context of a case study of a hot desert/cold environment, with evaluation of the extent of development.

- Level 2 (clear) responses are likely to have linked or elaborated statements and some accurate use of geographical terms. May outline several opportunities for economic activity in a hot desert/ cold environment, but understanding of the actual development likely to be incomplete. May make an evaluation of extent of development.

- Level 1 (basic) responses are likely to consist of simple statements, with limited use of subject vocabulary. Might be limited to generic statements, or a list of economic activities without development. May be limited to a single activity. May make a limited evaluation.

<u>Indicative content for hot deserts</u>

- The command “to what extent” means that responses may state the degree to which economic development has occurred. Eg the statement may be completely untrue, true to some extent (partly but not completely true), to a great extent, or completely true.
  Extent of development may be considerable, significant, partial, limited, slight etc.

- Understanding of the opportunities for economic activity.

		Opportunities include: resources, farming, tourism, energy eg solar, wind. Economic development comes from taking advantage of these opportunities: jobs, income, trade, taxes, improved infrastructure, spending in the local economy, multiplier effect. May explain links to economy eg deep canyons provide beautiful scenery which attracts tourists who create a demand for employment in hotels leading to a multiplier effect. • Support for answers may be based in poorer or richer parts of the world. In HICs, south west US may be used. Economic activity may focus on water supply and how it is managed, commercial farming, mining, industrial development, supplying water, renewable and non-renewable energy, development of tourism on a large scale, building areas for retirement. • In LICs, areas such as the Thar Desert may be cited. Economic activities include subsistence farming, including nomadic farming, and hunter-gathering. Commercial farming supported by irrigation may be emphasised. Resources such as limestone and gypsum are found in this desert, valuable for the building industry. Hydroelectric power is supplied. Tourism is a growing industry. Credit specific case study details. • Degree of development may be determined by availability of water, physical terrain, extremes of temperature, technology, population size and migration, money available, access and transport, and value of resources. As the desert ecosystem is fragile, development may not be sustainable. • Evaluation eg although there is much economic potential, the extent of development is partial, limited by physical factors, environmental issues, technology and other factors. <u>Indicative content for cold environments.</u> • The command “to what extent” means that responses may state the degree to which development has occurred. Eg the statement may be completely untrue, true to some extent (partly but not completely true), to a great extent, or completely true. • Answers should focus on the nature of economic opportunities, and the scale of development • Understanding of the opportunities for economic activity. Opportunities include: resources, farming, fishing, tourism, energy eg solar, wind. Economic development comes from taking advantage of these opportunities with resulting jobs, income, trade, taxes, improved infrastructure, spending in the local economy, multiplier effect. May explain links to economy eg high, steep mountains provide beautiful scenery which attracts tourists who create a demand for employment in hotels leading to a multiplier effect. • Credit answers that focus on Arctic or Antarctic regions. Allow	

		reference to tundra as well as polar areas. Support for answers may be based on Northern Canada and/or Alaska. Eg drilling and mining activities occur, hydroelectric power is developed, large parts of the coastline offer wind and geothermal energy possibilities and the region has a large fishing industry. • Degree of development depends partly on fragility of environment and ease of damage to tundra vegetation by human activities, including drilling for oil, commercial fishing, tourism, building roads, housing and mineral exploitation. • Extent of development may also depend on international agreements. Eg Antarctic Treaty. Protected Areas have been set up. The treaty banned mining for at least 50 years. Seal hunting is strictly regulated. Fishing boats have quotas. Tourist numbers/activities are limited under agreement by IAATO and all tours must be guided and not enter environmentally sensitive areas. Only smaller ships can visit the area. • Evaluation of extent of economic development. Eg the tundra/polar environment is among the least disturbed ecosystems in the world. However, that is changing with the discovery of large reserves of raw materials. Although there is much economic potential, the extent of development is partial, limited by physical factors, environmental issues, international agreements, technology, access and other factors. • An answer that lacks consideration of the extent of development is limited to Level 2. • A purely generic answer without clear exemplification is limited to Level 2. AO1-3 marks AO2-3 marks AO3-3 marks	

