# Mark Scheme (Results)

## Summer 2022

Pearson Edexcel International Advanced Level
In Geography (WGE02/01)
Paper 2: Geographical investigations

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Summer 2022
Question Paper Log Number P66607A
Publications Code WGE02_01_MS_2206

**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.

| Question Number | Answer | Mark |
|---|---|---|
| **1(ai)** | **AO2 (1 marks)**<br><br>**X** = **C** Sediment source (river) | **1** |

| Question Number | Answer | Mark |
|---|---|---|
| **1(aii)** | **AO2 (1 marks)**<br>Award **1** mark:<br>• Longshore drift (1)<br>• (Ocean) currents (1)<br>• Wind (1)<br><br>**NB Do not accept transport processes**, e.g. traction | **1** |

| Question Number | Answer | Mark |
|---|---|---|
| **1(b)** | **AO1 (2 marks)**<br>Award **1** mark for explaining a way and a further expansion mark, up to a maximum of 2 marks each:<br>• They can be classified according to their rock type (1) which means that hard vs soft rock will determine the landscape features (1).<br>• Some coasts are classified by type of wave energy (1) based around high or low levels that are usually dominant (1).<br>• Coasts can be classified according to topography or relief (1) with areas that are low-lying being very different to those with steep cliffs (1).<br><br>Credit other valid criteria, e.g. reference to concordant and discordant coasts. | **2** |

| Question Number | Indicative content |
|---|---|
| **1(c)** | **AO1 (6 marks)/AO2 (2 marks)**<br><br>**Marking instructions** |

<table>
<tr><td></td><td colspan="2">Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.<br><br>Indicative content guidance<br>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:<br><br>AO1<br>• Erosion processes include hydraulic action, abrasion and attrition moving onshore.<br>• Constructive waves are typically found in sheltered bays and spits where they build up sandy beaches.<br>• Constructive waves carry material up the beach in their swash<br>• Destructive waves have a large wave height and short wavelength.<br>• Destructive have tall breakers that have a high downward force and a strong backwash. Their strong downward energy helps erode beach material and cliffs.<br><br>AO2<br>• The balance of wave types will have a big impact on coastal landform development and processes, with coasts dominated by more sandy bays and beaches.<br>• On some coastlines depositional processes may be much more important compared to erosional processes.<br>• There are many other controls on coastal landforms including sub aerial processes as well as weathering, lithology and rock structure.<br>• Fetch and sediment transport processes will affect landscape features.<br>• Future sea-level rise and climate change may have implications on rate of erosion processes, which in turn will impact on the development and balance of landscape features.</td></tr>
<tr><td>Level</td><td>Mark</td><td>Descriptor</td></tr>
<tr><td>Level 0</td><td>0</td><td>No acceptable response.</td></tr>
<tr><td>Level 1</td><td>1–3</td><td>• Demonstrates isolated elements of geographical knowledge and understanding, some of which may be inaccurate. (AO1)</td></tr>
</table>

| | | |
|---|---|---|
| | | • Understanding addresses a narrow range of geographical ideas. (AO1)<br>• Understanding of geographical ideas lacks detail. (AO1)<br>• 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)<br>• Understanding addresses a range of geographical ideas. (AO1)<br>• Understanding of geographical ideas is not fully detailed and/or developed. (AO1)<br>• 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)<br>• Understanding addresses a broad range of geographical ideas. (AO1)<br>• Understanding of the geographical ideas is detailed and fully developed. (AO1)<br>• Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2) |

| Question Number | Answer | Mark |
|---|---|---|
| **2(a)** | **AO2 (2 marks)**<br><br>Award **1** mark for each idea:<br><br>• Housing will become less affordable (1).<br>• Will increase rental costs in the city (1).<br>• People cannot afford to move into the area for work (1).<br>• Will increase housing inequality (1). | **2** |

| | | |
|---|---|---|
| | • Certain people will be excluded from buying a property (1).<br>• May lead to greater homelessness / pressure for informal housing (1).<br>• May create empty houses (1).<br>• Lowering quality of life (1).<br><br>Credit other valid ideas. Can credit two problems in a single answer space / line. | |

