GCE AS

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GEOGRAPHY

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SAMPLE ASSESSMENT MATERIALS

Teaching from 2016

wjec cbac

This Ofqual regulated qualification is not available for candidates in maintained schools and colleges in Wales.

For teaching from 2016
For award from 2017

GCE AS GEOGRAPHY

SAMPLE ASSESSMENT MATERIALS

Contents

Candidate Name	Centre Number					Candidate Number				
						0				

AS GEOGRAPHY

COMPONENT 1

CHANGING LANDSCAPES

SAMPLE ASSESSMENT MATERIALS

2 hours 15 minutes

For examiner's use only	
Q.1	15
Q.2	20
Q.3	15
Q.4	20
Q.5	40
Q.6	35
Q7	10
Total Marks	

ADDITIONAL MATERIALS

In addition to this paper, you will require a calculator.

INSTRUCTIONS TO CANDIDATES

Answer in Section **A**, **either** questions 1 and 2 **or** questions 3 and 4

Answer **all** questions in Section **B** (Tectonic Hazards) and **all** questions in Section C (Challenges in the 21st Century).

Use either black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Write your answers in the spaces provided in this booklet.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.

A blank page is available at the end of each section for you to add any relevant sketch maps and diagrams you may wish to include.

Section A: Coastal Landscapes

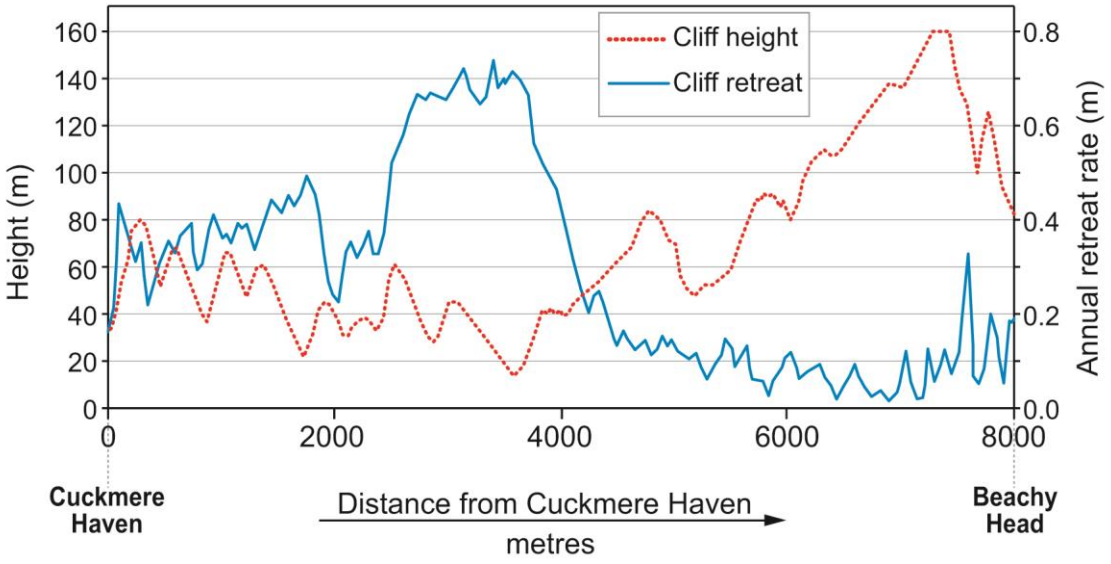
*Answer **either** question 1 and 2 **or** questions 3 and 4 from your chosen landscape.*

Where possible, make full use of examples and data to support your answers.

Either: Coastal Landscapes

Answer questions 1 and 2 if this is your chosen landscape.

Figure 1: Cliff height and rate of retreat (1875-1995), Cuckmere Haven to Beachy Head, Sussex



Source: adapted from www.sussex.ac.uk

1. (a) Use **Figure 1** to describe the relationship between cliff height and the rate of cliff retreat. [5]

[insert 10 lines]

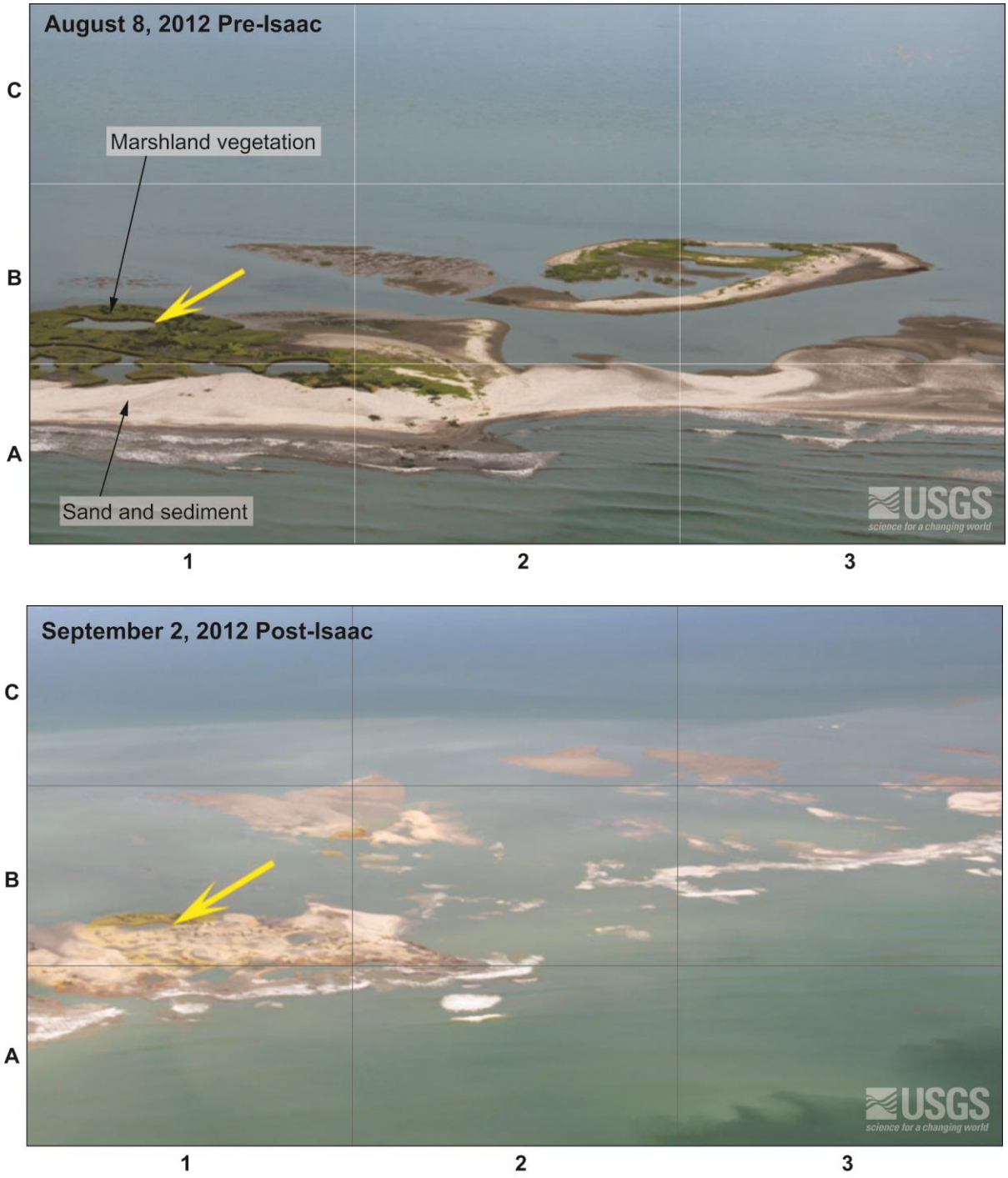
(b) Assess the importance of biotic processes in the formation of **either** sand dunes **or** coral reefs. [10]

Within your answer to question 1 (b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 20 lines]

Figure 2: Chandeleur Islands, Louisiana, before and after the passage of Hurricane Isaac (an extreme weather event)

The yellow arrow in each image points to the same feature.



Source: adapted from coastal.er.usgs.gov

2. (a) Use **Figure 2** to compare the coastal landscapes before and after the passage of Hurricane Isaac. [5]

[insert 10 lines]

(b) Evaluate the extent to which **one** coastal management strategy has been successful. [15]

Within your answer to question 2 (b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 30 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Or: Glaciated Landscapes

Answer questions 3 and 4 if this is your chosen landscape.

Figure 3: Landscape in Nova Scotia

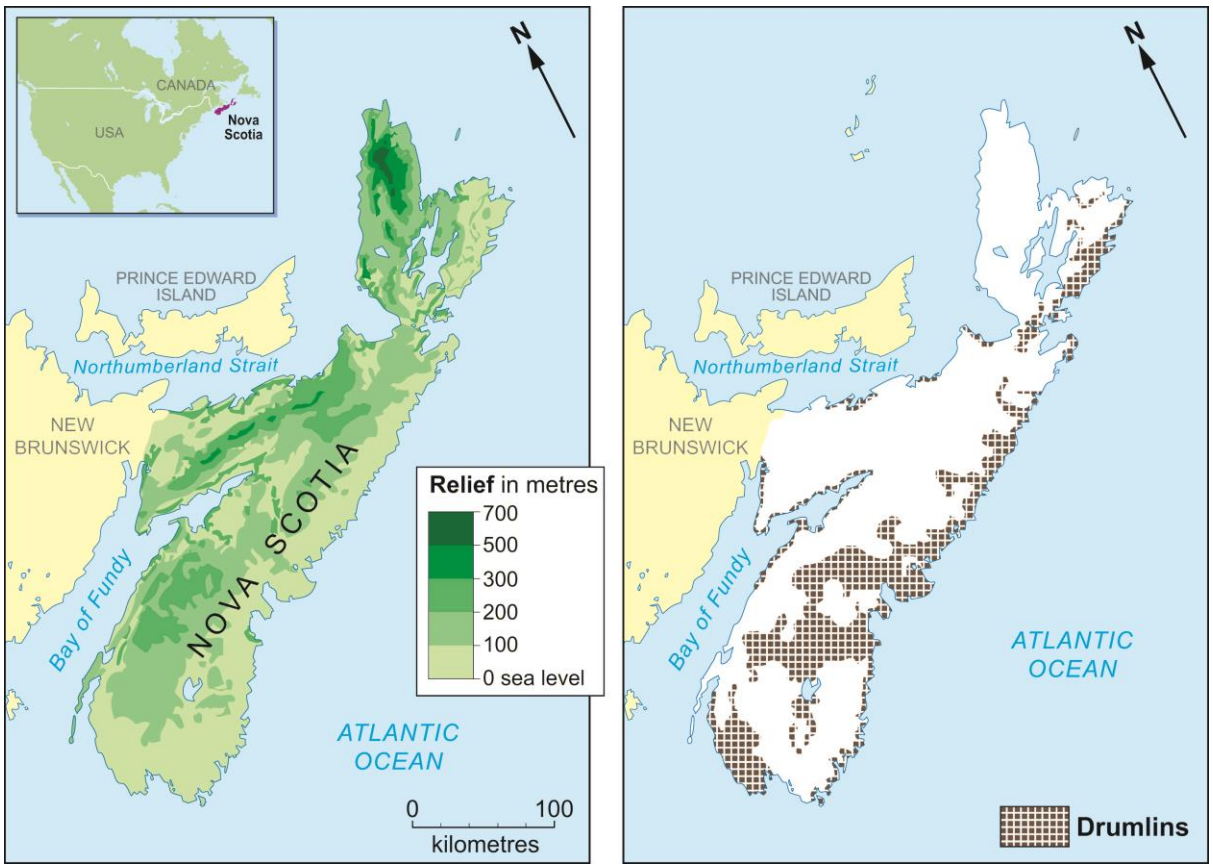


Figure 3a: Nova Scotia, relief

Figure 3b: Nova Scotia, location of drumlins

Source: adapted from novascotia.ca

3. (a) Use **Figures 3a** and **3b** to describe the relationship between relief and the distribution of drumlins in Nova Scotia.

