



EUNOIA JUNIOR COLLEGE
JC2 Preliminary Examination 2025
General Certificate of Education Advanced Level
Higher 2

H2 GEOGRAPHY

Paper 2

Suggested Marking Guide

9173/02

17 September 2025

3 Hours

READ THESE INSTRUCTIONS FIRST

Please note that this Suggested Marking Guide contains possible responses only and other responses could be considered as well. This version contains information about candidates' performance and should NOT be circulated beyond Eunoia Junior College.

Answer Questions 1 and 2 and
EITHER Question 3 **OR** Question 4

Section A

Cluster 4: Fieldwork

- 1 A group of four students from a Junior College embarked on an investigation to find out about flood mitigation strategies and public perception of flood risk along two rivers in Singapore – Punggol Waterway (Site A) and Kallang River (Site B). Their hypothesis is as follows:

‘The flood risk along Punggol Waterway is lower than the flood risk along Kallang River.’

They employed the following methods:

- Flood risk perception survey
- Bi-polar survey of the success of flood mitigation strategies at each site.

The students conducted their investigation at Site A on 10 December (Tuesday) and Site B on 15 December (Sunday). They collected data in pairs and devised the following schedule to ensure that each pair had the chance to try out different methods:

	10 December	15 December
Flood perception survey	Pair 1	Pair 2
Bi-polar survey	Pair 2	Pair 1

On 10 December, the students conducted the flood risk perception survey with every tenth resident they met while walking around Site A from 9-10am. They only managed to get 3 respondents.

On 15 December, they modified the process by surveying every fifth resident instead of tenth, from 9am-12pm, at Site B. The pair conducting the bi-polar survey at Site B was done by 10am and returned to Site A to survey additional residents from 11am-12pm.

Resources 1A and 1B show the photos taken at Sites A and B respectively. Resource 2 shows the demographics of the population who attempted the flood risk perception survey at each site. Resource 3 shows the tabulation of data for the flood risk perception survey. Resource 4 shows the bipolar survey used by the students.

(a) Explain **one** strength and **one** weakness in the students' hypothesis.

[4]

Award 1 mark for each explanation of a strength of weakness.

Award a maximum of 1 additional mark for further development of each explanation.

Award a maximum of 2 marks for explanation of either strength or weakness only.

Possible responses include:

- [Strength] It is **clearly defined** as “flood risk” is a concept that can be easily calculated by collecting data on the likelihood and severity of flooding. [1 mark]
 The likelihood of flooding can be measured by collecting data on channel characteristics such as river velocity and cross-sectional area of channel

whereas the severity of flooding can be measured by examining flood risk perceptions of park users. [1 additional mark]

- [Weakness] The hypothesis is not of a **suitable scale** as the site for investigation is the entire Kallang River and Punggol Waterway. [1 mark] This is not **researchable** since both rivers span quite a huge distance especially the Kallang River, which stretches from Bishan-Ang Mo Kio Park to the Marina Reservoir. [1 additional mark]

(b) Explain how the sampling of respondents for the flood risk perception surveys could be improved. [5]

Award 1 mark for each explanation of how sampling could be improved, to a maximum of 5 marks.

Award a maximum of 1 additional mark for further development of each explanation, where applicable.

Possible responses include:

- The biasness in their sampling could be reduced by stationing students at specific locations at each site to survey residents. [1 mark] This will reduce the biasness of their original sampling method of walking around at each site to survey residents. [1 additional mark]
- The sampling of residents could also be more intentional so that a more representative sample of residents could be surveyed. [1 mark] This can be done by employing a stratified approach to sampling so that there are enough residents across various demographic characteristics such as age groups. [1 additional mark]
- The sampling of residents at both sites could also be more consistent by ensuring that the students stick to the same sampling approach. [1 mark] They should continue to survey every tenth resident at Site B, instead of modifying the process to survey every fifth resident. [1 additional mark]

(c) With reference to Resources 1A and 1B, suggest how the students could minimise potential risks during data collection. [6]

Award 1 mark for each suggestion on how students could minimise potential risks during data collection, to a maximum of 6 marks.