Section C

Qu	Pt	Marking guidance	Total marks
03	1	**Using Figure 10, give the four-figure grid reference for a headland with cliffs.** One mark for the correct answer: C. 4240 No credit if two or more answers shaded. AO4 = 1 mark	1
03	2	**Using Figure 10, which of the following coastal features is not shown in grid square 4339?** One mark for the correct answer: D. A coastal spit No credit if two or more answers shaded AO4 = 1 mark	1
03	3	**Using Figure 10, what is the length and average width of Woolacombe beach between 456438 (labelled X) and 445407 (labelled Y)?** One mark for the correct answer: C. Beach length 3.3 km average width 0.4 km No credit if two or more answers shaded. AO4 = 1 mark	1

03	4	**Using Figure 10, suggest one reason why this coastline has suitable conditions for the formation of sand dunes.** The answer requires application of knowledge and understanding to map evidence. Answers must suggest a reason why the area has suitable conditions for sand dune formation: Eg there are (wide) sandy beaches (1) / sand may be picked up and transported by the wind onshore (1)/ at low tide there is a wide beach with much sand (1)/good supply of sediment (1). The beaches face westwards, where the main winds come from (1). Some parts of the coast have a gentle slope allowing the development of sand dunes (1). AO3 - 1 mark	1

03	5	**Using Figure 11, identify the landform marked Z.** One mark for the correct answer. Wave cut platform/ wave-cut bench/shore platform/abrasion platform AO4 – 1 mark	1

03	6	**Explain how a coastline of headlands and bays forms and changes over time.** Level / Marks / Description 2 (Clear) / 3-4 / AO1 Demonstrates accurate knowledge about coastal erosion processes and headland and bay formation. AO2 Shows a clear geographical understanding of the interrelationships between coastal environments and processes. Explanations are developed. 1 (Basic) / 1-2 / AO1 Demonstrates some knowledge of coastal erosion processes and headland and bay formation. AO2 Shows limited geographical understanding of the interrelationships between coastal environments and processes. Explanations are partial. 0 / No relevant content • Level 2 (clear) responses are likely to contain linked statements showing understanding of the processes involved and the sequence of formation. Appropriate geographical terminology. • Level 1 (basic) responses will comprise simple ideas with limited or partial sequence and little reference to the processes involved. Geographical terminology will be limited. <u>Indicative content</u>	4

		• The command is “explain”, so responses should provide a reasoned account of how and why headlands and bays form and change over time. • The question implies knowledge of the processes of erosion and as well as a landform of coastal erosion. Some reference to depositional processes is also relevant. Emphasis is on explanation, so processes may be outlined as well as the sequence of formation. • There should be recognition of the formation of headlands and bays over time, based on differences in rock type. • Credit relevant labelled/annotated diagrams as part of the explanation of processes and the sequence of changes to headlands and bays. • Credit specific processes if made relevant to the answer-erosion, deposition, hydraulic action, corrosion/abrasion, differential erosion, wave refraction • Initial formation. Because of differences in resistance of rocks to erosion, some parts of the coast may retreat faster than others. This will happen where the rocks are at right angles to the coastline (a discordant coast). • Change over time. Over thousands of years the softer less resistant rock will be eroded more quickly than the harder more resistant rock and differences become more pronounced. Eventually there will be headlands that stick out into the sea and bays where the land has been worn back. • Further development can be credited-due to wave refraction, the energy of the waves is then focused on the headlands and spread out in the bays. As the cliffs on the headland wear back, a wave cut platform may develop. Wave energy is less in the bays so beaches may form here. • Allow idea of retreat of headland linked to formation of arches and stacks. • Credit reference to **Figures 10** and **11** if linked to formation of headlands and bays. Eg hard resistant rocks may be found at Morte Point and Baggy Point. These are worn away less rapidly than the softer rocks in between. Wave energy is now concentrated on the headlands so a jagged erosional coast forms here, while a bayhead beach forms at Woolacombe Bay • Sequence of headlands and bays formation and development, including some reference to processes involved required for top of Level 2 AO1 – 2 marks AO2 – 2 marks	

<table>
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<td>03</td>
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<td>
Coastal management schemes are effective in protecting the coastline from physical processes.'

