GCE AS MARKING SCHEME

SUMMER 2022

AS
GEOGRAPHY - COMPONENT 2
B110U20-1

INTRODUCTION

This marking scheme was used by WJEC for the 2022 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCE AS GEOGRAPHY

COMPONENT 2: CHANGING PLACES

SUMMER 2022 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.

Assessment Objective	Strands	Elements
AO1 Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.	N/A	This AO is a single element.
AO2 Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.	N/A	1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.
		1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.
		1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues
AO3 Use a variety of relevant quantitative, qualitative and fieldwork skills to: • investigate geographical questions and issues • interpret, analyse and evaluate data and evidence • construct arguments and draw conclusions.	1 - investigate geographical questions and issues	N/A
	2 - interpret, analyse and evaluate data and evidence	
	3 - construct arguments and draw conclusions	

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) Compare the trends shown in Figure 1. Skills: 3.6	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
Award 1 mark for each valid point					3		**3**

Indicative content

- Downwards trend in both data sets (1)
- England total has declined from approx. 15,000 to just under 6,800 (55% decline) (1)
- SW total has declined from approx. 5,000 to approx. 2,400 (52% decline) (1)
- Steepest decline in both data sets from 2002 to 2008, then slower decline (1)
- Steeper rate of decline in England than rate in SW (1)

Marking guidance

Credit other valid points.

(ii) Suggest **one** way in which the decline in primary employment in rural areas has affected local people. Content: 2.1.3	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
Award up to 3 marks for the development of any of the following points up to a maximum of 3 marks	3						**3**

Indicative content

Candidates are expected to appreciate the impacts of the decline in primary employment in rural areas on the lives of learners and those of others.

- Growing trend for diversification, farmers may switch from being commercial dairy farmers to other activities e.g. campsites, festivals, small-scale ice-cream/cheese producers, holiday homes
- Out-migration of young people as insufficient opportunity to work in the dairy industry
- Political factors relating to pricing of milk having an impact on economic performance of farms
- Smaller farms may be bought out by bigger farms / dairy organisations in an attempt to introduce economies of scale.

Marking guidance

Candidates might make three simple points or develop one/two ideas in more detail; this is acceptable to access full marks.

Credit other valid points.

(b) Examine the impacts of the continuing decline of some urban places. Content: 2.1.4 and 2.1.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	7			3			**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

In focus box 2.1.4, AO1 content encompasses knowledge and understanding of the economic change and social inequalities in deindustrialised urban places. Candidates are expected to appreciate the consequences of the loss of traditional industries and the impact of government policies in deindustrialised places.

- the cycle of deprivation, social exclusion, and lower pollution levels (adaptation, globalisation, identity, interdependence and thresholds) e.g. Lower Don Valley, Teesside, London Docklands
- the impact of the loss of secondary industries in urban areas including unemployment (adaptation, globalisation, identity, interdependence and thresholds) e.g. Lower Don Valley, Teesside, London Docklands
- a range of local / national / European government policies including retraining, economic (local to global), environmental policies and how these might be expected to stimulate tertiary growth and investment by foreign MNCs (adaptation, globalisation, identity, interdependence and thresholds) e.g. Lower Don Valley, Teesside, Olympic Park (London)

Meanwhile in focus box 2.1.5, AO1 content encompasses knowledge and understanding of the complexity of the changing service economy, candidates should be taught about the impacts of the continuing decline for some central urban places. Candidates are expected to appreciate the impact of out-of-town retailing and office-parks, internet shopping and central entertainment in contributing to these impacts on a range of stakeholders.

- continuing decline of some central urban places (adaptation, globalisation, identity, interdependence and thresholds) e.g. Blackpool, Detroit
- out-of-town retailing and office-parks (adaptation, globalisation, identity, interdependence and thresholds) (e.g. Bicester Village, Meadowhall, the Cambridge Science Park, La Defense, Paris, Amsterdam / Akerpoort))
- internet shopping (adaptation, globalisation, identity, interdependence and thresholds) (amazon.co.uk / amazon.com)
- central entertainment (adaptation, globalisation, identity, interdependence and thresholds) (Santander Arena, Reading and Nottingham Motorpoint Arena; Oxford Playhouse Theatre, the Arts Club Liverpool, Rockefeller Centre, New York City)
- gentrification of one area of a central place may well be contributing to decline in another e.g. Sheffield's redevelopment of The Moor has contributed to the decline of the original indoor market area (inequality, threshold)
- socio-economic change
- political change
- environmental change.