Award a maximum of 1 additional mark for further development of each suggestion, where applicable.

Possible responses include:

- Students could ensure that they are in cooling and comfortable attire during data collection, including the donning of caps / hats. [1 mark] This will reduce the chances of getting sun stroke due to prolonged exposure to the sun. [1 additional mark]
- Students could apply sunblock when collecting data to prevent themselves from getting sunburnt. [1 mark]
- Students should not bend over or use their devices when walking along the railings along the riverbanks in Site A, as seen in Resource 1A. [1 mark] This is to prevent instances of them dropping their devices or even falling into the river should they not be cautious. [1 additional mark]
- Students should avoid walking along the riverbank slopes in Site B, as seen in Resource 1B. [1 mark] This is to prevent potential incidents of them slipping into the river should they not be cautious. [1 additional mark]

- (d)** Compare the characteristics of the respondents in Sites A and B as shown in Resource 2. [5]

Award 1 mark for each comparison of the characteristics of respondents in Sites A and B, to a maximum of 5 marks.

Award a maximum of 1 additional mark for further development of each comparison, where applicable.

Possible responses include:

- The majority of respondents in both Sites A and B were female. [1 mark]
- However, the proportion of female respondents in Site A was overwhelming – the number of female respondents was almost 4 times the number of male respondents. [1 mark] In contrast, the proportion of female respondents in Site B was only slightly more than male respondents – less than 10%. [1 additional mark]
- The majority of the respondents in Site A were also 65 years old and above, whereas the majority of the respondents in Site B were between the ages of 35 and 65 years old. [1 mark] However, the majority age group in Site A took up more than two thirds of the respondents in Site A whereas the majority age group in Site B contributed to about one third of the respondents in Site B. [1 additional mark]
- The respondents in Site B spanned across all the age groups whereas the respondents in Site A were only from 3 age groups. [1 mark]

- (e)** Explain how the data in Resource 3 may be represented using a suitable graphical method. [5]

Award 1 mark for each explanation of how data in Resource 3 may be represented using a suitable graphical method, to a maximum of 5 marks.

Award a maximum of 1 additional mark for further development of each explanation, where applicable.

Possible responses include:

- The data in Resource 3 may be represented using compound bar graphs which are suitable for discrete data. [1 mark] Two compound bar graphs can be used for each question, with the data converted to percentages for ease of comparison. [1 additional mark]
- For each compound bar graph, a title corresponding to the question should be provided. [1 mark] The title for one bar graph could be “Concerns about flood risks” for Question 1 while the other could be “Awareness of flood communication channels” for Question 4. [1 additional mark]
- The percentage of respondents should be indicated on the Y-axis while the sites should be indicated on the X-axis. [1 mark]
- Colours should be provided for each rating on the Likert scale and this should be represented on a legend provided. [1 mark] The colours selected should be represent the progress in the ratings such as using yellow for 1 (Strongly Disagree), light orange for 2, blood orange for 3, brown for 4 and red for 5 (Strongly Agree). [1 additional mark]

(f) Explain the limitations of the data collection sheet shown in Resource 4. [5]

Award 1 mark for each explanation on how the design of the data collection sheet in Resource 4 could be improved, to a maximum of 6 marks.

Award a maximum of 1 additional mark for further development of each explanation, where applicable.

Possible responses include:

- The sequence of ratings on the Likert scale are counter-intuitive, with the positive values on the left of the sheet and the negative, on the right. [1 mark] Respondents might end up ticking on the left for negative impressions, and right for positive, as per standard convention. [1 additional mark]
- Some of the descriptors and factors such as “ugly” and “vulnerable to overtopping” are subjective and might be dependent on the respondent’s perceptions. [1 mark] Different respondents might have differing opinions on what constitutes “ugly” for instance, resulting in the lack of accuracy of the data collection. [1 additional mark]
- The part on “comments” (if any) is ambiguous, with no guidance as to what the respondent should be looking out for. [1 mark] This might result in either a list of remarks which are not relevant or no comments, which renders the section useless. [1 additional mark]
- The categorising of the levels of technology seems misplaced, with low tech strategies being seen as positive and high tech ones seen as negative. [1 mark]