[5]

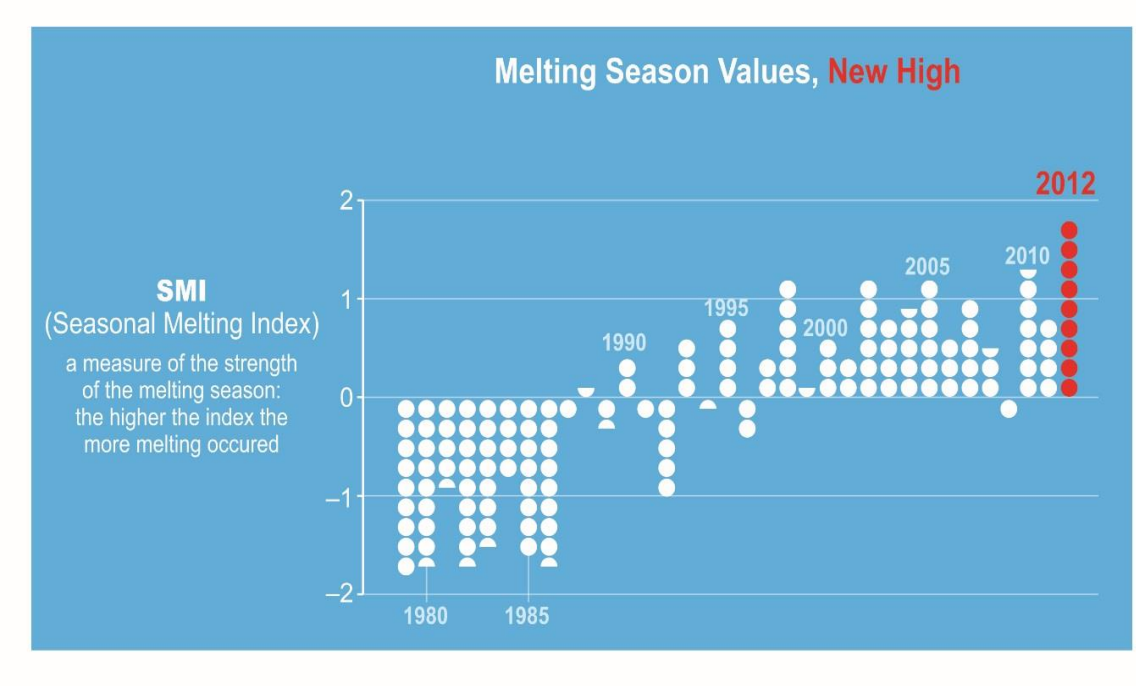
[insert 10 lines]

(b) Assess the impact of human activity on permafrost at both the local and global scales. [10]

Within your answer to question 3 (b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 20 lines]

Figure 4: Seasonal Melting Index for the Greenland ice sheet, 1979-2012



Number of years in the sample = 34

Source: adapted from www.polarseeds.org

4. (a) Suggest how **Figure 4** indicates a permanent decline in the mass of the Greenland ice sheet. [5]

[insert 10 lines]

(b) Evaluate the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs. [15]

Within your answer to question 4 (b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 30 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Section B: Tectonic Hazards

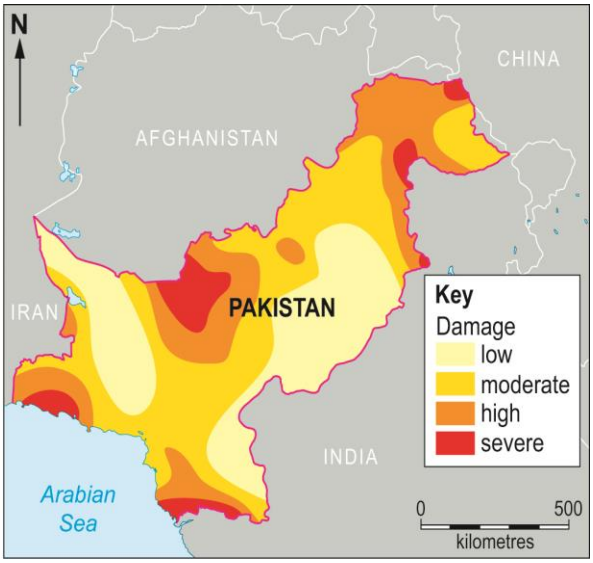
*Answer **all** questions.*

Where possible, make full use of examples and data to support your answers.

Figure 5a: Location map of Pakistan

Key	
NWFP	North Western Frontier Province
AJK	Azad Jammu and Kashmir
	Pakistan border

Figure 5b: Earthquake risk map of Pakistan

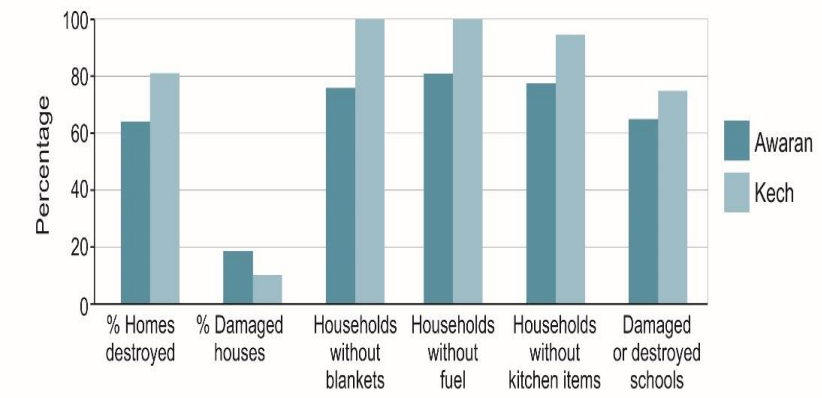


Source: adapted from www.saarc-sadkn.org

5. (a)(i) Use **Figures 5a and 5b** to describe the distribution of severe earthquake risk areas in Pakistan. [6]

[insert 12 lines]

Figure 5c: Impacts of the 2013 earthquake in the Awaran and Kech areas of Balochistan



(ii) Use **Figure 5c** to compare the impacts of the 2013 earthquake on buildings in Awaran and Kech. [4]

[insert 8 lines]

Figure 5d: Chi-squared calculation for number of injured in four districts of Awaran and Kech

The null hypothesis (H0) is that there is no significant difference in the number of injured between the four districts

The alternative hypothesis (H1) is that there is a significant difference in the number of injured between the four districts

	O	**E**	**(O-E)**	**$(O-E)^2$**	**$(O-E)^2/E$**
Council/District	**Number of injured**				
Dandar/Kech	9	90.25	81.25	6601.56	73.15
Awaran/Awaran	233	90.25	142.75	20377.56	225.79
Gishkor/Awaran	52	90.25	38.25	1463.06	
Teertaj/Awaran	67	90.25	23.25	540.56	
			X^2 (chi-squared value)	**∑**	

(b) (i) Calculate the chi-squared value by completing the missing figures in the column headed $(O-E)^2/E$ in Figure 5d. Show workings in your answer. [2]

[insert 4 lines]

(ii) Using the degrees of freedom in the table below, interpret the result of the chi-squared test calculated in 5 (b) (i). [2]

Significance (confidence) level		
Degrees of freedom	95%	99%
3	7.82	11.34
4	9.49	13.28

[insert 4 lines]

Figure 5e: Food security in earthquake affected areas

		Percentage of households		
District	Population	No food stock	Enough food to last up to 1 week	Enough food to last more than one week
Awaran	480,000	42	50	8
Jhal Jao	377,000	60	0	40
Mashkai	100,000	38	61	1
Hoshab	110,868	92	8	0

Source: adapted from www.saarc-sadkn.org

(iii) Use **Figure 5e** to select and justify one graphical and one cartographical technique that could be used to interpret variations in food security in earthquake affected areas. [6]

[insert 12 lines]

(iv) Use **Figures 5 a – e** and your own knowledge to analyse the appropriateness of possible **short-term** responses that could mitigate the effects of earthquakes in Balochistan. [12]

[insert 24 lines]

(c) Explain why earthquakes produce landslides and tsunamis. [8]

[insert 16 lines]

6. (a) To what extent is magnitude the most important factor in the level of impact of tectonic hazards? [15]

Within your answer to question 6 (a), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 30 lines]

(b) Analyse the impacts of similar volcanic events on contrasting locations. [20]

Within your answer to question 6 (b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 40 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Section C: Challenges in the 21st Century

7. To what extent are economic factors the most significant driver of change in central urban places? [10]

*In your answer to question 7, you should use the photographs in **Figures 6a, 6b and 6c**, and apply your knowledge and understanding of the connections between different aspects of this area across the whole specification.*

You should develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Figure 6a: Central Christchurch, New Zealand in 2010

Source http://eres.scix.net

Figure 6b: Cashel Mall in 2011 immediately after the 6.3 magnitude earthquake

Source http://memia.com

Figure 6c: Subsequent development of the Container Mall on the former site of Cashel Mall

Source: https://s-media-cache-ak0.pinimg.com

[insert 20 lines]

Component 1: Changing Landscapes

Mark Scheme

Guidance for Examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him / her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this component includes both point-based mark schemes and banded mark schemes.

Point-based mark schemes

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Annotations must reflect the mark awarded for the question. The targeted assessment objective (AO) is also indicated.

Banded mark schemes

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response. This is followed by an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this component. The targeted AO(s) are also indicated, for example AO2.1c.

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content. Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), the qualities of each mark band will be discussed in detail. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The mark scheme reflects the layout of the examination paper. Mark questions 1 and 2 or 3 and 4 in Section A, all questions in Section B and all questions in Section C. If the candidate has responded to all questions in Section A, mark all these responses. Award the higher marks attained; further, possible rubric infringements will be discussed at the marking conference.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Section A: Changing Landscapes

Either: Coastal Landscapes

1. (a) Use *Figure 1* to describe the relationship between cliff height and the rate of cliff retreat.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					5		**5**

Indicative content

- Although variable, the overall relationship is that the higher the cliff, the lower the annual rate of cliff retreat
- Maximum cliff height of 160m corresponds with a very low rate of cliff retreat of around 0.05 to 0.12 m/yr with the lowest rate of cliff retreat (around 0.025 m/yr) corresponding with a cliff height of 135m at around 6900m from Cuckmere Haven
- Lowest cliff height of around 15m corresponds with very high rates of cliff retreat of 0.7 m/yr at around 3500 m from Cuckmere Haven
- Between 2700m – 3750m from Cuckmere Haven where cliffs are below 60m there are the highest rates of cliff retreat > 0.65 m/yr
- Anomalies include similar cliff heights of 80m (at 250m and 4700m from Cuckmere Haven) with different rates of cliff retreat (around 0.3 m/yr and 0.1m/yr respectively)

Credit any other valid points.