AO2
AO2 demonstrates knowledge and understanding to judge the impacts of decline of urban areas.
Relevant responses may include:

- The extent of the different types of impacts on central urban areas, for example social and economic threats (mitigation, sustainability)
- The extent of the impacts on central urban areas of different scale, for example small towns or large cities
- The extent of the impacts in different central urban areas, for example Brighton, Winchester and San Francisco as compared to areas of industrial decline Sheffield and Birmingham (adaptation)
- The extent of the impacts relative to others e.g. it could be argued that online shopping is a greater threat, or threatens out-of-town retail areas equally (sustainability, thresholds)
- The extent of the impacts 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 (interdependence, sustainability).

Marking guidance

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

Credit other valid points.

Award the marks as follows:		
	AO1 (7 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of the impacts of the continuing decline of some urban places*	*Applies knowledge and understanding to appraise / judge the impacts of the continuing decline of some urban places*
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 impacts of the continuing decline of some urban places Well annotated sketches / diagrams / maps may be used and should be credited	**3 marks** Applies knowledge and understanding to produce a thorough and coherent examination that is supported by evidence Applies knowledge and understanding to produce a thorough and coherent examination of the extent to which continuing decline poses a threat to (have a negative impact on) 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 impacts of the continuing decline of some urban places Sketches / diagrams / maps may be used and should be credited	**2 marks** Applies knowledge and understanding to produce a coherent but partial examination that is supported by evidence Applies knowledge and understanding to produce coherent but partial examination of the extent to which continuing decline poses a threat to (have a negative impact on) 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 impacts of the continuing decline of some urban places Basic sketches / diagrams / maps may be used and should be credited	**1 mark** Applies knowledge and understanding to produce an examination with limited coherence and support from some evidence Applies knowledge and understanding to produce a limited examination of how threats from continuing decline have a negative impact on urban areas
	0 marks Response not creditworthy or not attempted	**0 marks** Response not creditworthy or not attempted

2. (a) (i) Use **Figure 2** to identify ways in which Hartlepool Council are planning to regenerate Hartlepool Marina. Content: 2.1.8 Skills: 8.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					4		**4**

Indicative content

- Distinctive architecture
- Extensive landscaping for pedestrian access to waterfront
- Covered public areas all-weather / year-round public space
- Tree planting

Maximum 1 mark for a list
Credit other valid suggestions.

Award the marks as follows:

Band	Marks	
3	**3-4**	Detailed grasp of ways in which Hartlepool Marina is to be regenerated with strong supporting evidence to illustrate
2	**2**	Clear grasp of ways in which Hartlepool Marina is to be regenerated with evidence to illustrate
1	**1**	Limited grasp of ways in which Hartlepool Marina is to be regenerated
	0	Response not creditworthy or not attempted.

(ii) Calculate the percentage change in visitor numbers between 2010 and 2011; show your working and give your answer to **one** decimal place. Skills: 2.3	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					3		**3**

Indicative content

3.64 – 3.42 / 3.42 x 100 = 0.22 / 3.42 x 100 = 6.4 % increase

- Award (1) for each correct stage of the calculation (max 2 marks)
- correct answer to 1 decimal place (1)
- identification that this represents an increase (1)

Marking guidance

Credit alternative route to correct answer.

(b) Outline **one** on-going challenge in places where regeneration / rebranding is absent **or** has failed **or** causes overheating. Content: 2.1.7 and 2.1.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	4						**4**

Indicative content

The specification suggests that the regeneration results in changing economic and social characteristics.