| Question Number | Answer | Mark |
|---|---|---|
| **2(b)** | **AO1 (2 marks)**<br><br>Award **1** mark for explaining a reason further expansion mark, up to a maximum of 2 marks:<br><br>Examples could include:<br>• Fear of crime (1) which means that people want to be separated from the risk (1).<br>• Because people are wealthy / can afford to live in a gated community (1) and therefore have a better living experience (1).<br>• Processes associated with community / segregation (1) which means that people are surrounded by similar / like-minded people (1).<br>• Less disease risk in some places (1) so people choose to live in an area where their feel "in control" (1).<br>• Prestige of living in a gated community (1) which means that residents can have a desirable address / position within the community or amongst their peers (1).<br><br>Credit other valid ideas. | **2** |

| Question Number | 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**

- Services include access to, water, sanitation, health, education and electricity. Others are also relevant.
- Waste management is a problem in both developing and developed world cities
- Direct impacts of poor service provision include health inequalities, higher incidence of disease and unequal access to education
- There are environmental and social impacts associated with illegal dumping of waste in developing and emerging world cities.

**AO2**

- The consequences of poor service provision may be linked to problems in terms of longer-term health or mental health challenges.
- Poor service provision is likely linked to a wider set of problems that are rooted in wealth, inequality and lack of cohesive / effective governance.
- Impacts do not affect all communities in the same way – some are excluded or more resilient.
- Poor service provision whilst often linked to shanty and squatter settlements can also be an issue in richer parts of the world, e.g. difficulty in accessing affordable dental care
- Ultimately the impacts of poor service provision will be very dependent on the city and the individual types of provision.

NB Answers should focus on service provision, not housing.

| 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)<br>• Understanding of geographical ideas lacks detail. (AO1)<br>• 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)<br>• Understanding addresses a range of geographical ideas. (AO1)<br>• Understanding of geographical ideas is not fully detailed and/or developed. (AO1)<br>• 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)<br>• Understanding addresses a broad range of geographical ideas. (AO1)<br>• Understanding of the geographical ideas is detailed and fully developed. (AO1)<br>• Applies knowledge and understanding to geographical information/ideas logically to find fully relevant connections/relationships. (AO2) |

| Question Number | Answer | Mark |
|---|---|---|
| **3(a)** | **AO3 (3 marks)**<br>***NB:*** *the aim / question / hypothesis provides a context for the investigation and the subsequent parts that follow – no credit for this.*<br><br>Award **1** mark for explaining the way and further marks for explanation (may be linked to why it was appropriate), up to a maximum of 3 marks.<br><br>The nature of the purpose (or focus) will vary depending on the fieldwork areas chose.<br>• Google maps was used to select and area to study coastal ecosystem change (1). This was a manageable scale (1) and therefore the fieldwork could be repeated in order to consider reliability (1).<br>• Google Street View was used to see the past land-use (1) meaning that we could compare our results to those historically (1) and them provide possible explanations for the changes (1).<br>• An online GIS geology map source allowed a stretch of coast to be chosen (1) this was based on similar geological characterises (1) and it formed part of an appropriate closed sediment-cell system (1).<br>• Past transport data from another student's project formed the basis of our comparison (1) allowing us to link patterns of traffic in the same area (1) with those that were found 5 years ago before the new road was built (1).<br><br>NB – no credit for simply identifying or stating a type of secondary data. | **3** |

| Question Number | Answer | Mark |
|---|---|---|
| **3(b)** | **AO3 (3 marks)** | **3** |

| | | |
|---|---|---|
| | Award **1** mark for explaining the purpose and further marks for explanation (may be linked to why it was appropriate), up to a maximum of 3 marks.<br><br>Nature of quantitative data will vary depending on the location as well as the context of the investigation.<br><br>• A traffic count was used to estimate the number of vehicles per minute (1) and then find out how this changed over 1 hour (1) and to reach conclusions about daily traffic flow (1).<br>• The percentage frequency of plants in a sand dune was estimated (1) using a 0.5mx0.5m quadrat (1) and this was carried out in a transect line from the shore inland (1).<br>• We used an environmental quality survey with a bi-polar scale (1) to find out about how housing quality varied (1) along a 2km transect in the city (1).<br>• A gun clinometer was used to estimate the angle of some cliffs (1) which was then converted into an approximate cliff height (1) which gave us a coastal erosion risk score (1).<br>• A questionnaire with closed questions (1) was used to collect numerical / scored data about people's opinions (1) which allowed comparisons between different groups of people (1).<br><br>Credit other valid ideas, e.g. those related to sampling but in the context of a primary data technique. | |

| Question number | Answer |
|---|---|
| **3(c)** | **AO3 (6 marks)**<br><br>**Marking instructions**<br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.<br><br>**Indicative content guidance** |

