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Mark Scheme (Results)

Summer 2025

Pearson Edexcel International Advanced Subsidiary Level in Geography (WGE02)
Paper 01 Geographical Investigations

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Important 2506 Country classification / development level terminology:

The IAL Geography Specification currently uses the terms:

- Developing country
- Emerging country
- Developed country.

In answers candidates are likely to use the terminology above.

Other terminology is equally acceptable and should be credited, such as:

- Global North (referring to developed / high-income / HIC countries)
- Global South (referring to developing / low-income / LICs *and* emerging / middle-income / MIC countries)

If terminology such as LDC (Least Developed Country), NIC (Newly Industrialised Country) and other similar terms are used by candidates, credit should be given as long as the meaning is clear and their use is accurate in the context of the question.

Question Number	Identify two erosion processes happening on this coastline **Answer**	Mark
1(a)(i)	**AO2 (2 marks)** • Hydraulic action • Abrasion / corrasion • Attrition • Solution / corrosion /chemical *erosion* Do not credit weathering or mass movement processes Credit other valid answers	**2**

Question Number	Explain one way destructive waves can influence a beach profile. **Answer**	Mark
1(a)(ii)	**AO1 (2 marks)** Award **1** mark for explaining a way destructive waves influence a beach profile, and a further expansion mark, up to a maximum of **2** marks. • Destructive waves have a weak swash and strong backwash (1) which transports sediment out to sea / erodes the beach / creates a steep profile / creates an offshore bar or longshore bar (1). • Destructive waves have a high wave height and short wavelength/ are strong /powerful (1) which means that sediment is removed from the beach/causing a steep beach profile (1). Credit other valid answers.	**2**

Question Number	Assess the influence of geological structure and lithology on the rate of coastal recession. **Indicative content**
1(b)	**AO1 (6 marks) AO2 (2 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Geological structure includes rock hardness, rock resistance, jointing, dip, joint spacing, faulting and folding. Each influences rates of coastal recession.

	• Lithology (igneous, sedimentary and metamorphic rock) affects rates of coastal recession, for example the resistance to erosion and /or sub-aerial of sedimentary versus igneous rock types. • Rate of recession is how fast inland retreat of the coastline occurs. • Alignment of geological structure at the coast can create concordant and discordant coastlines and associated landforms e.g. headlands and bays, which influence rates of recession as wave energy is focussed at headlands due to wave fraction and dissipated in bays where deposition is more likely. • Dip can be seaward or landward. Seaward dip creates gentler cliffs more prone to mass movements like rockfalls, which could affect the rate of erosion. Landward dip creates steeper cliffs that are more prone to erosion processes like abrasion and hydraulic action. • Faulting and folding create weaknesses in rock which is then more prone to weathering and erosion. **AO2** • Geology plays an important role in determining rates of recession, but other natural factors come into play such as fetch, direction which the coast in facing, dominant winds, storms and levels of wave energy. • Coastlines may be influenced by human factors including as coastal engineering which protect landscapes but could interfere with natural processes. • Location of a coastline in relation to prevailing winds and currents may be important in leading to powerful wave action which speeds up rates of recession. • Coastal ecosystems such as sand dunes and coral reefs may develop due to movement of sediment, ocean temperature and latitude, and these may reduce erosion rates on some coastlines. L3 answers are likely to include examples which explore the influence of geology alongside other relevant processes in affecting recession rates. Credit other valid ideas.