(g) The students concluded that their hypothesis is true. Evaluate the validity of their conclusion. [10]

Possible approach:

Candidates could refer to the Resources and consider how the data collection methods and the data collected have been useful in supporting the conclusion that the hypothesis is true. This could be in terms of the data in Resource 3 where a higher percentage of respondents were not concerned about the risks of floods nor aware of the communication channels about floods. This could also be in terms of the flood perception surveys and bipolar surveys conducted, which assess the levels of flood risks across both sites.

Candidates should also consider how the data might lack representativeness given how the demographics are skewed towards more elderly residents and the unevenness of numbers of respondents across the sites, as seen in Resource 2. The flaws in the bipolar survey in Resource 4 might also imply inaccurate data which could suggest that the hypothesis might not be true.

Additionally, candidates could also consider how there were other issues during the data collection process.

Levels marked using Generic Level Descriptors for H2 fieldwork evaluative questions

Section B

Cluster 3: Sustainable Future and Climate Change

2	Resource 5 shows the share of urban populations living in slums in 2022. Resource 6 shows an infographic on the changes in exposure to heatwaves across different socioeconomic clusters from the 2030s to 2090s. Resource 7 shows a photograph of a slum dweller and her home.		
	(a)	Explain the difficulties faced when measuring sustainable urban development.	[5]
		Award 1 mark for explanation of difficulties faced when measuring SUD. Award additional 1 mark for further development of explanation, where applicable. Possible responses include: - When measuring sustainable urban development (SUD), there is difficulty in deciding what aspects of the dimensions to measure as SUD involves economic, social and environmental dimensions, and within each, there are multiple possible aspects to measure [1 mark]. Different stakeholders may also prioritise different aspects, making it hard to reach consensus on what counts as “sustainability” [1 additional mark]. - It is also difficult to measure SUD as the different dimensions of SUD are interdependent and it may be difficult to account for trade-offs or synergies between different dimensions [1 mark]. There is also difficulty in selecting appropriate indicators. The choice of indicators can bias or limit the overall assessment of urban sustainability [1 mark]. If a city measures sustainability mainly using economic indicators like GDP growth or income levels, it may overlook critical environmental indicators such as air quality or carbon emissions. This biases the overall assessment, since the city might appear “sustainable” economically but actually perform poorly in environmental sustainability. - Difficulty in selecting appropriate indicators as limited or inconsistent data availability in certain cities makes it hard to select and apply robust indicators [1 mark]. Oftentimes, fine-grained local indicators (e.g. percentage of residents with access to green space within 500m) may be lacking for some cities and this can consequently hinder comparison across cities in this aspect [1 additional mark].	

	(b) Describe the variation in the share of urban population living in slums in 2022 as shown in Resource 5.	[5]
	Award 1 mark for each description of variation in the share of urban populations living in slums in world regions, up to a maximum of 5 marks. Additional 1 mark for further development of each description, where applicable. [General] - In general, the developing regions such as Sub-Saharan Africa and South Asia tend to have higher shares of their urban population living in slums as compared to the more developed regions such as North America [1 mark]. [Specific] - In Sub-Saharan Africa, many countries such as Chad, Central African Republic, and South Sudan have a high concentration of countries with moderate to high slum shares (50% and above), with more than half the region often exceeding 70% [1 mark]. - South Asia region shows moderate levels, where countries like Bangladesh and Nepal show slum shares of between 40% and 50%. [1 mark] - In Latin America and the Caribbean, urban slum shares range from low to moderate levels of 10% to 50%, with a majority of countries in the range of 10-20%. [1 mark] - In the East Asia and Pacific region, slum prevalence is low to moderate, where countries such as the Philippines shows slum shares between 30% and 50%, while China has a much lower share of 10- 20%. [1 mark] - Europe and Central Asia and North America have the lowest urban slum shares, generally 10% and below. [1 mark]	
	(c) Using Resource 6, compare the projected exposure to heatwaves across socioeconomic clusters from the 2030s to 2090s.	[4]
	<i>Award 1 mark for each comparison of the projected heat exposure across different income groups from 2030s to 2090s.</i> <i>Award 1 additional mark for further development of comparison, where applicable.</i> Absolute change in projected exposure - From the 2030s to 2090s, all socioeconomic clusters are expected to experience increase in projected exposure to heatwaves [1 mark]. - However, the increase in projected exposure is most pronounced for the lower income and lower-middle income groups, whereas the high-income populations experienced much lesser increase [1 mark]. As seen in Resource 6, while the lower- and lower-middle income populations experienced significant increases 7.5B and 3.5B respectively, high-income populations only face a modest rise, from 1.2B in the 2030s to 1.9B in the 2090s, remaining the least affected group throughout [1 additional mark]. Proportion of total population exposed to heatwaves - Across all periods, lower-income and lower-middle-income groups consistently experience the greatest exposure to heatwaves and their share grows over	