Award the marks as follows:

Band	Marks	
3	**4-5**	Clear description of the relationship between cliff height and the rate of cliff retreat. Wide use of the resource as source of data to support the description.
2	**2-3**	Some identification of the relationship between cliff height and the rate of cliff retreat. Partial use of the resource as source of data to support the description.
1	**1**	Simple statements of the relationship between cliff height and the rate of cliff retreat. Limited use of the resource as source of data.
	0	Response not creditworthy or not attempted.

1. (b) **Assess the importance of biotic processes in the formation of *either* sand dunes *or* coral reefs.**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			3			**10**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of biotic processes as seen in the formation of either sand dunes or coral reefs. Biotic processes derive from living organisms; the biotic factors in an environment include the organisms competition for food resources and symbiotic relationships.

This may include:

For sand dunes

- Colonising plants may provide shelter and trap sand blown inland which will build sand dunes
- Sand builds up to form an embryo dune
- Wind diverted to allow accumulation of sediment in areas with decreased wind velocity
- Roots of marram bind sand which accumulates to form sand dunes
- Organic matter increases fertility of soil which encourages growth of plants to trap wind-blown sand
- Bigger plants established which increase shelter and so increasing dune size
- Burrowing fauna can expose sediment which is eroded by wind and thus blow outs form

For coral reefs

- Free-swimming coral larvae attach to submerged rocks or attach to other hard surfaces along the edges of islands or continents
- Corals grow and expand, reefs take on one of three major characteristic structures – fringing, barrier or atoll
- Fringing reefs form borders along shorelines and surrounding islands
- Barrier reefs also border shorelines at a greater distance – separated from their adjacent land mass by a lagoon of open water
- Atolls are usually circular or oval, with a central lagoon
- Slow accumulation and deposition of calcium carbonate (limestone) extracted from seawater
- After the individual organisms die, they leave behind their limestone skeletons
- Accumulation of minerals in skeletal remains build up to form the large structures
- Other reef builders such as sponges provide extra sediment which builds the reef structure

AO2

Candidates demonstrate application of knowledge and understanding through an assessment of the importance of biotic processes in the formation of either sand dunes or coral reefs. Relevant responses may include:

- The importance of the biotic processes such as where organic matter increases fertility of soil which encourages growth of plants to trap wind-blown sand
- Recognition that sand dunes can initially form without biotic processes
- Assessment of the importance of different plants or corals
- Assessment of the importance of biotic processes at different stages of formation of dunes and reefs

Near the lower end, there will be limited assessment of the relationships or role of other processes.

Credit any other valid points.

Award the marks as follows		
	AO1 (7 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of biotic processes and formation of sand dunes or coral reefs*	*Applies knowledge and understanding to assess the importance of biotic processes*
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of biotic processes Demonstrates detailed and accurate knowledge and understanding of the link between biotic processes and the formation of sand dunes or coral reefs Demonstrates detailed and accurate knowledge and understanding of the link between other processes (aeolian / chemical / marine) and the formation of sand dunes or coral reefs Well annotated sketches / diagrams / maps may also be used and should be credited	3 marks Applies knowledge and understanding to produce a thorough and coherent assessment that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent assessment of the importance of biotic processes in the formation of sand dunes or coral reefs
2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of biotic processes Demonstrates accurate knowledge and understanding of link between biotic processes and the formation of sand dunes or coral reefs Sketches / diagrams / maps may also be used and should be credited	2 marks Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial assessment of the importance of biotic processes, in the formation of sand dunes or coral reefs that is supported by some evidence

1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of biotic processes Demonstrates limited link between biotic processes and the formation of sand dunes or coral reefs Basic sketches / diagrams / maps may be used and can be credited	1 mark Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence Applies knowledge and understanding to produce a limited assessment of the importance of biotic processes in the formation of sand dunes or coral reefs that is supported by some evidence
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

2. (a) Use *Figure 2* to compare the coastal landscapes before and after the passage of Hurricane Isaac.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					5		**5**

Indicative content

In order to compare the coastal landscapes, both similarities and differences should be highlighted.

Similarities include:

- Both landscapes are low energy coastal environments of deposition
- Both landscapes are comprised of sand/sediment deposits

Differences include

- More extensive, continuous and wider area of sand/sediment deposits in the foreground pre-Isaac compared to discontinuous, fragmented and smaller area of sand/sediment deposits post-Isaac
- Extensive seaward-facing areas of marshland vegetation pre-Isaac compared to the absence of marshland vegetation post-Isaac
- Lagoons to west pre-Isaac compared to loss/absence of lagoons post-Isaac
- Limited offshore deposition beyond islands pre-Isaac compared to more, but discontinuous offshore deposition in area beyond main island post-Isaac
  Presence of island to east in foreground pre-Isaac compared to destruction of island in east post-Isaac

Marking guidance

Answers that score well provide detailed comparative comment of the similarities and differences between the two landscapes, including factual detail. Near the lower end, answers will be limited in their comparative comment.

Credit any other valid points.

Award the marks as follows:

Band	Marks	
3	**5-6**	Clear comparison of similarities and differences between the coastal landscapes, identifying a range of distinctive features, including factual detail. Wide use of the resource as source of data to support the description.
2	**3-4**	Some comparison of similarities and differences between the coastal landscapes, identifying several distinctive features, including some factual detail. Partial use of the resource as source of data to support the description.
1	**1-2**	Simple statements of similarities and/or differences between the coastal landscapes. Limited use of the resource as source of data.
	0	Response not creditworthy or not attempted.

2. (b) Evaluate the extent to which *one* coastal management strategy has been successful.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			8			**15**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of one coastal management strategy. The content will depend upon the management strategy that is chosen but there are a number of threads that will be common for credit.

For whichever strategy is chosen there should be knowledge and understanding of the characteristics of the strategy and how it is used to manage coastal processes, which could be erosional or depositional. This may include:

- An outline of the reasons why a management strategy is required such as high rates of cliff or beach erosion, deposition of sediment in inappropriate places
- An outline of the characteristics of the management strategy which could include physical structures and operations
- An outline of the operation of the management strategy
- An outline of the strategy to demonstrate how the management strategy modifies coastal processes
- A geographical context for the management strategy

AO2

Candidates demonstrate application of knowledge and understanding through an evaluation of the extent to which one coastal management strategy has been successful. Relevant responses may include:

- The extent to which modification of the erosional or depositional processes operating in a coastal environment has been successful
- Whether the reduction of impacts of erosion on human activity such as farming, industry, infrastructure and settlement has been successful
- Whether there has been improvement or reduction in the aesthetic character of the coast
- The extent to which there has been an improvement of the coast as an amenity
- The extent to which the management of port access via sediment dredging has been successful
- The extent to which there has been a changing focus of coastal erosion as sediment is trapped by groynes

Those that score well will evaluate inter-relationships in the coastal environment and include how the strategy has a positive or negative impact. There could be reference to the success in reducing risk in coastal areas or improving the resilience of coastal activities. Evaluation may refer to success in one location having an impact on other places. Near the lower end, there will be limited evaluation with little reference to risk or resilience.

Credit any other valid points.

Award the marks as follows:		
	AO1 (7 marks)	**AO2.1c (8 marks)**
	Demonstrates knowledge and understanding of one coastal management strategy	*Applies knowledge and understanding to appraise / judge through evaluating the success of the selected strategy*
Band		
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of one coastal management strategy Demonstrates detailed and accurate knowledge and understanding of the operation of the selected strategy Well annotated sketches / diagrams / maps may be used and should be credited	6-8 marks Applies knowledge and understanding to produce a thorough and coherent evaluation that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent evaluation of the inter-relationships in the coastal environment and includes how the strategy has a positive or negative impact Balanced evaluation of the success in terms of reducing risk in coastal areas or improving the resilience of coastal activities
2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of one coastal management strategy Demonstrates accurate knowledge and understanding of the operation of the selected strategy Sketches / diagrams / maps may be used and should be credited	3-5 marks Applies knowledge and understanding to produce a coherent but partial evaluation that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial evaluation of how the strategy has a positive or negative impact Partial evaluation of the success in terms of reducing risk in coastal areas or improving the resilience of coastal activities
1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of one coastal management strategy Demonstrates limited knowledge and understanding of the operation of the selected strategy Basic sketches / diagrams / maps may be used and should be credited	1-2 marks Applies knowledge and understanding to produce an evaluation with limited coherence and support from some evidence Limited application of knowledge and understanding to evaluate how the strategy has a positive or negative impact Limited application of knowledge and understanding to evaluate in terms of success in reducing risk in coastal areas or improving the resilience of coastal activities
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Or: Glaciated Landscapes

3. (a) Use *Figures 3a and 3b* to describe the relationship between relief and the distribution of drumlins in Nova Scotia.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					5		**5**

Indicative content

- Although variable, the overall relationship is that drumlins are concentrated in areas of lower relief
- Drumlins are almost always found in areas between 0 - 300m
- An almost continuous linear pattern of drumlins concentrated along the east coast of Nova Scotia corresponds with areas of low relief (<100m)
- A drumlin 'swarm' is concentrated in the coastal lowland of south west Nova Scotia where the relief is <100m
- Two broad belts of drumlins extending east-west across southern areas of Nova Scotia correspond with altitudes of between 0 - 300m
- The area with the highest relief of >700m in the north west of Nova Scotia is devoid of drumlins
- Drumlins are nearly always absent from areas > 300m in altitude

Credit any other valid points.

Marking guidance

Answers that score well will identify distinctive features of the relationship between relief and the distribution of drumlins and give a full description including factual detail.

Near the lower end, there will be limited identification and description of the relationship between relief and the distribution of drumlins.

Award the marks as follows:

Band	Marks	
3	**5-6**	Clear description of the relationship between relief and the distribution of drumlins. Wide use of the resource as source of data to support the description.
2	**3-4**	Some identification of the relationship between relief and the distribution of drumlins. Partial use of the resource as source of data to support the description.
1	**1-2**	Simple statements of the relationship between relief and the distribution of drumlins. Limited use of the resource as source of data.
	0	Response not creditworthy or not attempted.

3. (b) Assess the impact of human activity on permafrost at both the local and global scales.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			3			**10**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the various impacts of human activity on permafrost. This may include:

- The establishment of settlement which includes the dissemination of heat from buildings and waste disposal which leads to thermokarst
- The development of infrastructure which absorbs heat and thaws permafrost
- The impacts of global climate change which changes temperature regimes so that summer thawing lasts for longer and the active layer becomes more mobile
- The effects of human activity such as localised thawing, destruction of ice wedges, shrinking of surface
- The impact on erosion of coasts due to global sea-level rise.

AO2

Candidates demonstrate application of knowledge and understanding through an assessment of the impact of human activity on permafrost at both the local and global scales. Relevant responses may include:

- An assessment of which scale is the most important; local or global
- An assessment of impacts in a named locality
- An assessment which human impacts are most damaging
- An assessment of the magnitude of impacts
- An assessment of the resilience of permafrost to human impacts

Answers that score well will give a developed assessment of the impact of human activity on permafrost at both the local and global scales. Some answers may refer to feedback in the form of climate change and the increasing impact that human activity has over a wide scale. These answers may also look at thresholds in the periglacial system.