Level	Mark	Descriptor
Level 0	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Understanding addresses a narrow range of geographical ideas. (AO1) • Understanding of geographical ideas lacks detail. (AO1)

		• Applies knowledge and understanding to geographical information/ideas, with limited logical connections/relationships. (AO2)
Level 2	4-6	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas. (AO1) • Understanding of geographical ideas is not fully detailed and/or developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find some relevant connections/relationships. (AO2)
Level 3	7-8	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas. (AO1) • Understanding of the geographical ideas is detailed and fully developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2)

Question Number	Identify **two** possible problems caused by the trend in Cape Town's house price index. **Answer**	Mark
2(a)	**AO1 (2 marks)** Award **1** mark for each problem: • Housing becomes less affordable (1) • Homelessness increases if people cannot pay (1) • People have to live in self-built houses on outskirts or illegally on vacant land (1) • People have to work longer hours to afford housing (1) • People have to travel further to work as cheaper housing is further away from the city (1) • People economise on food, medicine to afford the costs of housing (1) • There may be more empty housing (1) • There will be an increase in housing inequality (1) • Certain people will be excluded from renting/buying a property (1). • Examiners can credit two problems in a single answer space / line. Answers must link to the trend in house prices shown. Do not credit a description of the trend, such as 'Housing becomes more expensive over time'. Credit other valid ideas.	**2**

Question Number	Explain **one** way the informal economy affects inequalities in developing world cities 2.4.1c Answer	Mark
2(b)	**AO1 (2 marks)** Award **1** mark for explaining a possible way, and a further expansion mark about the reasons for this, or about the impact on inequalities, up to a maximum of 2 marks. • Pay is likely to be lower in the informal economy (1) so income inequalities in the city become greater (1). • Lower pay (1) so workers and families cannot afford electricity/sanitation /access health care (1). • No tax paid (1) so government cannot afford to invest in health/education /pensions (1). • Lower pay than in the formal sector (1) but this is better than no pay at all, so inequalities are reduced (1) • Accidents are more likely in the informal economy (1) so people can't work (1).	**2**

	• People working in the informal economy do not have employment security (1) so can be sacked at any time (1). Credit other valid ideas.	

Question Number	Assess the success of solutions used to reduce urban transport problems. **Indicative content**
2(c)	**AO1 (6 marks) AO2 (2 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include: **AO1** • Urban transport problems include pollution (particulate matter, low level ozone, NOx) and congestion, as well as overcrowding on public transport, high cost, accessibility for those with mobility issues. • Solutions to urban transport problems include major infrastructure projects (light rail, metro, major road developments) but these have costs and benefits. • Other approaches include attempts to reduce car use and/or emissions (congestion charging, cheaper public transport, pedestrianisation, park and ride, no-drive days, road pricing, cycle schemes). These have had mixed success and are unpopular with some. • Cost (financial) and disruption to everyday life and business and tourism may make solutions relying on developing new infrastructure unattractive to many people. • Stakeholders will have different views about the success of solutions. • Reduction of urban transport problems could be approached by planning of the layout of the city e.g. the 15-minute city. **AO2** • Large scale schemes can be very effective/successful in reducing congestion once completed, but disruption may be long term, and cost implications are large. This often makes them controversial. • Large scale schemes may be seen as economically successful by some if investment brings a return to shareholders. • New/faster roads often attract more traffic however, so reductions in congestion/pollution may be short-lived. • There may be environmental or social costs as habitats/cultural sites/residential areas may be destroyed.

	• Conflict may occur if decisions are made to build infrastructure over places where people live. Lower income communities may lack the political power or influence to protect their communities. • Smaller scale solutions, for example, using community based and localised schemes, such as buses, shared taxis, new/safer cycle routes, low emission zones, lower speed limits, electrical vehicles, cycle routes and congestion charges may meet with greater success over shorter time periods. Some local people will not support these. Expect located examples. L3 answers might assess in terms of how far solutions meet the needs of all, or in economic or environmental terms, Credit other valid ideas.