| | |
|---|---|
| | Content depends on students' choice of research question. Analysis may include some of the following ideas:<br>• Analysis can include use of spreadsheet to calculate mode, mean, median and other measure of centrality.<br>• Analysis for association correlation and using statistical methods such as Spearman's Rank, Pearson and Chi squared.<br>• Spreadsheets may help with the identify anomalies and can then be linked to how much the results can be trusted.<br>• Allow in part the use of presentation, e.g. scatter graphs as they are part of the initial analysis.<br>• May include reference to analysis of secondary data in the context of validating primary results.<br>• May include qualitative analysis, e.g. coding, theming of text or annotation of photographs.<br>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 linked to analysis. |

| 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)<br>• 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)<br>• Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (A03) |
| **Level 2** | **3–4** | • Some understanding of the relationship between the background information, geographical context and research question (AO3)<br>• Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (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. (A03) |
| **Level 3** | **5–6** | • A full understanding of the relationship between the background information, geographical context and research question (AO3)<br>• Evaluates fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3)<br>• Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (A03) |

| Question number | Answer |
|---|---|
| **3(d)** | **AO3 (12 marks)**<br><br>**Marking instructions**<br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.<br><br>**Indicative content guidance** |

| | |
|---|---|
| | Content depends on students' choice of research question.<br>Evaluation of fieldwork could include some the following:<br>• The nature of initial research to inform the context of the enquiry as well as the identification of an appropriate topic to study through the route to enquiry.<br>• Design of sampling framework: number of sites, spacing, sample sizes, sampling method – linked to specific methods of data collection.<br>• Methodologies: these will depend on specific methods chosen but can include evaluation of the equipment used, operator error; success of recording sheets / tallies<br>• Inaccessibility of sites / lack of ability collect data due to time of day, seasons, or unanticipated hazards such as bad weather.<br>• Ethical issues could be considered e.g. appropriateness of questionnaire questions. This impacts on both the range and quality of data and in turn has effects upon the accuracy of the results and the validity of conclusions. Whether the outcomes can be trusted.<br>• Improvements may also form part of the response if its in relation to the original title or question.<br><br>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. |

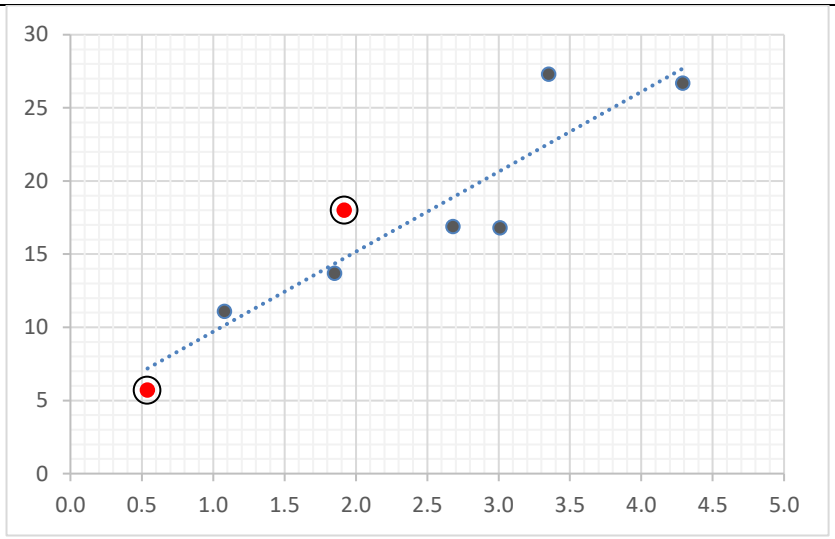
| Level | Mark | Descriptor |
|---|---|---|
| **Level 1** | **1–4** | • Limited understanding of the relationships between geographical questions and the background information, geographical context and research question (AO3)<br>• Uses a limited range of fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3)<br>• Limited interpretation, analysis based on the data / information collected. (AO3)<br>• Limited evidence of an ability to draw conclusions and the evaluation is simplistic, limited to one stage in the route to enquiry. (A03) |
| **Level 2** | **5–8** | • Some understanding of the relationship between the background information, geographical context and research question (AO3)<br>• Uses some fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3)<br>• Interpretation and analysis based on the data / information collected form part of the response (AO3)<br>• 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. (A03) |
| **Level 3** | **9–12** | • A full understanding of the relationship between the background information, geographical context and research question (AO3)<br>• Evaluates fieldwork research skills and techniques to obtain information that may link to, but not support, the investigation of the research question. (AO3)<br>• Critically considers the role of interpretation, analysis based on the data / information collected. (AO3)<br>• Clear evidence of an ability to draw conclusions and the evaluation is full, across a number of stages in the route to enquiry. (A03) |