Near the lower end, there will be limited assessment of the impact of human activity on permafrost at different scales.

Credit any other valid approaches.

Award the marks as follows:		
	AO1 (7 marks)	**AO2.1c (3 marks)**
	Demonstrates knowledge and understanding of human activity and its impacts on permafrost at the local and global scales	*Applies knowledge and understanding to assess the links between human activity on permafrost at the local and global scales*
Band		
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of human activity and its impacts on permafrost at both global and local scales Well annotated sketches / diagrams / maps may be used and should be credited	3 marks Applies knowledge and understanding to produce a thorough and coherent assessment that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent assessment of the impact of human activity on permafrost at the local and global scales Balanced assessment of the impact of human activity on permafrost in terms of scale, location, magnitude, type of human activity and resilience to impacts
2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of human activity and its impacts on permafrost with some reference to different scales Sketches / diagrams / maps may also be used and should be credited	2 marks Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial assessment of the impact of human activity on permafrost at the local and global scales Partial assessment of the impact of human activity on permafrost in terms of scale, location, magnitude, type of human activity or resilience to impacts
1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of human activity and its impacts on permafrost with limited reference to different scales Basic sketches / diagrams / maps may be used and should be credited	1 mark Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence Limited application of knowledge and understanding to produce an assessment of the impact of human activity on permafrost at the local and global scales Limited assessment of the impact of human activity on permafrost in terms of scale, location, magnitude, type of human activity or resilience to impacts
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

4. (a) Suggest how *Figure 4* indicates a permanent decline in the mass of the Greenland ice sheet.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
						5	**5**

Indicative content

- Becoming more severe in recent years
- Threshold has been reached
- 2009 an anomaly – may indicate that it is not a permanent decline
- New high in 2012
- Quantification

Credit any other valid points.

Marking guidance

Answers that score well interpret the data and evidence to suggest how Figure 4 indicates that there has been a permanent decline, making specific reference to the resource.

Near the lower end, there will be limited interpretation of the resource and its indications of permanent decline.

Award the marks as follows:		
Band	**Marks**	
3	**4-5**	Well-developed interpretation of the extent of permanent decline. Wide use of the resource as source of data to support the description.
2	**2-3**	Partial interpretation of the extent of permanent decline. Partial use of the resource as source of data to support the description.
1	**1**	Limited interpretation of the pattern shown by the graph. Limited use of the resource as source of data.
	0	Response not creditworthy or not attempted.

4. (b) Evaluate the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			8			**15**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of erosional processes in the formation of the characteristic features of glacial troughs. The content will depend upon the examples chosen but there are a number of threads that will be common for credit. Answers should identify a number of characteristic features of glacial troughs. This could include:

- The overall shape of the trough with the over-deepened and parabolic section
- Hanging valleys, rock bars, small-scale features such as roche moutonees and striations
- Answers may pick out features that may involve the input of other processes such as deposition of moraines or post-glacial mass movement to form ribbon lakes
- Sea-level changes to produce fjords
- Identification and description of the major erosional processes and comment on the way in which they operate to produce the features of glacial troughs
- Comment on the way in which geomorphic processes operate to produce the features of glacial troughs

AO2

Candidates demonstrate application of knowledge and understanding through an evaluation of the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs. Relevant responses may include:

- Evaluation of the role of erosional processes compared to other glacial processes
- Evaluation of the role of erosional processes compared to post glacial processes such as mass movement and fluvial action
- Evaluation of the role of erosion between different glacial troughs
- Evaluation of the role of erosion in different parts of glacial troughs - more important in the upstream sections than lower down where deposition can be more evident

Answers that score well will evaluate the importance of erosional processes in the formation of the features of glacial troughs. Other answers will recognise that there are a variety of other inputs into the glacial system, one of which is pre-glacial landscape which may direct the flow of ice and also geology. This may impact upon the rate of erosion and over-deepening of troughs.

Near the lower end, there will be limited evaluation of the importance of erosional processes.

Credit any other valid approaches.

Award the marks as follows:		
	AO1 (7 marks)	**AO2.1c (8 marks)**
	Demonstrates knowledge and understanding of the characteristics and formation of glacial troughs	*Applies knowledge and understanding to appraise / judge through evaluating the relative importance of erosional processes*
Band		
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of glacial erosional processes and their link to landforms Demonstrates detailed and accurate knowledge and understanding of other glacial processes and their link to landforms Demonstrates detailed and accurate knowledge and understanding of non-glacial processes and their link to landforms Well annotated sketches / diagrams / maps may be used and should be credited	6-8 marks Applies knowledge and understanding to produce a thorough and coherent evaluation that is supported by evidence Applies knowledge and understanding to judge the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs Balanced evaluation of the relative role of different appropriate and relevant factors in the formation of the characteristic features of glacial troughs
2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of glacial erosional processes and their link to landforms Demonstrates accurate knowledge and understanding of other glacial processes and their link to landforms Demonstrates accurate knowledge and understanding of non-glacial processes and their link to landforms Sketches / diagrams / maps may be used and should be credited	3-5 marks Applies knowledge and understanding to produce a coherent but partial evaluation that is supported by some evidence Applies knowledge and understanding to partially judge the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs Partial evaluation of the relative role of different factors in the formation of the characteristic features of glacial troughs

1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of glacial erosional processes and their link to landforms Demonstrates limited knowledge and understanding of other glacial processes and their link to landforms Demonstrates limited knowledge and understanding of non-glacial processes and their link to landforms Basic sketches / diagrams / maps may be used and should be credited	1-2 marks Applies knowledge and understanding to produce an evaluation with limited coherence and support from some evidence Limited application of knowledge and understanding to evaluate the extent to which erosional processes are the main factor in the formation of the characteristic features of glacial troughs Limited evaluation of the relative role of different factors in the formation of the characteristic features of glacial troughs
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section B: Tectonic Hazards

5. (a) (i) Use *Figures 5a and 5b* to describe the distribution of severe earthquake risk areas in Pakistan.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					6		**6**

Indicative content

- Concentrations are in a number of areas
- In the south risk is along coast – SE and SW
- Western border of Balochistan / Afghanistan
- North has two areas affected in Gilgit and Kashmir
- Largest area is in Balochistan
- Quantification e.g. area given in kilometres squared

Marking Guidance

Near the upper end, answers that score well will identify distinctive features of the distribution of areas of severe earthquake risk and give a full description including factual detail.

Near the lower end, answers that score weakly will be limited in their identification and description of the distribution of areas of severe earthquake risk.

Credit any other valid points.

Award the marks as follows:

Band	Marks	
3	**5-6**	Clear description of the distribution of severe earthquake hazard. Wide use of the resource as source of data to support the description.
2	**3-4**	Some description of the distribution of severe earthquake hazard. Partial use of the resource as source of data to support the description.
1	**1-2**	Simple description of the distribution of severe earthquake hazard. Limited use of the resource as source of data.
	0	Response not creditworthy or not attempted.

5. (a) (ii) Use *Figure 5c* to compare the impacts of the 2013 earthquake on buildings in Awaran and Kech.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Credit 1 mark per point and allow 1 mark for quantification, up to maximum of 4 marks						4	**4**

- Higher percentage of homes destroyed in Kech (1 mark)
- Lower percentage of damaged houses in Kech (1 mark)
- Higher percentage of damaged / destroyed schools in Kech (1 mark)
- Quantification e.g. both suffered over 60% school damage (1 mark)

Credit any other valid points and responses relating any of the above points to Awaran rather than Kech.

5. (b) (i) Calculate the chi-squared value by completing the missing figures in the column headed $(O-E)^2/E$ in *Figure 5d*. Show workings in your answer.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					2		**2**

Indictative content

The missing values in the table are: 16.21 for Gishkor/Awaran and 5.99 for Teertaj/Awaran

Chi-squared value is 321.14

Marking Guidance

Correct chi-squared value (1) workings showing how the two missing values were calculated (1) by dividing the figures in the column headed $(O-E)^2$ by the expected figure (E= 90.25) for the rows for Gishkor/Awaran and Teertaj/Awaran

5. (b) (ii) Using the degrees of freedom in the table below, interpret the result of the chi-squared test calculated in 5 (b) (i).	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
						2	**2**

Indicative content

As the calculated chi-squared value of 321.14 is above the tabulated figure at the 99% confidence level at degrees of freedom 3 (n-1) of 11.34, it can be stated with 99% confidence that there is a statistically significant difference between the observed data and the expected data.

Marking Guidance

Correct confidence level (99%) selected at degrees of freedom 3 (1). Correct interpretation of the chi-squared result that the null hypothesis can be rejected and the alternative hypothesis accepted. This means that there is a statistically significant difference in the number of injured between the four districts and that there is some factor other than chance that is responsible for this (1).

5(b) (iii) Use *Figure 5e* to select and justify one graphical and one cartographical technique that could be used to interpret variations in food security in earthquake affected areas	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
						6	**6**

Indicative content

Graphical methods could include:

- Bar graphs to display rows or columns
- Composite bars for each district
- Pie charts to show each district
- Proportional circles
- Dial graphs

Cartographical methods could include:

- Choropleth mapping of selected statistics from the table
- Proportional symbols (circles, squares, bars) of selected statistics superimposed on a base map
- Pie or bar graphs of selected statistics superimposed on a base map

Credit any other valid points.

Marking Guidance

Answers that score well will select and justify through evaluating one appropriate graphical technique and one appropriate cartographical technique that enable interpretation of variations in food security with justification of why the choice of techniques is appropriate.

Near the lower end, there will be one graphical and one cartographical selected with limited justification of why they were selected.

Award the marks as follows:

Band	Marks	
3	**5-6**	Selection of one graphical and one cartographical technique with clear reference and application of the techniques to the resource Demonstrates a clear and well-developed justification of the selection of techniques Demonstrates justification of selected techniques through evaluation of why other possible techniques are not as appropriate, with clear reference to the resource Demonstrates the use of fieldwork skills to interpret, analyse and evaluate data to construct well-developed and balanced arguments, supported by evidence Well annotated sketches / diagrams / maps may be used and should be credited

2	**3-4**	Selection of one graphical and one cartographical technique and some reference and application of the techniques to the resource Demonstrates partial justification of the selection of techniques Demonstrates partial justification of selected techniques through partial evaluation of why other possible techniques are not as appropriate, with partial reference to the resource Demonstrates the use of fieldwork skills to partially interpret, analyse and evaluate data to construct partially developed or an unbalanced answer that has band 3 qualities for either the graphical or cartographical method, supported by mostly appropriate evidence Sketches / diagrams / maps may be also be used and should be credited
1	**1-2**	Selection of one graphical and one cartographical technique with limited or no reference and application of the techniques to the resource Demonstrates limited justification of the selection of techniques Demonstrates the limited use of fieldwork skills to interpret, analyse and evaluate data to construct an unbalanced answer for either the graphical or cartographical method Basic sketches / diagrams / maps may be used and should be credited
	0	Response not creditworthy or not attempted.