Level	Mark	Descriptor
Level 0	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1) • Understanding addresses a narrow range of geographical ideas. (AO1) • Understanding of geographical ideas lacks detail. (AO1) • Applies knowledge and understanding to geographical information/ideas, with limited logical connections/relationships. (AO2)
Level 2	4-6	• Demonstrates geographical knowledge and understanding, which is mostly relevant and may include some inaccuracies. (AO1) • Understanding addresses a range of geographical ideas. (AO1) • Understanding of geographical ideas is not fully detailed and/or developed. (AO1) • Applies knowledge and understanding to geographical information/ideas logically to find some relevant connections/relationships. (AO2)
Level 3	7-8	• Demonstrates accurate and relevant geographical knowledge and understanding throughout. (AO1) • Understanding addresses a broad range of geographical ideas. (AO1) • Understanding of the geographical ideas is detailed and fully developed. (AO1)

		• Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2)

Question Number	Explain the aim(s) of your investigation.	Mark
3(a)	**AO3 (3 marks)** **NB: credit *both* what the candidate has written in the 'state your aim (s)' section *and* the answer space.** Award **1** mark for identifying the aim(s) of the investigation (this may come from the 'statement' section). Award further expansion marks up to a maximum of 2 marks linked to: • Further details and explanation of what they were hoping to find out • The places that will be used, for example to make contrasts between two places, or before and after a change • Reference to investigations at different times / seasons. • Understanding the processes/reasons involved • Reference to testing a model, theory or hypothesis • How the investigation was carried out in terms of the approach or locations, but NOT including detail on what primary data collection methods were used Allow the explanation of one or more aims. Do not credit details about the methodology used.	**3**

Question Number	Explain how you managed **one** risk when you collected your fieldwork data. Answer	Mark
3(b)	**AO3 (3 marks)** Award **1** mark for explaining **one** risk associated with the fieldwork, and a further expansion explaining how the risk was managed, up to a maximum of 3 marks. Nature of risk, and risk management will vary depending on the location as well as the context of the investigation. • In the urban area there was lots of traffic so the risk was of being struck by a vehicle (1) which was	**3**

	managed by only using a designed crossing (1) and ensuring the whole group crossed at the same time (1) • Fieldwork was carried out in the winter so there was a risk of hypothermia/excessive cold (1). Lots of warm clothes were used (1) and the students went to a café to warm up halfway through (1). • Fieldwork was carried out in a very hot climate so there was a risk of sun burn/heat stroke (1) so enough water was taken (1) and the students started fieldwork early in the morning to avoid the hottest part of the day (1). • Risk assessment was carried out (1) and the precautions recommended were carried out (1) and e.g. no students entered the sea/ all crossed at designated crossings/ many other options (1). • The wet rocks at the coast presented a slip and trip risk. (1). Walking boots were used to minimise the risk of falling over (1) and staff ensured a safe route was selected (1). Credit other valid ideas. Nature of risk, and risk management will vary depending on the location as well as the context of the fieldwork. Accept other valid ideas.	

Question number	You collected your fieldwork data at different locations, sites and / or times. Explain how this improved the reliability of your data. Answer
3(c)	**AO3 (6 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** Content depends on students' choice of research question. Methodology and design (which overlap) of the primary fieldwork data may include the following ideas: • Different locations/sites means that the data collected has a better spatial spread, which may help improve the reliability of conclusions. • Visiting different sites allow for comparisons between sites to check for trends or differences in data. • Bigger sample size represents the whole population more effectively and helps identify outliers. • Many natural systems vary spatially (and/or over time), so sampling at different points allows that spatial change, e.g. ecosystem zonation to be tested and / or explored in a reliable manner.

	• Taking measurements at different places and / or at different times allows the calculation of means and medians and the student can infer something about reliability. • Some systems / places change over time, e.g. traffic and transport, so sampling at different times allows for a better "picture" of those changes, and therefore increased reliability of results. • City centres have varying flows of people so speaking to people at different times of the day or week may help improve the quality / reliability of the conclusions as a wider range of views and stakeholders may be consulted. Answers will vary with the field work context. Candidates might discuss a range of locations (like comparing two places), or sampling sites, or times, but coverage of all of these is not required. Expect top band answers to write about specifically about locations, sites and/or times. Nature of responses will be heavily dependent on the context of the fieldwork and the environment in which it was undertaken. However, examiners should reward for detailed clear and specific data and information which are supported with depth and detail in terms of factual accuracy and realism in terms of data collection.

Level	**Mark**	**Descriptor**
	0	No rewardable material.
Level 1	**1–2**	• Limited understanding of the relationships between geographical questions and the background information, geographical context and research question (AO3) • Uses a limited range of fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (AO3)
Level 2	**3–4**	• Some understanding of the relationship between the background information, geographical context and research question (AO3) • Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Some evidence of an ability to draw conclusions and the evaluation is relevant, but restricted to one or two stages in the route to enquiry. (AO3)

Level	Mark	Descriptor
Level 3	**5–6**	• A full understanding of the relationship between the background information, geographical context and research question (AO3) • Evaluates fieldwork research skills and techniques to obtain information that supports the investigation of the research question. (AO3) • Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (AO3)

Question number	Assess the value of the different types of secondary data that you used in your Geographical investigation. Answer
3(d)	**AO3 (12 marks)** **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. **Indicative content guidance** Content depends on students' choice of research question. Evaluation of the usefulness of secondary data at different stages of an investigation could include some the following: **Planning the primary data collection:** • Valuable as students could to find out more about the population/ people of an area, e.g. local census statistics could help select appropriate locations for data collection to show range or trends. • Assisted in design of sampling framework: number of sites, spacing, sample sizes, sampling method, plus methodology: equipment, operator error etc. • Maps, tide timetables, news and weather apps are of value as they could help select a suitable locations/ times for data collection • Secondary data can be used to give baseline data, e.g. to work out rates of coastal recession using GIS and historical maps, which could be used before for planning or afterwards for analysis. **Analysis stage:** • Secondary data could be used to contextualise and challenge primary fieldwork data. • Secondary data of value to provide opinions from a range of online and other sources to provide context. • Secondary information could be used to provide quantitative data for statistical analysis, e.g. the calculation of median deprivation indices for contrasting local areas.

	• Old maps and photos could be used to contrast previous land use /quality of environment/ deprivation levels /ecosystems/erosion with present day. • Past data collection could be used for comparison. • Improvements to the investigation may be suggested as a result of the use of secondary data, and therefore it is of value to the evaluation. **Limitations for the value of secondary data might include:** • Old maps or photos might be undated and locations might be unclear if there has been change, making comparisons invalid. • Forecasts might be inaccurate. • Census data and other government sources might be outdated or biased or inaccurate or simply unavailable or costly to obtain. The nature of responses will be heavily dependent on the context of the fieldwork and the environment in which it was undertaken. However, examiners should reward for detailed clear and specific data and information which are supported with depth and detail in terms of factual accuracy and realism.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	**1–4**	• Limited understanding of the relationships between geographical questions and the background information, geographical context and research question (AO3) • Uses a limited range of fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Limited interpretation, analysis based on the data / information collected. (AO3) • Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (AO3)
Level 2	**5–8**	• Some understanding of the relationship between the background information, geographical context and research question (AO3) • Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Interpretation and analysis based on the data / information collected form part of the response (AO3)

Level	Mark	Descriptor
		• Some evidence of an ability to draw conclusions and the evaluation is relevant, but restricted to one or two stages in the route to enquiry. (AO3)
Level 3	**9–12**	• A full understanding of the relationship between the background information, geographical context and research question (AO3) • Evaluates fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3) • Critically considers the role of interpretation, analysis based on the data / information collected. (AO3) • Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (AO3)

Question Number	Explain one advantage and one disadvantage of using a mobile phone to record primary data.	Mark
4(a)(i)	**AO3 (4 marks)** Award **1** mark for explaining one advantage and one disadvantage and further expansion marks up to a maximum of **2** marks. Advantage: • Less wasteful / more eco-friendly as paper is no longer needed (1) because records can be made online (1). • Less time-consuming (1) as phones are multi-functional, containing many apps for measurements. • Data is digital so can be transferred more easily to other groups (1) without mistakes being made when copying (1). • Digital data can be easily stored as a table of data (1) and calculations can be made at the site (1). • Photos can be taken and digitally located (1) so analysis will be more reliable (1). • Geo-location by the smart phone and its compass to keep transect straight/on track (1) so mistakes about location are not made (1). • Easier to use than paper (1) so results are not lost/blown away/ rained on (1). Disadvantage: • Battery may run out during field work (1) so data cannot be recorded for the later sites visited leaving incomplete sets of data (1). • There may be no signal for all or part of data collection (1) so some or all data has to be recorded on paper which may not be available (1) • Sand gets in charger port (1) so the phone cannot be used again (1). • Quality of the apps used to record data / take photos (e.g. slope angle) may be poor (1) so less accurate readings are obtained than using specialist equipment (1) • If a mobile is used some students may not have the right app on their phone, e.g. to record slope angle (1) so rely on a different website which makes it impossible to share data afterwards (1). Do not allow points that equally apply to a clipboard, such as losing your phone or being portable. Accept other valid ideas.	**4**

Question Number	Describe the relationship between percentage (%) of bare sand and distance from the beach. Answer	Mark
4(a)(ii)	**AO3 (2 marks)** Award **1** mark for each valid description of the relationship, up to a maximum of 2 marks: • Percentage (%) of bare sand is highest near the sea and decreases inland (1) • There is a negative correlation (1) • The change in bare sand is greater between 0 and 300m than between 300m and 600m (1) • Percentage (%) of bare sand decreases steadily from 350m to 600m (1) • There seems to be an exception to the trend at 300m (1) Accept other valid descriptions based on evidence from Figure 3a. No additional mark for data, but it is likely to be used to make a valid point.	**2**

Question Number	**Calculate the range for the percentage (%) of bare ground data shown. Answer**	**Mark**
4(a)(iii)	**AO3 (2 marks)** Award **1** mark for correctly reading both values from the graph and award a further **1** mark for calculating the range correctly. • 90 – 55 (1) • Answer = 35 (1) From 2025 onwards, if the correct answer is given, no working is required, and 2 marks must be awarded.	**1+1**

Question Number	**Identify which one of the following sampling methods they used. Answer**	**Mark**
4(a)(iv)	**AO3 (1 mark)** Award **1** mark correctly identifying the sampling approach used. • **D** Systematic (1) (Because the points/sites are regularly spaced). • **A** Opportunistic is incorrect because there is a regular pattern in the points/sites used	**1**

	• **B** Random is incorrect because there is a regular pattern in the points/sites used • **C** Stratified is incorrect because there is no grouping of points/sites or indication of sub-groups	

Question Number	Suggest reasons why the students' conclusion may be unreliable. Answer	Mark
4(b)	Award **1** mark for explaining a reason why their conclusion may be unreliable, and further marks for additional reasons or expansion, up to a maximum of 3 marks. • They have only taken one photo/image (1) at one time (1) so this is not reliable as they have nothing to compare it with /other parts of the scheme might be very different (1). • One photo is not enough (1) they could have used secondary data/ spoken to local people (1) to find out more about how long the scheme has been there / how much it has grown (1) • The soft-engineering approach shown might appear sustainable as the plants will grow (1) but long-term sea level may rise (1) and wash all the plants away (1). • People/fishermen may climb over the low fence or let dogs into the area (1) and trample on the plants so their height will be restricted (1) and they will not provide a network of roots to stabilise the dune (1). • The Geotech mesh looks to be breaking up so sand will blow away (1) and the roots of the plants will be exposed (1) and winds or storms will erode the plants/dune (1). • Some of the plants are very small/unhealthy (1) so they may not form a secure barrier (1) and we need more than one photo to show what happen in the longer term (1). *Candidates may approach the question either by discussing the ways the solution shown is unsustainable, or by explaining the limitations of the data collection method, or a combination of both.* Accept other valid ideas.	**3**

Question Number	Explain one advantage and one disadvantage of using a mobile phone to record primary data.	Mark
5(a)(i)	**AO3 (4 marks)** Award **1** mark for explaining one advantage and one disadvantage and further expansion marks up to a maximum of **2** marks. Advantage: • Less wasteful / more eco-friendly as paper is no longer needed (1) because records can be made online (1). • Data is digital so can be transferred more easily to other groups (1) without mistakes being made when copying (1). • Digital data can be easily stored as a table of data (1) and calculations can be made at the site (1). • Photos can be taken and digitally located (1) so analysis will be more reliable (1). • Geo-location by the smart phone and its compass to keep transect straight/on track (1) so mistakes about location are not made (1). • Easier to use than paper (1) so results are not lost/blown away/ rained on (1). Disadvantage: • Battery may run out during field work (1) so data cannot be recorded for the later sites visited leaving incomplete sets of data (1). • There may be no signal for all or part of data collection (1) so some or all data has to be recorded on paper which may not be available (1) • Phone may be stolen in the city (1) and all the data lost (1). • Quality of the apps used to record data (e.g. noise levels/camera) may be poor (1) so less accurate readings are obtained than using specialist equipment (1) • If a mobile is used some students may not have the right app on their phone, e.g. to record noise level (1) so rely on a different website which makes it impossible to share data afterwards (1). Accept other valid ideas.	**2+2**

Question Number	Describe the relationship between noise level (decibel) and distance from the city centre. Answer	Mark
5(a)(ii)	**AO3 (2 marks)** Award **1** mark for each valid description of the relationship, up to a maximum of 2 marks: • Noise levels are highest near the sea and decrease inland (1) • There is a negative correlation (1). • The change in decibels is greater between 300 and 600m than between 0m and 300m. • Noise levels decline steadily from 350m to 600m. • There seems to be an exception to the trend at 300m. Accept other valid descriptions based on evidence from Figure 3a. No additional mark for data, but it is likely to be used to make a valid point. Accept other valid description based on evidence from Figure 4a.	**2**

Question Number	Calculate the range for the noise level (decibel) shown. Answer	Mark
5(a)(iii)	**AO3 (2 marks)** Award **1** mark for correctly reading both values from the graph and award a further **1** mark for calculating the range correctly. • 90 – 55 (1) • Answer = 35 (1) From 2025 onwards, if the correct answer is given, no working is required, and 2 marks must be awarded.	**2**

Question Number	Identify which one of the following sampling methods they used. Answer	Mark
5(a)(iv)	**AO3 (1 mark)** Award **1** mark correctly identifying the sampling approach used. • **D** Systematic (1) (Because the points/sites are regularly spaced).	**1**

	• **A** Opportunistic is incorrect because there is a regular pattern in the points/sites used • **B** Random is incorrect because there is a regular pattern in the points/sites used • **C** Stratified is incorrect because there is no grouping of points/sites or indication of sub-groups	

Question Number	Suggest reasons why the students' conclusion may be unreliable. Answer	Mark
5(b)	**AO3 (3 marks)** Award **1** mark for explaining a reason why their conclusion may be unreliable, and further marks for additional reasons or expansion, up to a maximum of 3 marks. • They have only taken one photo/image of one part of the city (1) at one time (1) so this is not reliable as they have nothing to compare it with / there may be different traffic levels at other times (1). • There are many roads (1) therefore lots of traffic and air quality issues (1) and therefore health risks for those with asthma so this solution is unsustainable socially (1). • There is not enough information in the photo to make a judgement (1) as you cannot see what public transport is available (1) or what the costs are/how accessible it is for all users (1). • Lots of concrete used in construction (1) which has a high environmental footprint/is environmentally unsustainable (1) as it causes emission of CO_2 when being built (1). • Parcels of development separated by major roads (1) which makes access for pedestrians very hard, leading to over-reliance on the car (1) and we do not know what will happen in the future as we have only one photo (1). • Roads are multi-lane (1) so cycling, which would be a more sustainable travel option would be very difficult and dangerous (1) so many would be discouraged from cycling and use vehicles instead (1). *Candidates may approach the question either by discussing the ways the solution shown is unsustainable, or by explaining the limitations of the data collection method, or a combination of both.* Accept other valid ideas.	**3**

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