| Question Number | Answer | Mark |
|---|---|---|
| **4(a)** | **AO3 (4 marks)**<br>Award **1** mark per relevant piece of information from Figure and a further development mark(s) where relevant. Maximum **4** marks.<br>• Clearly structured and logical sequence (1).<br>• Question sequence puts respondent in a relaxed frame of mind (1).<br>• Considers ethical considerations in the introduction (1).<br>• Background is focused on finding out about the respondent and their role (1).<br>• Plan is focused on find out about coastal management (1) and doesn't have irrelevant information not related to the focus (1).<br>• These sorts of ideas are difficult to do using a questionnaire (1) so it will get the best information (1).<br>• Timings are appropriate (1) so provide balance for the interview (1).<br><br>Accept other valid ideas.<br><br>NB the idea of bias is not relevant. Responses must be related to the plan, rather than interviews in general. | **4** |

| Question Number | Indicative content | Mark |
|---|---|---|
| **4(b)** | **AO3 (2 marks)** | **2** |

| | | |
|---|---|---|
| | Award **1** mark for explaining a disadvantage and a further expansion mark up to a maximum of **2** marks.<br>• May be unreliable (1) because people express strong views (1).<br>• It can be difficult to get focused data from crowd sourced / social media (1) as there is some much "noise" and irrelevant information (1).<br>• Only certain groups of people use social media (1) so other people's views are excluded (1).<br>• Need to have the right technology to access crowd sourced information (1) so some researchers will be unable to use it (1).<br>• Information may be mostly qualitative (1) so is difficult to process (1).<br>• The volume of information may be very big (1) so analysis is complex (1).<br>• The data can be varied and complex (1) making it difficult to understand (1).<br>• Data can be outdated (1) which leads to unreliable conclusions (1).<br><br>Credit other valid ideas.<br>NB crowd-sourced refers to a large and undefined network of people who are predominantly online. | |

| Question Number | Answer | Mark |
|---|---|---|
| **4(c)(i)** | **AO3 (2 marks)**<br><br>Graph to be completed.<br>One mark for each correctly plotted point.<br>Allow margin of error indicated by the black circle round the red plot point. | **2** |




| Question Number | Answer | Mark |
|---|---|---|
| **4(c)(ii)** | **AO3 (1 mark)**<br><br>**B** Strong positive | **1** |

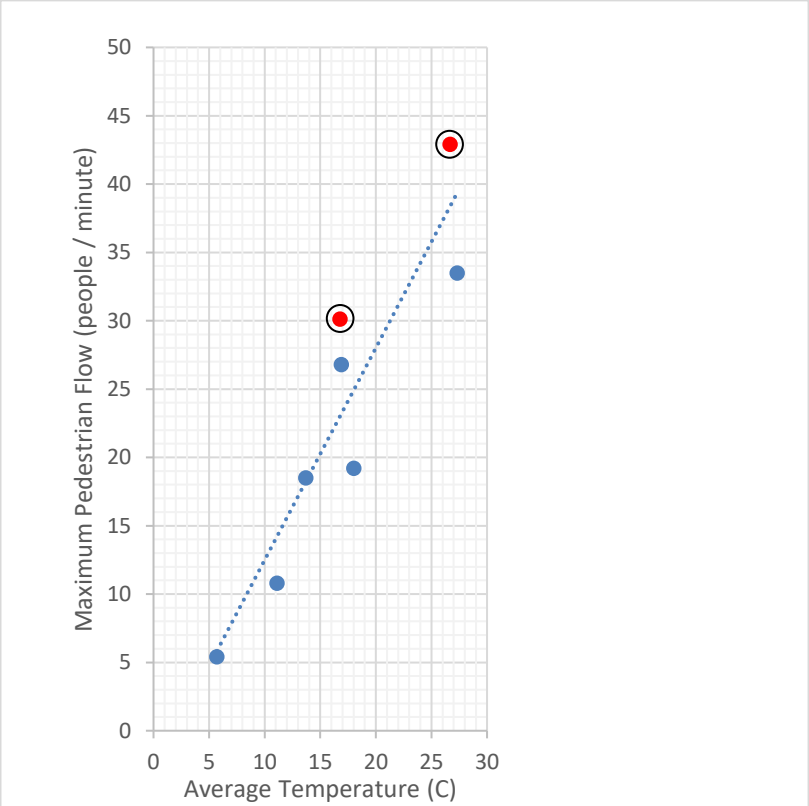
| Question Number | Answer | Mark |
|---|---|---|
| **4(c)(iii)** | **AO3 (3 marks)**<br><br>Award **1** mark for an idea about unreliability and a development or additional ideas up to a maximum of **3** marks.<br><br>• The observations to collect wave height may be inaccurate (1) therefore the data is not reliable (1) which means the strength of conclusions may be affected (1).<br>• Data is only over a short period of time (1) so longer-term patterns cannot be seen (1) so conclusions may be difficult may be unreliable (1).<br>• Some data may be anomalous (1).<br>• Dots are large on the graph and difficult to see the exact place (1).<br>• Lines of best fit may be drawn differently (1) so this changes the analysis / interpretation of data (1).<br>• Other factors may be influence wave height (1) so it could be that wind speed is not important | **3** |