5. (b) (iv) Use *Figures 5 a - e* and your own knowledge to analyse the appropriateness of possible *short-term* responses that could mitigate the effects of earthquakes in Balochistan.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	5	7					**12**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the short-term responses which occur in the first weeks and months after the earthquake. The content will depend upon the responses chosen but there are a number of threads that will be common for credit. This may include:

- Search and rescue responses that can address destruction and damage to homes
- Provision of food and shelter that can address possible starvation and exposure to elements
- Supply of first aid and medical provisions that can address injuries and disease
- Clearing of infrastructure that can allow access
- Water and emergency aid from national and international agencies

Answers may refer to the characteristics of the responses and give detail on how the responses function.

Structural, for example:

- Infrastructure clearance and improvement to allow emergency services, rescue services, food supplies to be provided for the affected population
- Provision of shelter for the population whose houses have been destroyed or badly damaged. This can be linked to the nature of the location

Non-structural, for example:

- Provision of funds to allow authorities and NGOs to manage the impacts of the earthquake
- Social and community services to work with survivors

AO2

Candidates demonstrate application of knowledge and understanding through an analysis of the appropriateness of possible short-term responses that could mitigate the effects of earthquakes in Balochistan. Relevant responses may include:

- The analysis of possible short-term responses should comment on the appropriateness and link them to the mitigation of the impacts of the earthquake
- Measures should be given context as required in the question so responses should be directed at Balochistan and provide issues of location, access, possible support from neighbouring countries, spatial variation in effects and support from neighbouring countries, degree of and spatial variation in vulnerability of the population in terms of lack of shelter, equipment, fuel and food - characteristics that are evident from the resources

Answers that score well will analyse the application of different short-term responses in the context of the resources provided. To demonstrate analysis of application, responses may include:

- Analysis of the need to prioritise certain types of responses (shelter, fuel, essential supplies and food) given the vulnerability of the population shown in Figures 5c and 5e
- Analysis of the need to prioritise certain areas given the spatial variation in vulnerability of the population shown in Figures 5c and 5e (impacts on shelter greater in Kech compared to Awaran in 5e and Hoshab has the highest % of households with no food of 92%)
- Analysis of the difficulties with implementing responses given the scale of the Balochistan shown in Figure 5a
- Analysis of the variation in response times of mitigation strategies given the distances involved and remoteness of some areas from major cities shown in Figure 5a
- Analysis of the difficulties with accessing aid from surrounding countries of Iran and Afghanistan given their levels of development and political instability
- Analysis of the spatial variations in the need for specific mitigation strategies such as medical care (variations in the number of injuries shown in Figure 5d)

Credit any other valid points.

Award the marks are follows:		
	AO1 (5 marks)	**AO2.1a (7 marks)**
	Demonstrates knowledge and understanding of short term responses	*Applies knowledge and understanding to analyse different short-term responses in the context of the place*
Band		
3	4-5 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of short term responses that could mitigate against effects in Balochistan Well annotated sketches / diagrams / maps may be used and should be credited	5-7 marks Applies knowledge and understanding to produce a thorough and coherent analysis that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent analysis of a range of short-term responses, well linked to the resources provided Applies knowledge and understanding to make thorough and coherent links regarding the mitigation of effects
2	2-3 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of short term responses that could mitigate against effects in Balochistan Sketches / diagrams / maps may be used and should be credited	3-4 marks Applies knowledge and understanding to produce a coherent but partial analysis that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial analysis of a number of short-term responses with some linkage to the resources provided Applies knowledge and understanding to make partial or unbalanced links regarding mitigation of effects
1	1 mark Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of short term responses that could mitigate against effects in Balochistan Basic sketches / diagrams / maps may be used and should be credited	1-2 marks Applies knowledge and understanding to produce an analysis with limited coherence and support from some evidence Limited application of knowledge and understanding to analyse a limited number of possible short-term responses Applies knowledge and understanding to make limited links regarding the mitigation of effects
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted.

5. (c) Explain why earthquakes produce landslides and tsunamis.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	8						**8**

Indicative content

Tsunami
A huge wave caused by either volcanic or earthquake activity on the sea floor under the ocean from sudden movement of tectonic plates. The activity on the sea floor from shock waves radiating from the epicentre displaces the sea bed which creates a wave deep in the ocean, moving towards land. When the wave reaches shallower water the wave height increases and waves get closer. When these hit land they cause huge flooding e.g. Indian Ocean 2004, affecting India, Sri Lanka, Indonesia and Thailand and Japan in March 2011, affecting north east Japan.

Landslides
Landslides are the result of vibrations generated by earthquakes. The P and S waves produced during an earthquake act upon slopes. Landslides occur in a variety of situations from solid rock through to unconsolidated sands – these require different threshold strengths to trigger movement. Landslides have different features – rockfall, rockslides, debris flows etc. affecting, for example, California annually, Sri Lanka in 2003, south west China in 2012 and Ecuador in 2014.

Marking guidance

Answers that score well will give an accurate and developed account of the link between earthquakes and tsunamis and landslides. There will be clear factual detail in the explanation of process, both in the generation of the hazard and the hazard itself.

Near the lower end, there will be limited explanation of process.

Credit any other valid points.

Award the marks as follows:

Band	Marks	
3	**6-8 marks**	Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding through clear explanation and balanced treatment of why earthquakes produce both landslides and tsunamis Well annotated sketches / diagrams / maps may be used and should be credited
2	**3-5 marks**	Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding through explanation of why earthquakes produce both landslides and tsunamis Sketches / diagrams / maps may be used and should be credited

1	**1-2 marks**	Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding through simple explanation of why earthquakes produce both landslides and tsunamis. Explanation may focus only on landslides or tsunamis rather than both Basic sketches / diagrams / maps may be used and should be credited
	0 marks	Response not creditworthy or not attempted

6. (a) To what extent is magnitude the most important factor in the level of impact of tectonic hazards?	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	10			5			**15**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of magnitude as a factor in the level of impact of tectonic hazards. The content will depend upon the factors chosen but there are a number of threads that will be common and creditworthy. This may include:

- Magnitude could be defined with reference to scales such as Richter, Mercali and VEI. There should be an understanding of how the strength and character of tectonic processes change with magnitude
- Accept detail of the different tectonic processes
- As magnitude increases there will be a greater possibility of more severe impacts
- There may be comment on the idea that at greater magnitudes the ability to overcome mitigation strategies is increased
- Events of smaller magnitude can be more easily managed

Answers may also give detail on how other factors may influence the level of impact could include physical elements of the hazard such as:

- Speed of onset where rapid onset gives less time for preparation
- Duration of the event where extended duration of events such as earthquake vibration leads to more damage
- Geographical characteristics of the location where events that occur in urban areas or high relief areas can cause more damage

Or human aspects such as:

- Level of development where low income countries are not able to manage the after effects or high income countries receive higher economic damage
- Level of preparation where areas that have prepared by earthquake resistant structures or education of population can have receive less severe impacts

AO2

Candidates demonstrate application of knowledge and understanding through an evaluation of the extent to which magnitude is the most important factor in the level of impact of tectonic hazards. Relevant responses may include:

- The relative importance of other factors, such as, onset, duration, levels of development and preparedness. They will also show clear appreciation that magnitude is not the only factor that dictates the level of impact
- The extent to which magnitude varies in importance in different tectonic events
- The extent to which impact of magnitude may change over time with improving technology

Near the lower end, there will be limited evaluation of the relative importance of other factor(s).

Credit any other valid points.

Award the marks as follows:

	AO1 (10 marks)	**AO2.1c (5 marks)**
	Demonstrates knowledge and understanding of magnitude and other factors	*Applies knowledge and understanding to evaluate the essential elements of the factor and judge its importance*
Band		
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of magnitude and a broad range of other factors Well annotated sketches / diagrams / maps may be used and should be credited	4-5 marks Applies knowledge and understanding to produce a thorough and coherent evaluation that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent evaluation of the essential elements of the named factor and judge its importance Balanced evaluation of the relative importance of other factors
2	4-6 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of magnitude and other factors Sketches / diagrams / maps may be used and should be credited	2-3 marks Applies knowledge and understanding to produce a coherent but partial evaluation that is supported by some evidence Applies knowledge and understanding to evaluate the essential elements of the named factor and judge its importance Partial evaluation of the relative importance of other factors
1	1-3 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of magnitude and other factors Basic sketches / diagrams / maps may be used and should be credited	1 mark Applies knowledge and understanding to produce an evaluation with limited coherence and support from some evidence Limited application of knowledge and understanding to evaluate the essential elements of the named factor and judge its importance Limited evaluation of the relative importance of other factors
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

6. (b) Analyse the impacts of similar volcanic events on contrasting locations.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	10	10					**20**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the impacts of similar volcanic events on contrasting locations. The content will depend upon the volcanic events chosen but there are a number of threads that will be common and creditworthy. This may include:

The structure of answers will probably focus on:

- Demographic impacts to include mortality, migration and impacts on population structure. Some may deal with medical aspects here and this should be allowed
- Social impacts to include homelessness, trauma, infrastructure problems, disease, culture, politics etc.
- Economic impacts to include loss of production, cost of repair, insurance, loss of earnings etc
- Environmental impacts to include destruction of flora and fauna, changing landscape, climate change etc.
- Impacts should provide accurate supporting evidence within the context of the chosen volcanic events

AO2

Candidates demonstrate application of knowledge and understanding through an analysis of the overall impacts of similar volcanic events on appropriate and contrasting locations. Analysis may take a variety of formats. Relevant responses include:

- Analysis of the different elements of damage e.g. demographic versus social
- Analysis of the variations in the magnitude of impacts in a given category e.g. economic
- Analysis of the variations in the scale of impacts (local, regional, global)
- Analysis of variations in impacts over time e.g. climate change in the longer-term
- Analysis of the interdependence of impacts e.g. social impact of unemployment linked to economic impact of loss of production
- Analysis of the human characteristics such as demography, levels of preparedness, mitigation, level of economic development within and between countries etc.

Near the lower end, there will limited analysis of impacts of two or more volcanic events.

Credit any other valid points.

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1a (10 marks)**
	Demonstrates knowledge and understanding of the impacts of similar volcanic events on contrasting locations	*Applies knowledge and understanding to analyse the impacts of similar volcanic events on contrasting locations*
Band		
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of the impacts of similar volcanic events on appropriate contrasting locations Well annotated sketches / diagrams / maps may be used and should be credited	7-10 marks Applies knowledge and understanding to produce a thorough and coherent analysis that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent analysis of the overall impacts of similar volcanic events on appropriate and contrasting locations Balanced analysis of the impacts of similar volcanic events in terms of category, magnitude and scale of impact and characteristics of locations affected
2	4-6 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of impacts of similar volcanic events on appropriate contrasting locations Sketches / diagrams / maps may be used and should be credited	4-6 marks Applies knowledge and understanding to produce a coherent but partial analysis that is supported by some evidence Applies knowledge and understanding to produce a partial analysis of the overall impacts of similar volcanic events in appropriate and contrasting locations Partial analysis of the impacts of similar volcanic events in terms of category, magnitude and scale of impact or characteristics of locations affected
1	1-3 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of impacts of similar volcanic events Basic sketches / diagrams / maps may be used and should be credited	1-3 marks Applies knowledge and understanding to produce an analysis with limited coherence and support from some evidence Limited application of knowledge and understanding to analyse the overall impacts of similar volcanic events in contrasting locations focusing on either similarities or differences Limited analysis of the impacts of similar volcanic events in terms of category, magnitude and scale of impact or characteristics of locations affected
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section C: Challenges in the 21st Century

7. To what extent are economic factors the most significant driver of change in central urban places?	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
				10			**10**

Within the answer to question 7, candidates should use the photographs in *Figures 6a, 6b and 6c*, together with appropriate knowledge and understanding of the connections between different aspects of this area across the whole specification in order to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

Answers will probably focus on a number of changes that occur in central urban areas.