In rural places where strategies have either not taken place or have not worked it is likely to see:

- challenges related to change and inequality related to housing, transport and services (including Broadband) e.g. dial-up internet in parts of the Lake District having a negative impact on B&B owners, shortage of appropriate housing to meet the needs of elderly retirement population in Norfolk (adaptation, globalisation and sustainability)
- challenges varying in time and scale associated with counter-urbanisation and second-home ownership e.g. Peak District's young adults unable to buy properties as these are increasingly being purchased either for wealthy residents from peripheral towns & cities (e.g. Manchester / Sheffield / Stoke) either to live in and commute or as second-homes (identity)
- challenges in areas which have been left marginalised by failed or absent regeneration and / or rebranding schemes (north Cornwall, rural Teesside) (sustainability).

In urban places where strategies have either not taken place or have not worked it is likely to see:

- gap between richest and poorest widening (Grenfell Tower, Kensington and Chelsea where there has not been regeneration as arguably no need to do so) adaptation, identity, inequality, sustainability
- relatively wealthier residents have moved out leaving the poorest remaining (Norfolk Park, Sheffield) adaptation, identity, inequality, sustainability
- rise of private landlords to address shortage of local authority housing, pressure on private rental sector to address issues of affordability identity, inequality, sustainability
- wealthier residents have made use of services aimed at poorer people e.g. Sure Start centres and childcare facilities (Five Ways, Brighton) adaptation, identity, inequality, sustainability
- numbers reliant on low incomes, government benefits including universal credit do not provide sufficient threshold for multiplier effect to take place inequality, sustainability
- failed strategies to rebrand have left areas of wasteland in cities, money has been wasted and local communities have no confidence in local councils to provide for their needs (Sheffield's torn down Don Valley Stadium) inequality, sustainability
- at a local level, availability of capital (public and private) to finance regeneration can be very significant (inequality)
- neighbourhoods where re-branding and regeneration have been particularly successful have caused 'overheating' within the housing market so that local people are priced out, e.g. Hotwells, Bristol; Jericho, Oxford; Stoke Newington, London adaptation, identity, inequality, sustainability.

Marking guidance

Credit other valid approaches and full range of exemplification

Award the marks as follows

Band	Marks	
3	**3-4**	Detailed grasp of one challenge with supporting evidence to illustrate evidence or extent.
2	**2**	Clear grasp of one challenge.
1	**1**	Limited grasp of one challenge.
	0	Response not creditworthy or not attempted.

(c) Discuss the relative significance of the cultural characteristics of your 'home' and 'contrasting' places. Content: 2.1.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	6			7			**13**

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
Candidates are expected to have studied a 'home' place and a 'contrasting' place; implicit within that is familiarity with the similarities and differences between these two places.

Cultural characteristics (identity) are likely to include:
- Ethnicity & language
- Religion
- Heritage.

Candidates may refer to other characteristics, such as demographic and socio-economic: for example, Irish migration in 19th and 20th centuries, Commonwealth migration during the 1950s and 1960s.

AO2
Candidates demonstrate application of knowledge and understanding through an evaluation of the varying significance of cultural characteristics between two places.

- significance may vary between the cultural characteristics evident in each place (identity)
- significance may vary according to time and scale as recent decline of one characteristic may be replaced by growth of another characteristic which will be less well-established (e.g. emergence of a newly arrived ethnic group as they begin their assimilation into established communities.

Marking guidance

Content will depend on the 'home' and 'contrasting' places selected but place reference should be explicit and generic comments are unlikely to enable answer to proceed into upper bands. Candidates are expected to address explicitly the 'relative significance' element of the question in order to reach Band 3.