		time from 44.7% in the 2030s to 47.9% in the 2090s [1 mark]. However, the other socioeconomic clusters such as the high-income experienced slight decrease of 2.4% in their proportion [1 additional mark].	
	(d)	Explain the impacts of contemporary climate change on terrestrial ecosystems.	[5]
		Award 1 mark for each explanation of impacts of contemporary climate change on terrestrial ecosystems. Award 1 additional mark for further development of each explanation, where applicable. Possible responses: • There can be shifts in the geographical range of species and previously habitable environments may become inhabitable due to changes in temperature [1 mark]. These shifts can mean that certain ecosystems will be under threat of invasive species which can disrupt the food web and wider ecosystem [1 additional mark]. • Temperature rise in the tropical and subtropical regions can potentially hinder the growth of temperature-sensitive crops like wheat, rice, and maize [1 mark]. In contrast, rise in temp in some temperate regions may benefit from a longer growing season and CO₂ fertilisation, improving yields of certain crops like barley or grapes. [1 additional mark] • Increased frequency in extreme weather events such as wildfires and flooding can lead to loss of wildlife and the destruction of habitats [1 mark]. For example, in 2020, 78% of the jaguar territory in Pantanal, Brazil was burned and this placed survival and reproductive stress on the local jaguar populations as many suffered from starvation, dehydration and injuries [1 additional mark]. • As a result of climate change, increased frequency in intense rainfall events has led to soil erosion due to increased surface runoff generation [1 mark]. Soil erosion can lead to nutrient depletion, and salinisation, reducing soil fertility and this will have a knock-on impact on plant growth over time. [1 additional mark]	
	(e)	With reference to Resource 7, explain how slum conditions may worsen the effects of extreme heat on slum dwellers.	[6]
		Award 1 mark for each explanation of how slum conditions may worsen effects of extreme heat on slum dwellers. Award additional 1 mark for further development of each explanation, where applicable. Possible responses: Slum conditions can significantly worsen the effects of extreme heat on slum dwellers due to poor housing materials, and lack of basic services. • The use of substandard and non-insulated materials such as tarpaulin, metal sheets, and plywood can promote heat trapping and result in the slum housing becoming unbearably hot. [1 mark]. This can lead to increased risk of heat	