Figure 6a - economic factors shown in the photograph are linked to gentrification and the renovation of older areas of urban centres. Economic drivers can be in the form of cheap rents in declining areas. At a later stage rising costs force out traditional populations and alter land uses. Changes may also arise from the policies of agencies such as local government. Other economic factors may be given such as the causes of decline of town centres and the subsequent policies used in their revitalisation.

Figure 6b - physical changes can be identified in the destruction of the central area of Christchurch by tectonic activity. However there could also be reference to other physical factors that may cause damage such as coastal flooding and glacial lake outbursts.

Figure 6c - a combination of physical changes after the earthquake and clearance of buildings and the economic need to keep retail services to service the population of Christchurch.

The command 'to what extent' requires candidates to give possible explanations for and against the view expounded in the question. Answers that score well will put forward clear plausible and informed ideas based on Figures 6a, 6b and 6c and on their wider geographical knowledge and understanding from across the course. Such answers will demonstrate an understanding of the variety of factors that generate change in central urban places.

Answers that score well could:

- Argue the case for economic factors being the main drivers as central urban places are areas where retail and financial services are concentrated
- Argue that change is frequently driven by the need for profit so central areas are changed as a result - gentrification often seeks to take advantage of economic opportunities
- Argues that national and local government often provide the economic capacity for change
- Argue that in certain cities physical factors are important in change such as tectonic reasons in 6b Also change occurs in response to physical threats such as land use planning to mitigate the impacts of hazards or rebuilding after hazards
- Argue that the relative importance may differ from city to city

Near the lower end, there will be limited interpretation of Figures 6 a-c and limited knowledge, understanding of change and applied understanding of the driving factors taken from across the specification.

Credit any other valid points. Candidates should be credited for use of examples drawn from across the specification.

Award the marks as follows:		
Band	**Marks**	
3	**7-10**	Applies knowledge and understanding from across the specification to produce a thorough and coherent evaluation that is supported by evidence Well-developed synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, in order to make well-judged connections Applies knowledge and understanding from across the specification to judge the extent to which economic factors drive change in central urban areas through the use of appropriate, accurate and well-developed examples from across the specification Applies knowledge and understanding of the factors that have caused change in central urban areas
2	**4-6**	Applies knowledge and understanding from across the specification to produce a coherent but partial evaluation that is supported by some evidence Partial synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, in order to make partial connections Applies knowledge and understanding from across the specification to partially judge the extent to which economic factors drive change in central urban areas through the use of appropriate and well-developed examples from across the specification, Partially applies knowledge and understanding of the factors that have caused change in central urban areas
1	**1-3**	Applies knowledge and understanding from across the specification to produce an evaluation with limited coherence and support from some evidence Limited synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, making limited connections Limited application of knowledge and understanding from across the specification to make limited judgements on the extent to which economic factors drive change in central urban areas through the use of a limited number of undeveloped examples from across the specification Limited application of knowledge and understanding of the factors that have caused change in central urban areas
	0	Response not creditworthy or not attempted

Candidate Name	Centre Number					Candidate Number				
						0				

AS GEOGRAPHY

COMPONENT 2

CHANGING PLACES

SAMPLE ASSESSMENT MATERIALS

1 hour 15 minutes

For examiner's use only	
Q.1	20
Q.2	20
Q.3	40
Total Marks	80

ADDITIONAL MATERIALS

In addition to this paper, you will require a calculator.

INSTRUCTIONS TO CANDIDATES

Answer **all** questions.

Use either black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Write your answers in the spaces provided in this booklet.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.

A blank page is available at the end of each section for you to add any relevant sketch maps and diagrams you may wish to include.

Section A – Changing Places

*Answer **all** questions.*

Where possible, make the fullest use of examples and data to support your answers.

Figure 1: Employment rate in England, April 2008 and April 2012

Region	Employment rate; Aged 16-64 (persons percentage) in April 2008	Employment rate; Aged 16-64 (persons percentage) in April 2012
North East	68.1	66.5
North West	69.0	69.2
Yorkshire and The Humber	70.4	69.7
East Midlands	73.0	71.3
West Midlands	69.4	68.4
East of England	75.1	74.5
London	69.2	69.5
South East	76.4	74.4
South West	75.6	73.9
Interquartile range	6.25	

Source: adapted from www.neighbourhoodstatistics.gov.uk

1.(a) (i) Use **Figure 1** to calculate the interquartile range for the employment rate in England for April 2012. Show workings in your answer and insert the interquartile range calculated in the final row in the April 2012 column above. [4]

[insert 8 lines]

(a) (ii) Use the interquartile range results in **Figure 1** to interpret changes in employment rate in England between April 2008 and April 2012. [2]

[insert 4 lines]

(b) Suggest how the growth of quaternary industries could have impacts for:

- the local physical environment [2]

[insert 4 lines]

- how a place is marketed. [2]

[insert 4 lines]

(c) To what extent does out of town retailing pose a threat to central urban areas? [10]

Within your answer to question 1(b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 20 lines]

Figure 2: A new plan for Thornton Moor

Figure 2a: Photograph of Thornton Moor

Source: www.livefortheoutdoors.com

Plans have been approved for the construction of a trial 60m-high mast on a West Yorkshire moor, near the former home of the Brontë sisters. The landscape may soon see the addition of four larger wind turbines. Local campaigners say that it will be a disaster for local tourism and also for the UK's natural environmental heritage.

Charlotte Bronte's Wuthering Heights is one of the all-time great English novels. Its setting is the unspoiled and wild Thornton Moor. The story continues to grab people's imaginations, more than 150 years after it was completed. Every year, approximately five thousand fans of the novel visit the moor, which is less than 10km from the Brontë Museum.

Those opposed to the wind turbine scheme, including local residents and the locally-run Brontë society, think the landscape of Thornton Moor should remain untouched by turbines. Anthea Orchard, who chairs the Thornton Moor Wind Farm Action Group, told a newspaper: "It is devastating for everybody and everything. The damage to the landscape is going to be irreparable. Our whole way of life is going to suffer and we will fight it to the death".

Source: www.geographyinthenews.co.uk

Figure 2b: Account of a new plan for Thornton Moor

2. (a)(i) Analyse **Figure 2** to find **qualitative** and **quantitative** evidence showing how Thornton Moor is valued in varying ways by different groups of people. [4]

[insert 8 lines]

(ii) Outline **three** reasons why many people in some rural regions have the problem of low annual incomes. [3]

[insert 6 lines]

(b) Assess the relative importance of demographic and social impacts of counter-urbanisation for rural areas. [13]

Within your answer to question 2(b), you are required to demonstrate your ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

[insert 26 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Section B – Fieldwork in Physical and Human Geography

*Answer **all** questions.*

*In your answers to Section B you should include evidence from **your** fieldwork investigations in physical geography and human geography.*

Figure 3: A land use map of a UK town in 1967

3. An A level Geography student decided to survey the current land uses in a small town. To help his investigation, he consulted the results of a study from 48 years ago, shown in **Figure 3,** as the starting point for his investigation.

(a) Compare the distribution of shopping areas and public buildings in **Figure 3.** [3]

[insert 6 lines]

(b) Suggest possible improvements he could make to the data collection categories used in **Figure 3** before carrying out his own survey of current land uses [4]

[insert 8 lines]

(c) Explain how he could use primary and secondary sources of data to survey current land uses. [5]

[insert 10 lines]

(d) Suggest two alternative techniques the student could use to present the current land use data shown in **Figure 3**. Justify your choices. [8]

[insert 16 lines]

4. Assess the importance of planning to the success of your fieldwork investigation in **physical** geography.

*You should state clearly the title of your **physical** geography investigation* [10]

[insert 20 lines]

5. With reference to your fieldwork investigation in human geography, to what extent was your sampling technique successful?

*You should state clearly the title of your **human** geography investigation* [10]

[insert 20 lines]

Component 2: Changing Places

Mark Scheme

Guidance for Examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him / her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.
The mark scheme for this component includes both point-based mark schemes and banded mark schemes.

Point-based mark schemes

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Annotations must reflect the mark awarded for the question. The targeted assessment objective (AO) is also indicated.

Banded mark schemes

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response. This is followed by an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this component. The targeted AO(s) are also indicated, for example AO2.1c.

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.
If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), the qualities of each mark band will be discussed in detail. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The mark scheme reflects the layout of the examination paper. Mark all questions in Section A, and Section B.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Section A: Changing Places

1. (a) (i) Use *Figure 1* to calculate the interquartile range for the employment rate in England for April 2012. Show workings in your answer and insert the interquartile range calculated in the final row in the April 2012 column above.	AO1	AO2.1a	AO2.1	AO2.1c	AO3.1	AO3.2	Total
					4		**4**

Indicative content

Region	Employment rate; Aged 16-64 (persons percentage) in 2012	Rank
North East	66.5	1
North West	69.2	3
Yorkshire and The Humber	69.7	5
East Midlands	71.3	6
West Midlands	68.4	2
East of England	74.5	9
London	69.5	4
South East	74.4	8
South West	73.9	7

Population size:9
Lower quartile (xL): 68.8
Upper quartile (xU): 74.15
Interquartile range (xU-xL): 5.35

Marking Guidance

Workings showing how the interquartile range was calculated by ranking data in order of size from either lowest to highest or highest to lowest (1) and dividing them into four equal groups of quartiles.
The upper quartile (UQ) is the $\frac{(n+1)}{4}$ th item in the data set when arranged in rank order (1)
The lower quartile (LQ) is the $3\frac{(n+1)}{4}$ th item in the data set when arranged in rank order (1)
The interquartlile range (IQR) = UQ_LQ (1)

1 (a) (ii) Use the interquartile range results in *Figure 1* to interpret changes in employment rate in England between April 2008 and April 2012.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
						2	**2**

Indicative content

The interquartile range indicates the spread of the middle 50% of the data set around the median value. The lower interquartile range in April 2012 compared to April 2008 indicates that the employment data are more clustered/less dispersed around the mean in 2012 than in 2008 (1)
The employment rate in April 2012 shows less variation than the employment rate in 2008 (1)

However the extremes at either end of the scale are excluded.

Marking Guidance

Credit alternative suggestion(s) if it genuinely shows that a conclusion has been drawn

1.(b) Suggest how the growth of quaternary industries could have impacts for: • **the local physical environment** • **how a place is marketed.**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
In each case, award 1 mark for any of the following, up to a maximum of 2 marks; with a maximum of 2+2			4				**4**

Local physical environment

- Less pollution than traditional / smokestack industries (1 mark)
- Environment may be improved by landscaping (business parks) (1 mark)
- High levels of traffic congestion near hi-tech clusters (1 mark)
- Demand for new homes / offices so green belt lost / threatened (1 mark)

Credit other valid environmental suggestions.