Award the marks as follows:		
	AO1 (6 marks)	**AO2.1c (7 marks)**
Band	*Demonstrates knowledge and understanding of the cultural characteristics of 'home' and 'contrasting' places*	*Applies knowledge and understanding to evaluate the significance of the cultural characteristics of 'home' and 'contrasting' places*
3	**5-6 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 cultural characteristics of 'home' and 'contrasting' place. Demonstrates detailed and accurate knowledge and understanding of demographic, socio-economic and cultural characteristics. 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 discussion that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent discussion of the relative significance of the cultural characteristics of 'home' and 'contrasting' places.
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 cultural characteristics of 'home' and 'contrasting' place. Demonstrates accurate knowledge and understanding of demographic, socio-economic and cultural characteristics. Sketches / diagrams / maps may be used and should be credited.	**3-4 marks** Applies knowledge and understanding to produce a coherent but partial discussion that is supported by evidence. Applies knowledge and understanding to produce a coherent but partial discussion of the relative significance of the cultural characteristics of 'home' and 'contrasting' places.
1	**1-2 marks** Demonstrates limited knowledge and understanding through a limited number of undeveloped examples. Demonstrates limited knowledge and understanding of the cultural characteristics of 'home' and 'contrasting' place. Demonstrates a limited knowledge and understanding of demographic, socio-economic and cultural characteristics. Basic sketches / diagrams / maps may be used and should be credited.	**1-2 marks** Applies knowledge and understanding to produce a discussion with limited coherence and support from some evidence. Applies knowledge and understanding to produce a limited discussion of the relative significance of the cultural characteristics of 'home' and 'contrasting' places.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

Section B: Fieldwork in Physical and Human Geography

3: Changing Places

3. (a) (i) Suggest **one** geographical research question relating to gentrification. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	1						**1**

Indicative content

Candidates are expected to be able to define research questions that underpin the context of a field investigation, and there are a range of potential questions that could be investigated here. For example:

- What is the impact of gentrification on property values?
- What is the impact of gentrification on the original population?
- What is the impact of gentrification on local services?

Credit other valid approaches.

(ii) Explain how investigating this question could further students' knowledge and understanding of gentrification. **Enquiry Process Stage 6**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	4						**4**

Indicative content

The content will be dependent upon the nature of the question suggested in 3(a)(i).

For example, if candidates choose to investigate property prices, they may be expected to further understand the impact of the gentrification processes on both properties that have been gentrified as well as those close by with potential for developers to renovate and become part of the gentrification process. Furthermore, as services improve in gentrified areas, even properties which are run down may become more expensive as the area becomes more desirable.

Credit other valid approaches.

Award the marks as follows:

Band	Marks	
3	**3-4**	Detailed knowledge and understanding of this element of the evaluation stage of the enquiry process.
2	**2**	Clear knowledge and understanding of this element of the evaluation stage of the enquiry process.
1	**1**	Limited knowledge and understanding of this element of the evaluation stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(b) (i) Identify **two** potential risk factors that could impact on an investigation into the gentrification of an inner-city area. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

Potential risk factors might include:
- Threatening behaviour from members of the public
- Students getting lost if they are working in unfamiliar surroundings
- Road traffic accident involving students
- Data collection disruption due to adverse weather.

Credit other valid approaches.

(ii) For **one** of the risks identified in **3**(b)(i) above, suggest how it could be reduced. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the risks suggested in 3(b) (i). A likely answer to the issue of threatening behaviour from the public might involve:

- Students will be working in groups (1) of at least three people with a fully functioning and charged mobile phone in which the teacher's phone number is logged for quick access (1)
- Teachers will be based in a central location (1) and students will be working within 200m of this point (1).

Credit other valid approaches

(c) (i) Outline **one** example of primary data that the AS level students could use to investigate the impact of gentrification. **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the question suggested in (a) (i).

Likely sources of data might be:
- Ground floor land use survey (1) to identify the nature of shops and services available to support the local population (1)
- People count (1) to determine the structure of the local daytime population (1)
- Building quality survey (1) to identify renovation and upgrading of properties (1)
- Questionnaire survey (1) to identify the socio-economic characteristics of local residents (1).

Credit other valid approaches suggested by the candidate.

(ii) Justify your choice of the example of primary data outlined in **3**(c)(i). **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
				3			**3**

Indicative content

The content will be dependent upon the nature of the question suggested in 3(c)(i); in the example suggested:
- Candidates might suggest that a ground floor land use survey might reveal a difference in the nature of shops and services used by different demographic cohorts, for example, 'café culture' is associated with a gentrified area; whereas in other areas, there might be a greater number of shops as opposed to services.

Credit other valid approaches suggested by the candidate.

Award the marks as follows:

Band	Marks	
2	**2-3**	Clear knowledge and understanding of the data collection stage of the enquiry process.
1	**1**	Limited knowledge and understanding of the data collection stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(d) (i) Identify the median house price value for 2020. Skills: 2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					1		**1**

Indicative content

£386,000 (1) accept 386

(ii) Calculate the interquartile range for the house prices data for 2020; show your working. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					3		**3**

Indicative content

The formula for interquartile range may be used: UQ – LQ (n+1)/4 - 3(n+1)/4

In this case, 3rd piece of data – 9th piece of data (1)
i.e. £428,000 – £265,000 (1)
= **£163,000** (1) accept 163

Alternatively, the IQR may be calculated as the **difference between the median** of the top 50% of the data **and the median** of the lower 50% of the data.

In this case:
- the median of the upper 50% of the data (UQ) is 425 + 428 / 2 = 853 / 2 = 426.5 (1)
- the median of the lower 50% of the data (LQ) is 325 + 265 / 2 = 590 / 2 = 295 (1)

The IQR therefore is UQ – LQ = 426.5 – 295 = 131.5 (1)

Credit other valid approaches.

(iii) Suggest what the difference in the interquartile ranges for 2010 and 2020 indicates about property price changes in Redcliffe. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					2		**2**

Indicative content

The IQR is smaller in 2010 than in 2020 (1) which suggests that there is more clustering of property prices in 2010 (1) and that there is a greater disparity in 2020 (1).
The greater disparity indicated by the IQR value for 2020 (> 3 times greater than the IQR value for 2010) suggests that not all properties have been gentrified (1).

Credit other valid approaches.

4: Coastal Landscapes

4. (a) (i) Suggest **one** geographical research question relating to wave characteristics. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	1						**1**

Indicative content

Candidates are expected to be able to define research questions that underpin the context of a field investigation, and there are a range of potential questions that could be investigated here.

For example:
- What are the factors affecting wave characteristics (wave height, frequency, wavelength) along a stretch of the North Yorkshire coast
- How do wave height / frequency / wavelength affect the landscape of the North Yorkshire coast?
- How do wave characteristics vary seasonally in this location?

Credit other valid approaches.

(ii) Explain how investigating this question could further students' knowledge and understanding of wave characteristics. **Enquiry Process Stage 6**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	4						**4**

Indicative content

By understanding the factors that affect wave characteristics (wave height/ wave frequency and wavelength) candidates will have a better understanding of how these characteristics affect the power of waves and sediment mobility to result in differential rates of erosion/deposition and changing coastal morphology.

Credit other valid approaches.

Award the marks as follows:

Band	Marks	
3	**3-4**	Detailed knowledge and understanding of this element of the evaluation stage of the enquiry process.
2	**2**	Clear knowledge and understanding of this element of the evaluation stage of the enquiry process.
1	**1**	Limited knowledge and understanding of this element of the evaluation stage stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(b) (i) Identify **two** potential risk factors that could impact on an investigation into wave characteristics. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

Potential risk factors might include:
- An unanticipated storm event would make carrying out fieldwork on the beach dangerous
- Unusually high tides (storm surge)
- Critical incident along the coastline which leads to restricted access to the beach.

Credit other valid approaches.

(ii) For **one** of the risks identified in **4**(b)(i) above, suggest how it could be reduced. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the risks suggested in 4(b)(i). A likely answer to the issue of an unanticipated storm event might involve:
- By checking a reliable web-based app (1) for up-to-date, accurate weather forecasting (1) e.g. the Met Office
- By ensuring that students are properly equipped for fieldwork (1) whatever the weather (1)
- Maintaining a safe distance from the swash zone (1).

Credit other valid approaches.

(c) (i) Outline **one** example of primary data that the AS level students could use to investigate wave characteristics. **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the question suggested in 4a)(i).