		stress and dehydration, especially amongst the vulnerable groups such as children and elderly. [1 additional mark] • The structure lacks adequate ventilation, which hinders the movement of air and worsen indoor air quality [1 mark]. Moreover, the cramped space likely houses multiple occupants, intensifying the urban heat island effect within the micro-environment of the slum. [1 additional mark] • There is also a lack of access to cooling infrastructure or basic amenities like electricity or fans, which could help mitigate the impact of extreme heat. [1 mark]. The absence of shade or greenery in the surroundings further compounds exposure to extreme heat [1 additional mark].	
	(f)	Using Resources 6 and 7, explain the challenges in implementing strategies to respond to climate change in cities.	[5]
		Award 1 mark for each explanation of the challenges in responses to climate change in cities at low levels of development. Award 1 additional mark for further development of each explanation, where applicable. Maximum of 3 marks for reference to only one resource. Possible response: • Cities at low levels of development may not have the financial capacity to implement climate change responses such as adaptation strategies to help them cope with effects such as extreme heat [1 mark]. This is a pressing economic challenge because as shown in Resource 2, it is the lower-income populations and regions that are most vulnerable and exposed to heatwaves [1 additional mark]. • In addition, there may be a lack of governance to offer proper foresight and ensure long-term successes in implementing climate change response strategies [1 mark]. For instance, the effectiveness of climate change mitigation strategies such as urban greening may be viewed as a one-off/short-term strategy and as such, there may be a lack of political investment to help sustain such responses to climate change [1 additional mark]. • The informal nature of slums makes it difficult for governments to provide targeted climate interventions such as early warning systems or cooling centres. [1 mark] Politically, slum residents are often excluded from formal governance and service delivery due to lack of voting power, legal recognition, or representation, meaning they are overlooked in adaptation planning. [1 additional mark] • Slums often lack formal addresses, zoning, and land records, making it difficult for governments to systematically map vulnerable populations. [1 mark]. Economically and administratively, this weakens governments' ability to deliver public climate measures—such as heat alerts, emergency aid, or transport to cooling centres—since residents are not captured in municipal databases. [1 additional mark]	

Section C

Answer **either** Question 3 **or** Question 4.

Cluster 3: Sustainable Future and Climate Change

3 'Climate change in the last two centuries is unequivocally caused by human activities.'

Evaluate this statement.

[20]

Possible approaches:

Candidates could approach the question by evaluating whether climate change in the last two centuries has been primarily caused by human factors, such as fossil fuel combustion, deforestation and industrialisation that have increased greenhouse gas concentrations, or whether natural factors, including solar variability, volcanic activity, changes in the thermohaline circulation and short-term oscillations like El Niño, have also played a role. They may draw on evidence of past climate variability during the Quaternary to assess whether natural mechanisms alone are sufficient to explain the rapid and sustained warming observed since the Industrial Revolution, or whether the unprecedented pace and scale of change points more strongly to anthropogenic drivers.

Candidates could also approach the question by considering how human activities have not only directly contributed to global warming but also accelerated feedback mechanisms, such as the ice–albedo feedback, and initiated changes in the thermohaline circulation during the last two centuries that can further intensify climate change. At the same time, candidates may evaluate the extent to which human actions can mitigate climate change through reforestation, renewable energy adoption or international agreements, and whether these efforts significantly offset the dominance of anthropogenic causes. In making a judgement, candidates may argue that while natural factors continue to influence the climate system, the overwhelming scientific evidence supports human activities as the principal driver of recent change

Levels marked using generic level descriptors for 20m H2 essays

4 Evaluate the issues faced by women living in cities.

[20]

Possible approaches:

Candidates could approach the question by examining a range of economic, social, and psychological issues experienced by women in urban environments. They may consider the extent to which these issues occur across different contexts, while evaluating how their significance varies due to cultural norms, governance structures, and financial capacity of cities. For example, economic challenges such as wage inequality or precarious employment may be more acute in cities with weak labour protections, while social issues such as unsafe public spaces or limited access to childcare may be intensified in contexts with inadequate urban planning. Psychological impacts, such as fear or anxiety linked to gendered insecurity, could then be analysed as both consequences of and interrelated with the economic and social dimensions.

Candidates could also approach the question by evaluating how these issues differ for various groups of women within the same city, such as low-income residents, or professional women. This allows for an exploration of intersectionality, where one group may be disproportionately affected by overlapping disadvantages caused by the interconnected nature of issues—for instance, how economic precarity worsens social inequality and amplifies psychological strain. Evaluation could focus on the relative significance of each category of issues, and how context—ranging from governance capacity to cultural attitudes towards gender—determines whether women’s urban experiences are more constrained or more empowering.

Levels marked using generic level descriptors for 20m H2 essays