Do you agree?

Using an example, explain your answer.
<table>
<tr><th>Level</th><th>Marks</th><th>Description</th></tr>
<tr><td>3 (Detailed)</td><td>5-6</td><td>AO2 Shows thorough geographical understanding of a coastal management scheme/strategy(ies) used to protect the coastline.
AO3 Demonstrates application of knowledge and understanding in a reasoned way in making a supported judgement about the issues.</td></tr>
<tr><td>2 (Clear)</td><td>3-4</td><td>AO2 Shows some geographical understanding of a coastal management scheme/strategy(ies) used to protect the coastline.
AO3 Demonstrates reasonable application of knowledge and understanding in making a judgement about the issues.</td></tr>
<tr><td>1 (Basic)</td><td>1-2</td><td>AO2 Shows limited geographical understanding of coastal management scheme/strategy(ies) used to protect the coastline.
AO3 May include limited application of knowledge and understanding in making a judgement about the issues.</td></tr>
<tr><td></td><td>0</td><td>No relevant content</td></tr>
</table>

Level 3 (detailed) will be developed responses with supporting evidence for answer, which might be balanced or based on definite decision. Appropriate terminology will be used.
Level 2 (clear) responses are likely to have linked statement(s) showing understanding of strategy (ies) and their effectiveness. Answers may be balanced or based on definite decision. Some geographical terminology evident.
Level 1 (basic) responses will be simple statements with limited understanding or development. May consist of listed points or random statements about coastal management strategies.

<u>Indicative content</u>

Responses will apply knowledge and understanding of hard or soft strategies used in coastal environments, making a judgement about their effectiveness in protecting the coast from further erosion.
The command is 'explain your answer', so responses should support the choice made. Credit responses which highlight one side of the argument, as well as those which take a more balanced approach. There is no "correct" view-both sides can be credited, if supported with

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		evidence • The named scheme can be large or small scale, and can include a range of strategies including both hard and soft engineering. • Understanding of hard engineering schemes, which involve using artificial structures to control natural processes. These are designed to reduce wave energy or create a barrier between the land and sea, so storm waves can't reach the cliffs. • Strategies listed in the specification are sea walls, rock armour (rip-rap), gabions and groynes, but accept reference to other strategies such as revetments, tetrapods, offshore breakwaters, and tidal barriers. • Sea walls can be effective. They absorb and deflect wave energy back to sea. However they are expensive to construct and require regular repair. Erosion at the base can undermine sea wall foundations. • Rip rap / rock armour consists of massive blocks of natural rock piled up at the base of a cliff. They require less maintenance than a sea wall. If resistant rocks like granite are used they are eroded very slowly. However they are expensive to extract, transport and place in position, (although less expensive than sea walls). • Gabions are rock-filled wire cages. They are cheaper than sea walls and flexible in design. They can absorb wave energy. They can also improve drainage of cliffs and may eventually become vegetated and merge into the landscape. They can rust and can break apart, therefore requiring regular repair and maintenance. • Groynes are wooden or rock structures at right angles to a beach extending into the sea, catching longshore drift sediments. They are effective at increasing a natural barrier of beach, and can create calmer inshore water. However they require maintenance and repair and speed up erosion down the coast by robbing nearby beaches of sand. The problem is therefore shifted, not solved. • Evaluation of effectiveness. Eg protection for some groups at one location is often at the expense of other groups further along the coast. • Credit soft engineering strategies and managed retreat Eg beach management. This replaces beach or cliff material that has been removed by erosion or longshore drift. The main advantage is that beaches are a natural defence against erosion and coastal flooding. It is a relatively cheap option but requires constant maintenance to replace the beach material as it is washed away. Managed retreat. Areas of the coast are allowed to erode and flood naturally. Usually this will be areas considered to be of low value. The advantages are that it encourages the development of beaches (a natural defence) and salt marshes (important for the environment) and cost may be low. Managed retreat is a cheap option, but people will need to be compensated for loss of buildings and farmland.	

		• Evaluation of effectiveness- soft engineering works with nature rather than against it, blends in with the environment and can improve it e.g. adding sand to beaches, doesn't interfere with processes elsewhere and affect other areas; is sustainable. Disadvantages of soft engineering – areas can just be left at the mercy of the sea, more gentle intervention may not be effective, people can lose homes, livelihoods. • Credit named scheme. Eg Mappleton coastal management scheme involved two types of hard engineering - placing rock armour along the base of the cliff and building two rock groynes. Mappleton and the cliffs are no longer at great risk from erosion. The rock groynes have stopped beach material being moved south from Mappleton along the coast. However, this has increased erosion south of Mappleton. • Evaluation. Eg Coastal management schemes can be a very effective way of preventing erosion in developed areas when used appropriately. However some defences like groynes can cause problems for areas down the coast lacking coastal protection. • Reference to a named/located example is required for access to L3, which can be large or small scale. AO2 - 3 marks AO3 - 3 marks	

Qu	Pt	Marking guidance	Total marks
04	1	**Using Figure 12, give the four-figure grid reference for a river floodplain.** One mark for the correct answer: B. 6304 No credit if two or more answers shaded. AO4 = 1 mark	1
04	2	**Using Figure 12, which of the following statements best describes the features of grid square 6205?** One mark for the correct answer: C. A south facing slope with a stream and small tributary flowing through woodland. No credit if two or more answers shaded. AO4 = 1 mark	1

04	3	**Suggest one way the upper course of the River Severn may be different from that shown in Figure 12.** The answer requires application of knowledge and understanding to map evidence. Eg the river profile may be steeper (1). The valley may be steeper/narrower (1). The valley floor may be narrower (1). The river may be straighter/less meandering (1). The gradient may be more uneven/less smooth (1). The river may be narrower/shallower (1). Allow reference to landforms such as waterfalls, interlocking spurs Accept any valid comparison relating to river or valley AO3- 1 mark	1

04	4	**Using Figures 12 and 13, what is the height of the land (in metres) at the point marked X on Figure 13?** One mark for the correct answer: 49 (metres) Allow 50 (metres) – closest contour AO4 = 1 mark	1

04	5	**Describe one feature of the meander at Y on Figure 13.** One mark for brief outline or description of the meander feature that can be seen in the photograph. Accept any valid description Eg It is the inner bend (of a wide meandering river)(1). (It is an area of) deposition (1). (It appears to be a) slip off slope (where material has been deposited by the river) (1). No credit for river processes or for reference to the speed of river flow AO4 = 1 mark	1

04	6	**Explain how river meanders may change over time.**	4

Level	Marks	Description
2 (Clear)	3-4	AO1 Demonstrates accurate knowledge about fluvial erosion and /or depositional processes and meander development. AO2 Shows a clear geographical understanding of the interrelationships between fluvial environments and processes. Explanations are developed.
1 (Basic)	1-2	AO1 Demonstrates some knowledge of fluvial erosion and/or depositional processes and meander development. AO2 Shows limited geographical understanding of the interrelationships between fluvial environments and processes. Explanations are partial.
	0	No relevant content

- Level 2 (clear) responses are likely to contain linked statements showing some understanding of the processes involved and the sequence of development. Appropriate geographical terminology.

- Level 1 (basic) responses will comprise simple ideas with limited or partial sequence and little reference to the processes involved. Geographical terminology will be limited.

<u>Indicative content</u>

- The command is “explain”, so responses should provide a reasoned account of how and why a meander changes over time. Note that it is not essential to include the formation of a meander, although this can be credited. Emphasis is placed on change to existing meanders.

- The question implies knowledge of the processes of erosion and deposition. Emphasis is on explanation, so processes may be outlined as well as the sequence of formation. Credit explanation of enlargement of meander belt, downstream migration of meanders, as well as development of oxbow lakes. Accept reference to initial formation (riffles and pools) if change and development over time are explained.

- A meander is a winding curve or bend in a river. Water flows fastest on the outer bend of the river where the channel is deeper and there is less friction. Lateral erosion results in undercutting of the river bank and the formation of a steep sided river cliff. The development of meanders is due to both deposition and erosion. On the inside of the bend, where the river flow is slower, material is deposited on a slip off slope, as there is more friction. Over time, because of erosion and deposition, meanders gradually change shape and move across the floodplain and migrate downstream.

		• Credit further development including oxbow lake formation. Over time the horseshoe become tighter, until the ends become very close together. As the river breaks through, eg during a flood when the river has more energy, and the ends join, the loop is cut-off from the main channel. The cut-off loop is called an oxbow lake. • Credit relevant labelled diagrams as part of the explanation of processes and the sequence of meander development. • Credit reference to **Figures 12** and **13** if linked to development and change in meanders. The River Severn meanders across a broad floodplain, cutting into the outer bank where the water flows fastest, leading to lateral erosion. In places this widens the floodplain. On the inside bend deposition occurs, forming a bank of silt on the slip off slope, and gradually the meanders may migrate across the whole floodplain. • Sequence of formation and some reference to processes involved required to reach top of Level 2 AO1- 2 marks AO2- 2 marks	

<table>
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<td>04</td>
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‘Differences in the shape of flood hydrographs are caused by both human and physical factors.’

Do you agree?

Use Figure 14 and your own understanding to explain your answer.
<table>
<tr><th>Level</th><th>Marks</th><th>Description</th></tr>
<tr><td>3 (Detailed)</td><td>5-6</td><td>AO2 Shows thorough geographical understanding of physical and human factors affecting the shape of flood hydrographs

AO3 Demonstrates application of knowledge and understanding in a reasoned way in making a supported judgement about the importance of physical and/or human factors affecting the shape of flood hydrographs.</td></tr>
<tr><td>2 (Clear)</td><td>3-4</td><td>AO2 Shows some geographical understanding of the physical and/or human factors affecting the shape of flood hydrographs

AO3 Demonstrates reasonable application of knowledge and understanding in making a judgement about the importance of physical and/or human factors affecting the shape of flood hydrographs.</td></tr>
<tr><td>1 (Basic)</td><td>1-2</td><td>AO2 Shows limited geographical understanding of factor(s) affecting the shape of flood hydrographs

AO3 May include limited application of knowledge and understanding in making a judgement about importance of physical and/or human factors affecting the shape of flood hydrographs.</td></tr>
<tr><td></td><td>0</td><td>No relevant content.</td></tr>
</table>

Level 3 (detailed) will be developed responses, with understanding of how different physical and human factors play a role. Answers may be balanced or based on definite decision. Appropriate terminology will be used
Level 2 (clear) are likely to have linked statement(s) showing understanding of physical and/or human factor(s). Answers may be balanced or based on definite decision. Some geographical terminology evident.
Level 1 (basic) will be simple statements with limited understanding or development. May consist of listed points or random statements about physical and /or human factors

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		Indicative content • Responses will apply knowledge and understanding of human and physical factors affecting the shape of flood hydrographs, making a judgement about the role of different factors. • The command word is 'explain your answer', so answers should support the choice made. Credit responses which highlight one side of the argument, as well as those which take a more balanced approach. There is no "correct" view-both sides can be credited, if supported with evidence, although it is likely that most responses will agree with the statement. • Credit reference to physical factors/causes. Factors listed in the specification are precipitation, geology, and relief, but credit other factors such as snowmelt, levels of previous saturation, vegetation and soil type. The shape is determined by the speed in which flood waters are able to reach the river. Flashy hydrographs result from rapid transfer of water to the river. Credit reference to processes such as infiltration, surface runoff, throughflow and percolation as well as the key features of hydrographs such as rising limb, falling limb, peak discharge, baseflow and lag times • Physical factors affecting the shape include- Geology. Impermeable rocks (eg granite) and soil (eg clay) will not allow water to pass through, resulting in large amounts of surface runoff and a more flashy hydrograph. Relief. A drainage basin with steep slopes will result in greater overland flow and a shorter lag time than where the gradient is less steep, allowing more time for infiltration to occur. Precipitation. Heavy rain results in rapid saturation of the upper soil layers and the excess water therefore reaches streams quickly as surface runoff (short lag time). Slow light rain can be absorbed by infiltration and the river takes longer to respond to rainfall as water takes longer to pass through the drainage basin via throughflow and groundwater flow (longer lag time). Levels of previous rainfall may also be relevant. Vegetation. Vegetated areas help to reduce the steepness of the flood hydrograph by increasing the time it takes for water to reach a river (longer lag time) by encouraging infiltration, intercepting water by their leaves and taking up water in their roots. • Human factors include land use: surfaces such as concrete and tarmac are impermeable therefore rivers in urban drainage basins tend to have short lag times and higher peak flows due to higher amounts of surface runoff and drainage systems taking water to rivers quickly. The increase of house building in towns and villages, especially on river flood-plains has meant that rivers respond more quickly to storms, producing flashy hydrographs. Deforestation may result in more flashy hydrographs as interception and infiltration are reduced and runoff increases. Agricultural practices – such as ploughing up and down slopes - can increase surface runoff and produce short lag times.	

		• Credit examples where relevant, but these are not essential to gain max marks. • Evaluation may consider the importance of human and/ or physical factors in determining the shape of flood hydographs-may emphasise that precipitation is the primary factor, although its impact depends on several aspects such as intensity and duration. However other factors are significant in causing considerable differences in shape, even over quite small areas. • Application of knowledge and understanding to the 2 flood hydrographs in **Figure 14**. Both drainage basins experienced similar amounts of rainfall, with identical pattern of rainfall over 4 hours. The response of stream A was flashy-the steep rising limb and increase in discharge from 5-25 cumecs may have been due to specific characteristics of the drainage basin such as steep slopes, lack of vegetation or impermeable rock. Equally the surface may have been urbanised, with impermeable concrete and buildings. So both physical and human factors may have played a part. Note that it is not necessary to refer specifically to the flood hydrographs-use can be inferred. • Some flood hydrographs may be more affected by human factors than others-depending on proportion of built up area, level of tree cover, farming practices, artificial drainage. Many examples of floods where flood levels much higher as a result of human activity, others where physical factors dominant. • A developed explanation of two factors affecting the shape of flood hydrographs, with judgement, is sufficient to access maximum marks. AO2 – 3 marks AO3 – 3 marks	

Qu	Pt	Marking guidance	Total marks
05	1	**Using Figure 15, which grid square matches the following description?** **'There is a valley with a stream in the north. The land rises steeply southwards. It becomes more gentle towards the summit in the south, reaching a height of almost 1000 metres.'** One mark for the correct answer: B. 0299 No credit if two or more answers shaded. AO4 = 1 mark	1
05	2	**Locate Loch Avon centred in grid square 0102. What is the length (between points X and Y) and maximum depth of Loch Avon?** One mark for the correct answer: A. Length 2.5 km maximum depth over 30 metres No credit if two or more answers shaded. AO4 = 1 mark	1
05	3	**Suggest one reason for the shape of Loch Avon.** The answer requires application of knowledge and understanding to map evidence. Answers must suggest a reason for the shape of Loch Avon. Accept plausible suggestions. Eg it is long and fairly narrow because it was created by a valley glacier (1). It occupies the floor of a glacial trough/U shaped valley (1). It is in a (steep sided) valley (1). It is a ribbon lake (1) It represents a river valley enlarged during the ice age (1). It is uneven in shape because the valley floor is irregular/glacial deposits (1) or moraines were laid down/streams deposit materials along the edge of the lake (1)/different hardness of rock (1) AO3= 1 mark	1

05	4	**Using Figures 15 and 16, in which direction was the photographer facing when the picture was taken?** One mark for the correct answer: B. South west No credit if two or more answers shaded. AO4 = 1 mark	1

05	5	**Describe one feature of the corrie at Z on Figure 16.** One mark for brief outline or description of the corrie feature that can be seen in the photograph. Accept any valid description The land at Z is quite flat/it is waterlogged/ has much surface water/ has a small stream (1). This appears to be the corrie lip / the edge of a large tarn (1). It is an area of deposition (1)/ perhaps glacial moraine (1). It is a short stream separating a large tarn from a smaller lake (1). AO4-1 mark	1

05	6	**Explain how a corrie forms and changes over time.** Level / Marks / Description 2 (Clear) / 3-4 / AO1 Demonstrates accurate knowledge about glacial erosion processes and corrie formation. AO2 Shows a clear geographical understanding of the interrelationships between glacial environments and processes. Explanations are developed. 1 (Basic) / 1-2 / AO1 Demonstrates some knowledge of glacial erosion processes and corrie formation. AO2 Shows limited geographical understanding of the interrelationships between glacial environments and processes. Explanations are partial. 0 / No relevant content • Level 2 (clear) responses are likely to contain linked statements showing understanding of the processes involved and the sequence of formation. Appropriate geographical terminology. • Level 1 (basic) responses will comprise simple ideas with limited or partial sequence and little reference to the processes involved. Geographical terminology will be limited <u>Indicative content</u>	4

		• The command is “explain”, so responses should provide a reasoned account of how and why a corrie forms and develops over time. This could include post-glacial changes through to the present day. Processes should be outlined as well as the sequence of formation. • Although a landform of glacial erosion, some reference to depositional processes, weathering and mass movement is also relevant. A corrie is a hollow in the mountainside in which ice first collects. • Initial formation. A corrie is formed when snow begins to build up in a small hollow, often facing North or North-East in the UK so less affected by direct sunshine. The snow turns to ice and a small corrie glacier fills the hollow. • Development over time. The corrie glacier begins to move downhill by rotational sliding, while freeze-thaw weathering, along with plucking, loosens and removes material from the back of the hollow, producing a steep back-wall. Moraine gets dragged along the base of the glacier, deepening the hollow by abrasion and forming a rock basin. • Erosion at the front edge of the corrie is not so powerful, so a sill or rock-lip develops, often made higher by deposition of some of the moraine. When the ice begins to melt, the rock lip acts as a natural dam to the meltwater, and a deep, rounded corrie-loch (or tarn) sometimes forms. • Credit relevant labelled diagrams as part of the explanation of processes and the sequence of corrie formation and change over time. • Credit reference to **Figures 14** and **15** if linked to formation of a corrie. The corrie in the photograph faces NE which is away from direct sunlight and strong prevailing winds. Snow compacted to ice in the hollow, then moved under gravity towards the north and east. The ice rotated to the lip, shown in the foreground. Processes of abrasion deepened the corrie. Plucking steepened the back and sides, producing an almost vertical backwall in places. After glaciation a corrie tarn, Carn Etchachan, filled the hollow. • Sequence of formation and some reference to processes involved required to reach top of Level 2 AO1 – 2 marks AO2 – 2 marks	