Likely sources of data might be:

- Using stop watches to count the frequency (1) with which waves are breaking on the shore (1)
- Estimating the height of waves (1) using ranging poles to help estimate wave height when conditions permit (1)
- Assessing the relative strength of swash and backwash by monitoring breaking waves on the shore (1) Measure the time (in seconds) that the swash of each wave moves upwards and note whether the backwash (i) drains into the beach (ii) runs back down the shore before the next wave arrives or (iii) interferes with the swash of the next wave (1).

Credit other valid approaches suggested by the candidate.

(c) (ii) Justify your choice of the example of primary data outlined in **4**(c)(i). **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
				3			**3**

Indicative content

The content will be dependent upon the nature of the question suggested in 4(c)(i); in the first example suggested:

- In order to make a judgement about frequency, it is necessary to gather data on how many waves are approaching the shoreline and the interval between these waves.
- Using this data, frequency can be calculated with the simple calculation:
  frequency = number / time
- Wave frequency data will assist students with wave classification (constructive/destructive), giving an indication of their geomorphological action: constructive waves have a low frequency of between 6 and 8 waves per minute, their strong swash carries material up the beach, forming a berm. Destructive waves have a high frequency between 13 and 15 waves per minute. Their strong downward energy helps erode beach material and cliffs and their strong backwash results in narrow beach profiles.

Credit other valid approaches suggested by the candidate.

Award the marks as follows:

Band	Marks	
2	**2-3**	Clear knowledge and understanding of the data collection stage of the enquiry process.
1	**1**	Limited knowledge and understanding of the data collection stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(d) (i) Identify the median wave frequency value for December. Skills: 2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					1		**1**

Indicative content

16 (1)

(ii) Calculate the interquartile range for the wave frequency data for December; show your working. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					3		**3**

Indicative content

The formula for interquartile range may be used: UQ – LQ (n+1)/4 - 3(n+1)/4

In this case, 3rd piece of data – 9th piece of data (1)
i.e. 19 – 15 (1)
= **4** (1)

Alternatively, the IQR may be calculated as the **difference between the median** of the top 50% of the data **and the median** of the lower 50% of the data.

In this case:
- the median of the upper 50% of the data (UQ) is 19 + 18 / 2 = 37 / 2 = 18.5 (1)
- the median of the lower 50% of the data (LQ) is 15 +15 / 2 = 30 / 2 = 15 (1)

The IQR therefore is UQ – LQ = 18.5 – 15 = 2.5 (1)

Credit other valid approaches.

(iii) Suggest what the difference in the interquartile ranges for July and December indicates about wave frequencies on this beach. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					2		**2**

Indicative content

The IQR is smaller for waves recorded in July which suggests that the waves are much less frequent and more likely to be characteristic of constructive waves (1) whereas the data for December has a higher IQR suggesting that there is greater variation/range in the wave frequencies observed (1).

Credit other valid approaches.

5: Glaciated Landscapes

5. (a) (i) Suggest **one** geographical research question relating to the characteristics of glacial deposits. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	1						**1**

Indicative content

Candidates are expected to be able to define research questions that underpin the context of a field investigation, and there are a range of potential questions that could be investigated here.

For example
- What are the characteristics of the deposits (size, shape (angularity), degree of sorting, stratification)?
- What evidence is there that the deposits are glacial/fluvioglacial in origin?
- Can the direction of ice movement/meltwater flow be determined from the glacial deposits?

Credit other valid approaches.

(ii) Explain how investigating this question could further students' knowledge and understanding of the characteristics of glacial deposits. **Enquiry Process Stage 6**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	4				4		**4**

Indicative content

By understanding the characteristics of the depositional features (size, shape and stratification) candidates will have a better understanding of the complex processes by which rock debris is deposited in glacial environments. Deposition is dependent on changes in energy levels in ice and meltwater environments. The sorted, rounded and stratified sediments laid down by meltwater contrast markedly with the unsorted, angular and unstratified till deposits associated with glacial deposition.

Credit other valid approaches.

Award the marks as follows:

Band	Marks	
3	**3-4**	Detailed knowledge and understanding of this element of the evaluation stage of the enquiry process.
2	**2**	Clear knowledge and understanding of this element of the evaluation stage of the enquiry process.
1	**1**	Limited knowledge and understanding of this element of the evaluation stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(b) (i) Identify **two** potential risk factors that could impact on an investigation into the characteristics of glacial deposits. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

Potential risk factors might include:

- Recent mass movement on the slopes to be surveyed
- Unanticipated poor weather conditions / high winds causing precarious personal safety on exposed slopes.

Credit other valid approaches.

(ii) For **one** of the risks identified in **5**(b)(i) above, suggest how it could be reduced. **Enquiry Process Stage 1**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the risks suggested in 5(b)(i). A likely answer to the issue of a recent mass movement event might involve relocating the fieldwork site to another area of glacial deposition which is potentially less accessible or establishing assurances that all students are properly equipped with sturdy footwear could reduce risks of potential injury.

Credit other valid approaches.

(c) (i) Outline **one** example of primary data that the AS level students could use to investigate the characteristics of glacial deposits. **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative content

The content will be dependent upon the nature of the question suggested in 5(a)(i).

Likely sources of data might be:
- Using Powers Index of Roundness to quantify the shape of glacial deposits
- Measuring the 3 axes of glacial material *in situ* to determine size and sorting of material
- Using a set of graduated sieves to sort sediment samples into different size categories
- Measuring the preferred orientation of glacial deposits with a compass to find the direction that each particle points (the long axis should be parallel to the direction of ice flow).

Credit other valid approaches suggested by the candidate.

(ii) Justify your choice of the example of primary data outlined in **5**(c)(i). **Enquiry Process Stage 2**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
			3				**3**

Indicative content

The content will be dependent upon the nature of the question suggested in 5(c)(i); in the first example suggested:

- To understand the processes and environment of deposition of glacial material, an understanding of the nature of the material deposited is important. By classifying material by degree of angularity, conclusions can be drawn about whether the material was deposited by ice or meltwater. Material that is angular or sub-angular in shape indicates that it has been embedded in the ice during transport and therefore not subjected to rounding or smoothing, whereas material that is more rounded is indicative of attrition during transportation by meltwater prior to deposition.

Credit other valid approaches suggested by the candidate.

Award the marks as follows:

Band	Marks	
2	**2-3**	Clear knowledge and understanding of the data collection stage of the enquiry process.
1	**1**	Limited knowledge and understanding of the data collection stage of the enquiry process, isolated statement.
	0	Response not creditworthy or not attempted.

(d) (i) Identify the median sediment size for the sediment size data taken from the esker; show your working. Skills: 2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					1		**1**

Indicative content

8 (1)

(ii) Calculate the interquartile range for the sediment sample taken from an esker; show your working. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					3		**3**

Indicative content

The formula for interquartile range may be used: UQ – LQ (n+1)/4 - 3(n+1)/4
In this case, 3rd piece of data – 9th piece of data (1)
i.e. 11 – 5 (1)
= **6** (1)

Alternatively, the IQR may be calculated as the **difference between the median** of the top 50% of the data **and the median** of the lower 50% of the data.

In this case:
- the median of the upper 50% of the data (UQ) is 9 + 11 / 2 = 20 / 2 = 10 (1)
- the median of the lower 50% of the data (LQ) is 5 + 6 / 2 = 11 / 2 = 5.5 (1)
- UQ – LQ = 10 – 5.5 = 4.5

(iii) Suggest what the difference in the interquartile ranges for the samples taken from the moraine and esker indicates about sediment sizes in these glacial deposits. Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					2		**2**

Indicative content

The IQR is smaller when looking at the sediment size of material from an esker (1) which suggests that there is greater uniformity of sizes (1) whereas the data collected on terminal moraine reveals less clustering and a greater variety of sizes (1). This uniformity indicates that the material is better sorted in the sample taken from the esker, a feature of meltwater deposition, rather than deposition by ice (1).

Credit other valid approaches.