| | | |
|---|---|---|
| | (1) but factors have not been measured / understood (1).<br><br>Accept other ideas, based on information in the Figure 3c, including using the data to develop their ideas. | |

| | | |
|---|---|---|
| **5(a)** | **AO3 (4 marks)**<br>Award **1** mark per relevant piece of information from Figure and a further development mark(s) where relevant. Maximum **4** marks.<br>• Clearly structured and logical sequence (1).<br>• Question sequence puts respondent in a relaxed frame of mind (1).<br>• Considers ethical considerations in the introduction (1).<br>• Background is focused on finding out about the respondent and their role (1).<br>• Plan is focused on find out about housing (1) and doesn't have irrelevant information not related to the focus (1).<br>• These sorts of ideas are difficult to do using a questionnaire (1) so it will get the best information (1).<br>• Timings are appropriate (1) so provide balance for the interview (1).<br><br>Accept other valid ideas.<br><br>NB the idea of bias is not relevant. Responses must be related to the plan, rather than interviews in general. | **4** |

| Question Number | Indicative content | Mark |
|---|---|---|
| **5(b)** | **AO3 (2 marks)**<br><br>Award **1** mark for explaining an advantage and a further expansion mark up to a maximum of **2** marks.<br>• May be unreliable (1) because people express strong views (1).<br>• It can be difficult to get focused data from crowd sourced / social media (1) as there is some much "noise" and irrelevant information (1).<br>• Only certain groups of people use social media (1) so other people's views are excluded (1).<br>• Need to have the right technology to access crowd sourced information (1) so some researchers will be unable to use it (1).<br>• Information may be mostly qualitative (1) so is difficult to process (1).<br>• The volume of information may be very big (1) so analysis is complex (1).<br>• The data can be varied and complex (1) making it difficult to understand (1).<br>• Data can be outdated (1) which leads to unreliable conclusions (1).<br><br>Credit other valid ideas.<br>NB crowd-sourced refers to a large and undefined network of people who are predominantly online. | **2** |

| Question Number | Answer | Mark |
|---|---|---|
| **5(c)(i)** | **AO3 (2 marks)**<br><br>Graph to be completed.<br>One mark for each correctly plotted point.<br>Allow margin of error indicated by the black circle round the red plot point. | **2** |




| Question Number | Answer | Mark |
|---|---|---|
| **5(c)(ii)** | **AO3 (1 mark)**<br><br>**B** Strong positive | **1** |

| Question Number | Answer | Mark |
|---|---|---|
| **5(c)(iii)** | **AO3 (3 marks)**<br><br>Award **1** mark for the advantage and a further expansion mark up to a maximum of **3** marks.<br><br>• The observations to collect pedestrians may be inaccurate (1) therefore the data is not reliable (1) which means the strength of conclusions may be affected (1). | **3** |

| | | |
|---|---|---|
| | • Don't know when during the day observations are made (1) so diurnal patterns cannot be seen (1) so conclusions may be difficult may be unreliable (1).<br>• Some data may be anomalous (1).<br>• Other factors may be influence regeneration (1) so it could be that temperature is not important (1) but factors have not been measured / understood (1).<br><br>Accept other ideas, based on information in the Figure 4c. | |

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