How a place is marketed

- Promotion of a contemporary / futuristic / technological image of place (for investors / tourists) (1 mark)
- Advertising the 'green credentials' of non-polluting / landscaped place (for home-owners) (1 mark)
- Quaternary work associated with professionals / middle-classes (for workers) (1 mark)

Credit any other valid points.

1. (c) To what extent does out of town retailing pose a threat to central urban areas?	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			3			**10**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the character of out of town retailing, the resultant threats to central urban areas and possible management of those threats. This may include:

- Out-of-town supermarkets and hypermarkets have grown since 1980s often at the expense of town centres. Stores can gain a larger footprint, economies of scale and offer lower prices, accessibility and convenience, huge range of goods under one roof
- Many smaller towns have suffered loss of traditional retail and CBD decline
- This has resulted in the 'doughnut effect' with town centres suffering from increases in vacant retail units, declining environmental quality and a decrease in their social value
- Lack of investment by large companies has resulted employment issues
- Some smaller towns have regenerated through a shift towards entertainment and a diversity of the retail experience (e.g. pop up markets and themed events), in central urban areas
- Some towns are able to improve their physical environment by pedestrianisation, Business Improvement Districts and specialised area such as creative quarters
- Larger cities have often strengthened their retailing (new flagship developments and malls) and diversified into entertainment, or office and service growth

AO2

AO2 demonstrates knowledge and understanding to judge the extent to which out of town retailing poses a threat to central urban areas. Relevant responses may include:

- The extent of the different types of threat to central urban areas, for example social and economic threats
- The extent of the threats to central urban areas of different scale, for example small towns or large cities
- The extent of the threats in different central urban areas, for example S.E. England and areas of industrial decline
- The extent of the threat relative to others e.g. it could be argued that online shopping is a greater threat, or threatens out-of-town retail areas equally
- The extent of the threat relative to the resilience of the central urban area, for example some places have been highly resilient to threat and have adapted well, whereas others have reached a tipping-point / threshold so further decline inevitable

Near the lower end, there will be limited assessment of the threats and little of the underlying assumptions contained in the question.

Credit any other valid approaches.

Award the marks as follows:		
	AO1 (7 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of out-of-town retail and central urban areas*	*Applies knowledge and understanding to appraise / judge the threat posed by out of town retailing*
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of the character of out of town retailing Demonstrates detailed and accurate knowledge and understanding of the threats posed to central urban areas by out of town retailing Demonstrates detailed and accurate knowledge and understanding of the threats posed to central urban areas by other forms of retailing and technological developments Well annotated sketches / diagrams / maps may be used and should be credited	3 marks Applies knowledge and understanding to produce a thorough and coherent evaluation that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent evaluation of the extent to which out of town shopping poses a threat to central urban areas Applies knowledge and understanding to produce a thorough and coherent evaluation of the extent to which other forms of retailing and technological developments pose threats to central urban areas

2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of the character of out of town retailing Demonstrates accurate knowledge and understanding of the threats posed to central urban areas by out of town retailing Demonstrates accurate knowledge and understanding of the threats posed to central urban areas by other forms of retailing and technological developments Sketches / diagrams / maps may be used and should be credited	2 marks Applies knowledge and understanding to produce a coherent but partial evaluation that is supported by evidence Applies knowledge and understanding to produce coherent but partial evaluation of the extent to which out of town shopping poses a threat to central urban areas Applies knowledge and understanding to produce a coherent but partial evaluation of the extent to which other forms of retailing and technological developments pose threats to central urban areas
1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of the character of out of town retailing Demonstrates a limited knowledge and understanding of the threats posed by central urban areas by out of town retailing Demonstrates limited knowledge and understanding of the threats posed to central urban areas by other forms of retailing and technological developments Basic sketches / diagrams / maps may be used and should be credited	1 mark Applies knowledge and understanding to produce an evaluation with limited coherence and support from some evidence Applies knowledge and understanding to produce a limited evaluation of any threat from out of town retailing Limited application of knowledge and understanding to produce a limited evaluation of the extent to which other forms of retailing and technological developments pose threats to central urban areas
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

2. (a) (i) Analyse *Figure 2* to find *qualitative and* quantitative evidence showing how Thornton Moor is valued in varying ways by different groups of people.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
In each case, award 1 mark for any of the following up to a maximum of 2 marks; that is a maximum of 2+2 marks						4	**4**

Qualitative data

- Demonstrates analytical skill by selecting a quotation / viewpoint / representation as qualitative evidence of the how landscape is valued (1 mark) for instance, Anthea Orchard says she will 'fight it to the death' in her interview because she values the landscape (1 mark)

Quantitative data

- Uses quantitative data, for example 5,000 visitors a year (1 mark) to suggest the landscape is valued for romantic / heritage / visitor reasons (1 mark)

Credit any other valid points.

2. (a) (ii) Outline *three* reasons why many people in some rural regions have the problem of low annual incomes.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for each of the following reasons with a maximum of 3 marks	3						**3**

Indicative content

- Declining agricultural employment (1 mark) from such reasons as mechanisation (1 mark) and / or set-aside (1 mark)
- The post-productive countryside (changing practices) (1 mark)
- Existing tourism may be seasonal (1 mark), so low annual income (1 mark), zero hours contract (1 mark)
- Underemployment issues (1 mark), often related to particular groups in family, so lowers overall family income (1 mark)
- Rural incomes may be part-time (shops, tourism) (1 mark) so low annual income (1 mark)
- Lack of skills / education might limit employment (1 mark) thus low incomes (1 mark)

Credit any other valid points.

2 .(b) Assess the relative importance of demographic and social impacts of counter-urbanisation for rural areas.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	7			6			**13**

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the demographic and social impacts of counter-urbanisation for rural areas. This may include:

- Knowledge of the concept of counter urbanisation which includes the social and demographic process of movement from urban to rural areas
- Demographic changes are due to migration and also changes in life expectancy and have an impact on rural population structure
- Social changes may include movement of professionals / different social economic groups (SEGs) into rural regions
- Also credit changes in the character of places and services linked with social changes

The impacts of these changes may include:

- In-migration of young families, with professional parents (may be self-employed or working in service industries) that require services such as schools
- In-migration of retirees from urban areas who may require health services
- Out-migration of young people (though this varies according to isolation / remoteness of areas) and problems of affordable housing
- Naturally ageing population occurs as life expectancy increases and birth rate falls
- Gentrification of villages takes place especially in commuter belt / urban fringes
- Rising house prices in popular areas for migrants may push out lower-income groups, accelerating social change further
- Movement of A8 migrants into some farming areas so increasing ethnic / linguistic diversity
- There are some social reactions attached to this / social tensions in community

AO2

Candidates demonstrate application of knowledge and understanding through an assessment of the relative importance of demographic and social impacts of counter-urbanisation for rural areas. Relevant responses may include:

- Assessment of how these different impacts are interrelated (professional migrants drive housing shortages and accelerate out-migration) and their relative importance
- Assessment of the relative importance of demographic and social impacts in different types of rural place as changes may be different for remote and urban fringe areas
- Assessment which considers that the impacts may on balance be regarded as positive or negative with implications for community sustainability
- Assessment that considers that some impacts can cause thresholds to be crossed (eg local schools / colleges shut down due to selective out-migration)
- Assessment of how the relative importance of demographic and social impacts may change over time

Near the lower end, there will be limited assessment of the relative importance of the impacts and little of the underlying assumptions contained in the question.

Credit any other valid approaches.

Award the marks as follows:

	AO1 (7 marks)	**AO2.1c (6 marks)**
Band	*Demonstrates knowledge and understanding of counter-urbanisation and its associated demographic and social impacts for rural areas*	*Applies knowledge and understanding to appraise through assessing the relative importance of demographic and social impacts of counter-urbanisation for rural areas*
3	5-7 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of counter-urbanisation Demonstrates detailed and accurate knowledge and understanding of the demographic and social impacts for rural areas, with balanced coverage of demographic and social impacts Well annotated sketches / diagrams / maps may be used and should be credited	5-6 marks Applies knowledge and understanding to produce a thorough and coherent assessment that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent assessment of the relative importance of demographic and social impacts of counter-urbanisation for rural areas Applies knowledge and understanding to assess the influence of time and place on relative importance of demographic and social impacts of counter-urbanisation for rural areas Applies knowledge and understanding to assess the role of inter-relationships in the relative importance of demographic and social impacts of counter-urbanisation for rural areas

2	3-4 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of counter-urbanisation Demonstrates accurate knowledge and understanding of the demographic and social impacts for rural areas Sketches / diagrams / maps may be used and should be credited	3-4 marks Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial assessment of demographic and social impacts and their relative importance, supported by some evidence Applies knowledge and understanding to partially assess the influence of time and place on relative importance of demographic and social impacts of counter-urbanisation for rural areas Applies knowledge and understanding to make a partial assessment of the role of inter-relationships in the relative importance of demographic and social impacts of counter-urbanisation for rural areas
1	1-2 marks Demonstrates limited knowledge and understanding through a limited number of undeveloped examples Demonstrates limited knowledge and understanding of counter-urbanisation Demonstrates limited knowledge and understanding of demographic and social impacts for rural areas Basic sketches / diagrams / maps may be used and should be credited	1-2 marks Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence Limited application of knowledge and understanding to assess the relative importance of demographic and social impacts supported by some evidence Limited application of knowledge and understanding to assess the influence of time and place on relative importance of demographic and social impacts of counter-urbanisation for rural areas Limited application of knowledge and understanding to assess the role of inter-relationships in the relative importance of demographic and social impacts of counter-urbanisation for rural areas
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section B: Fieldwork Investigation in Physical and Human Geography

3. (a) Compare the distribution of shopping areas and public buildings in *Figure 3.*	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following up to a maximum of 3 marks; 1 mark only may be awarded for quantification / use of data as shown.					3		**3**

Indicative content

- Mostly found in the central area west of Charles Street and south of High Street whilst public buildings are to the south of the central area (1 mark)
- Shopping areas located in the centre whilst public buildings are scattered (1 mark)
- Shopping areas also line a major road heading from the centre towards the southeast whist public buildings have no definite link to lines of transport (1 mark)

Credit any other valid points.

3. (b) Suggest possible improvements he could make to the data collection categories used *in Figure 3* before carrying out his own survey of current land uses.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following up to a maximum of 4 marks						4	**4**

Indicative content

- Different types of shop might be recorded separately e.g. comparison and convenience (1 mark)
- Tourist functions may have developed since 1960s (1 mark)
- Industry may have declined leaving derelict areas that require a new category (1 mark)
- Shops may have flats above which could require a mixed land use category (1 mark)
- Different types of residential could be recorded e.g. flats and terraced housing (1 mark)

3. (c) Explain how he could use primary and secondary sources of data to survey current land uses.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
					5		**5**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

- Primary sources include direct field observations recorded on a base map undertaking a land use survey using the classification system. These can be accompanied by photographs. Where land use is unclear, or access is not possible, interviews could be carried out with local residents.
- Secondary sources include Street View on Google Earth which provides clear images of land use along all major roads in large urban areas. Ordnance Survey and GOAD maps can be used provided they are up to date. Published sources from local government if they are recent. Previous studies may be of use provided they are relatively recent

Credit any other valid approaches.