05	7	**'The growing number of visitors to glaciated upland areas in the UK can only bring advantages.'** **Do you agree?** **Use an example to explain your answer.**	6

Level	Marks	Description
3 (Detailed)	5-6	AO2 Shows thorough geographical understanding of the advantages and/or challenges associated with tourism in glacial environments AO3 Demonstrates application of knowledge and understanding in a reasoned way in making a supported judgement about the issue(s) relating to tourism in glaciated environments.
2 (Clear)	3-4	AO2 Shows some geographical understanding of the advantages and/or challenges associated with tourism in glacial environments AO3 Demonstrates reasonable application of knowledge and understanding in making a judgement about the issue(s) relating to tourism in glaciated environments.
1 (Basic)	1-2	AO2 Shows limited geographical understanding of the advantages and/or challenges associated with tourism in glacial environments AO3 May include limited application of knowledge and understanding in making a judgement about the issue(s) relating to tourism in glaciated environments.
	0	No relevant content.

- Level 3 (detailed) answers will be developed responses, with supporting evidence for answer. Answers may be balanced or based on definite decision. Appropriate terminology will be used.

- Level 2 (clear) responses are likely to have linked statements showing understanding of issues relating to tourism. Answers may be balanced or based on definite decision. Some geographical terminology evident.

- Level 1 (basic) responses will be simple statements with limited understanding or development. May consist of listed points or random statements about the advantages and/or disadvantages of tourism in glacial environments.

<u>Indicative content</u>

- Responses will apply knowledge and understanding of the effects of large number of visitors to glaciated area(s), making a judgement about the advantages and/or challenges identified.

		• The command word is 'explain your answer', so answers should support the points made. Credit responses which agree or disagree with the statement. Some will take a balanced approach before reaching a conclusion. There is no "correct" view-both sides can be credited, if supported with evidence, although it is likely that most responses will disagree with the statement. • Advantages of tourism to glaciated upland areas include: the needs of tourists create new jobs in catering, hotels, outdoor recreation etc; tourists support local shops and products as well as services such as post offices and buses; money from tourists is used to conserve and improve the area; services for tourists benefit local people, for example public transport and roads; tourists mainly come to see the scenery and wildlife, so there is pressure to conserve fragile habitats. • Disadvantages include: jobs in tourism are often seasonal and wages are low; prices may rise in shops as tourists have more money to spend; shops cater for the requirements of tourists not local people; large numbers of tourists can damage the environment eg footpath erosion; demand for holiday homes pushes up house prices for local people and limits use of local services, including schools; traffic congestion, air and water pollution and parking issues. Disadvantages often involve conflicts between tourism and other activities. Eg tourists may leave gates open whilst walking and exploring the area. This can lead to animals escaping and potentially being injured or lost. This would affect profits for the farmer. • Use of example to support or refute statement. Eg Lake District. Over 15 million visitors per year, money spent supports hotels, shops and restaurants; thousands of people are employed, new businesses such as adventure tourism have grown. However most arrive by car-roads are narrow and congestion is a major issue; house prices are high-much property is holiday rentals; jobs are seasonal and unreliable; walkers damage landscapes and farmland-trampling crops, leaving litter, dogs disturb sheep and cattle. Some conflicts occur between tourists and other tourists eg conflicts between open water swimmers, large sailing boats and water skiers. Speed limit on Windermere introduced in 2005 (10 mph). • Evaluation of statement. Eg tourism in upland glaciated areas does bring some economic advantages but can also lead to environmental problems and significant conflicts of interest. Many locals prepared to accept developments, and overlook disadvantages, if they bring employment and money to the area. • Reference to an example is required for access to Level 3. AO2 – 3 marks AO3 – 3 marks	