Award the marks as follows:

Band	Marks	
3	**4-5 Marks**	Clear explanation containing a balance of primary and secondary sources Clear reference to each source's relevance for providing land use data
2	**2-3 Marks**	Some explanation of primary and secondary sources (may lack balance) Outline tends to be descriptive with limited reference to the relevance of the sources
1	**1 Marks**	Simple explanation of one or two sources (may not distinguish primary and secondary) Outline makes no reference to the relevance of the sources
	0 marks	Response not creditworthy or not attempted

3. (d) Suggest two alternative techniques the student could use to present the current land use data shown in Figure 3. Justify your choices.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
				4	4		**8**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO2

Candidates demonstrate application of knowledge and understanding through the justification of two alternative techniques the student could use to present land use data rather than merely suggesting alternatives. They may discuss how the shading gradations used in Figure 3 are not very distinct from one another. Relevant responses may include:

- Coloured land use categories would make it easier to distinguish between different land uses. This would make it easier to identify patterns and anomalies
- The use of more distinctive black and white shading (residential and commercial are similar) would make the map clearer and therefore make it easier to identify patterns and anomalies
- Use of geo-located data / embedded images or charts using Google Earth would enable the results and map to be manipulated. In addition, it would make it easier to explain any patterns that might emerge
- Annotated photographs to show characteristics of each zone would help to give the results context. This would also help to explain any patterns that might emerge

Near the lower end, there will be limited justification of the two alternative techniques suggested.

Credit any other valid approaches.

AO3

AO3 content encompasses a knowledge and understanding of alternative techniques of producing a land use map or alternative techniques of presenting the information. This may include:

- Coloured land use categories to distinguish between different land uses
- The use of more distinctive black and white shading (residential and commercial are similar)
- Use of geo-located data / embedded images or charts using Google Earth
- Annotated photographs to show characteristics of each zone

Award the marks as follows		
	AO2.1c (4 marks)	**AO3.1 (4 marks)**
Band	*Applies (AO2.1c) to appraise / judge through justifying the choice of two alternative techniques*	*Demonstrates use of alternative methods and techniques*
3	3-4 marks Applies knowledge and understanding to produce a thorough and coherent justification that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent justification of the selection of two techniques, which shows consideration of the advantages of alternative techniques	3-4 marks Accurate account of two appropriate alternative techniques that could be used
2	2 marks Applies knowledge and understanding to produce a coherent but partial justification that is supported by some evidence Applies knowledge and understanding to produce a coherent but partial justification of the selection of two techniques, which shows consideration of the advantages of the alternative techniques	2 marks A partial account of two appropriate alternative techniques that could be used
1	1 mark Applies knowledge and understanding to produce a justification with limited coherence and support from some evidence Limited application of knowledge and understanding to justify the selection of one or two alternative techniques	1 mark Limited account of one or two appropriate alternative techniques that could be used
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

4. Assess the importance of planning to the success of your fieldwork investigation in *physical* geography. ***You should state clearly the title of your physical geography investigation*.**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	5			5			**10**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the planning stage of a fieldwork investigation. This may include:

- Researching the theoretical background of the physical by using textbooks (hard copy or online), academic journals and geography magazines
- Selecting the appropriate fieldwork questions to be investigated using the theoretical background established in the research
- Deciding what data is required to investigate the fieldwork questions selected and the sampling process that is required for its collection
- Deciding on the techniques and equipment to be used to collect data and the recording process
- Identifying and assessing the risks and ethical issues involved in the fieldwork investigation.

AO2

Candidates demonstrate knowledge and understanding to assess the importance of planning to the success of the stated fieldwork investigation. Relevant responses may include:

- Researching the theoretical background is important as it provides understanding and allows informed decisions to be made about the formulation of fieldwork questions
- Selection of appropriate fieldwork questions is important as it provides an academic focus and provides a framework for the collection of relevant data
- Deciding on the appropriate data to collect and formulating a sampling process is important as it provides valid information that is not biased
- Deciding on the equipment needed and the recording process is important as it aids in the collection of more accurate data that can then be processed and analysed
- Identifying and assessing risks is important as it provides for safe fieldwork
- Overall planning is important as it overcomes time constraints

If no direct references are made to a specific investigation that candidates have completed, answers should not be credited higher than band 1 in AO2.

Credit any other valid points

Award the marks as follows:		
	AO1 (5 marks) *Demonstrates knowledge and understanding of the planning stage in the fieldwork investigation*	**AO2.1c (5 marks)** *Applies knowledge and understanding through assessing the importance of the planning process in the fieldwork investigation*
Band		
3	4-5 marks Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples Demonstrates detailed and accurate knowledge and understanding of the features of the planning stage of an investigation Demonstrates detailed and accurate knowledge and understanding of risk and ethical issues and the use of a confident theoretical and contextual background to produce well-researched question(s) Well annotated sketches / diagrams / maps may be used and should be credited	4-5 marks Applies knowledge and understanding from their own fieldwork investigation to produce a thorough and coherent assessment that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent assessment of the importance of planning to the success of their investigation Applies knowledge and understanding to produce a thorough and coherent assessment of the importance of formulating appropriate fieldwork questions and collecting relevant, unbiased and accurate data Applies knowledge and understanding to produce a thorough and coherent assessment of the importance of safety in fieldwork in their own fieldwork investigation
2	2-3 marks Demonstrates accurate knowledge and understanding through the use of appropriate and well-developed examples Demonstrates accurate knowledge and understanding of the features of the planning stage of an investigation Demonstrates accurate knowledge and understanding of risk and ethical issues and use of a secure theoretical and contextual background to produce defined research question(s) Sketches / diagrams / maps may be used and should be credited	2-3 marks Applies knowledge and understanding from their own fieldwork investigation to produce a coherent but partial assessment that is supported by evidence Applies knowledge and understanding to produce a coherent but partial assessment of the importance of planning to the success of their investigation Applies knowledge and understanding to produce a coherent but partial assessment of the importance of formulating appropriate fieldwork questions and collecting relevant, unbiased and accurate data Applies knowledge and understanding to produce a coherent but partial assessment of the importance of safety in fieldwork in their own fieldwork investigation

1	1 mark Demonstrates limited knowledge and understanding through the use of a limited number of undeveloped examples Demonstrates limited geographical knowledge and understanding of the features of the planning stage of an investigation Demonstrates limited knowledge and understanding of risk and ethical issues and use of a limited theoretical and contextual background to produce research question(s) Basic sketches / diagrams / maps may be used and should be credited	1 mark Applies knowledge and understanding from their own fieldwork investigation to produce an assessment with limited coherence and support from some evidence Limited application of knowledge and understanding to assess the importance of planning to the success of an investigation Limited application of knowledge and understanding to assess the importance of formulating appropriate fieldwork questions and collecting relevant, unbiased and accurate data Limited application of knowledge and understanding to assess the importance of safety in a fieldwork investigation
	0 marks Response not creditworthy or not attempted of context	0 marks Response not creditworthy or not attempted

5. With reference to your fieldwork investigation in human geography, to what extent was your sampling technique successful? ***You should state clearly the title of your human geography investigation.***	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
				6	4		**10**

Indicative Content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO3

AO3 content encompasses investigating questions and issues and in the context of the question refers to sampling techniques appropriate to the stated human geography investigation. This may include:

- Random sampling - this form of sampling is generated randomly by using random number tables or the random number button on a calculator, with every member of the population having an equal chance of being selected
- Systematic sampling - the sample is collected in a consistent manner by selecting, for example, every tenth person or house
- Stratified sampling - this form of sampling requires knowledge about the target population, with samples taken from sub-sets of the total population
- Pragmatic sampling – based on practical reasons, for example you cannot trespass on private property

Within these techniques there are three methods: point, line and area:

- Point - involves choosing individual points and sampling at this points
- Line - involves taking measurements along a line
- Area - the total area under investigation is divided into small sub-areas

AO2

Candidates demonstrate knowledge and understanding to give possible explanations for and against the success of the chosen sampling technique in the stated human geography investigation. Relevant responses include:

- The extent to which the technique helped to avoid bias in the sample taken and made sure that the data was representative of the population from which it was drawn
- Whether the technique was a good analytical tool and allowed valid conclusions to be drawn from the data collected
- Whether the technique was practicable
- Whether the sample size was appropriate
- The extent to which people were willing to participate in data collection using the chosen technique
- The extent to which the spatial and temporal characteristics of the sample collected by the technique impacted on its reliability

If no direct reference is made to a specific investigation that candidates have completed, answers should not be credited higher than Band 1 in AO2

Answers that score well will:

- Evaluate the chosen sampling technique by giving reasons for using the technique
- Evaluate the strengths of the chosen technique, along with the limitations and possible improvements that could have been made

Near the lower end, answers will offer limited evaluation of the chosen method.

Credit any other valid points.

Award the marks as follows:		
Band	**AO2.1c (6 marks)** *Applies knowledge and understanding to judge to what extent through evaluating the success of a chosen sampling technique*	**AO3.1 (4 marks)** *Demonstrates use of one sampling technique in the fieldwork investigation with evaluation based on evidence*
3	5-6 marks Applies knowledge and understanding from their own fieldwork investigation to produce a thorough and coherent evaluation that is supported by evidence Applies knowledge and understanding from their own fieldwork investigation to produce a thorough and coherent evaluation to judge the extent to which the sampling technique provided reliable data Applies knowledge and understanding from their own fieldwork investigation to produce a thorough and coherent evaluation to judge the extent to which the sampling technique allowed valid conclusions to be reached Applies knowledge and understanding from their own fieldwork investigation to produce a thorough and coherent evaluation to judge the extent to which the sampling technique was practicable in the collection of data	3-4 marks Demonstrates evidence that fieldwork skills were used appropriately and effectively to investigate geographical questions and issues Demonstrates through evaluation of the experience, the practical advantages of a sampling technique supported by appropriate evidence from their investigation
2	3-4 marks Applies knowledge and understanding from their own fieldwork investigation to produce a coherent but partial evaluation that is supported by some evidence Applies knowledge and understanding from their own fieldwork investigation to produce a coherent but partial evaluation to judge the extent to which the sampling technique provided reliable data Applies knowledge and understanding from their own fieldwork investigation to produce a coherent but partial evaluation to judge the extent to which the sampling technique allowed valid conclusions to be reached Applies knowledge and understanding from their own fieldwork investigation to produce a coherent but partial evaluation to judge the extent to which the sampling technique was practicable in the collection of data	2 marks Demonstrates partial evidence that fieldwork skills were used appropriately and effectively to investigate geographical questions and issues Demonstrates partial evaluation of the experience and the practical advantages of a sampling technique partially supported by mostly appropriate evidence from their investigation

1	1-2 marks Applies knowledge and understanding from fieldwork to produce an evaluation with limited coherence and support from some evidence Limited application of knowledge and understanding from fieldwork to judge the extent to which the sampling technique provided reliable data Limited application of knowledge and understanding from fieldwork to judge the extent to which the sampling technique allowed valid conclusions to be reached Limited application of knowledge and understanding from fieldwork to judge the extent to which the sampling technique was practicable in the collection of data	1 mark Demonstrates limited evidence that fieldwork skills were used appropriately and effectively to investigate geographical questions and issues Demonstrates limited evaluation of the experience and the practical advantages of a sampling technique Lack of supporting evidence from their investigation
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted