

JC1 H2 Geography

End-of-Year Examination Suggested Answers

Section A

1. A group of 10 students carried out an investigation to look into the needs of the elderly living in urban neighbourhoods, particularly the homeless in Singapore. They decided on the following hypothesis for their investigation:

'Homelessness is more prevalent amongst the lower income elderly in Singapore because they cannot afford to pay for housing.'

The group decided to do a survey on the homeless elderly around Singapore via a questionnaire that is being translated to the 3 major languages – Mandarin, Malay and Tamil. They have decided to do their survey in different parts of Singapore where they stay. They also plan to do their survey from 10pm to about 12midnight on a Friday, and look for them at void decks and near closed eateries.

Resource 1 shows an infographic of the homeless in Singapore. Resources 2A and 2B show the questionnaire survey (the English version) the students used in their investigation and the selected results of the questionnaire survey. Resource 3 shows how the Singapore government is helping the elderly population in terms of housing.

(a) Explain whether the student's hypothesis is capable of research. [4]

Award 1 mark for each explanation of why the hypothesis is capable of research, to a maximum of 4m.

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

Possible responses include:

Yes, capable of research.

- **Clearly defined** – identified a specific target group: ***lower income elderly*** [1m]

There are limitations to the research.

- **Not a suitable scale** – whole of Singapore **too big** a scale for 10 students, and doing GI on only one Friday night is **too short a time** with **too little manpower** to yield many samples (Resource 2B shows only 24 samples – too small a sample for a hypothesis that investigates on Singapore). [1m]
- **Not fully researchable** – Although the students might be able to find some homeless elderly in the neighbourhood that they **live in** and are **familiar** with, and be able to **ask some questions** through the questionnaire, [1m] they have not familiarise themselves with secondary data available - like **where the homeless are congregated** (eg. Downtown, Bedok, Kallang), and research those more populated areas instead. [1 additional mark]

(b) With reference to Resources 1 and 2A, explain how the students can best collect data on the homeless elderly in Singapore. [4]

Award 1 mark for each explanation of how students can best collect data on the homeless elderly in Singapore.

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

Possible responses include:

- **Resource 1:** To **determine a sample size** and to **have enough manpower for collecting data** for the area (ie. Singapore) [1m]. If they are limited to 10 students, they should then do a **stratified sampling to obtain representative data of the population** → eg. Collect equal elderly samples from areas with most homeless persons – like Downtown, Bedok and Kallang [1 additional mark].
- **Resource 2A:** Explain to the elderly what the investigation is about first so they will understand the **purpose** [1m] and if they consent to do the questionnaire, the results will be more **meaningful and reliable** [1 additional mark].
- **Resource 2A:** might also be better to have **open-ended interview questions** (eg. why do you choose to stay out here?) [1m] rather than a questionnaire that assumes (eg. Q1 and Q2 - that they stay out because they have no choice or they didn't want to stay with anybody, which is ambiguous) [1 additional mark].

(c) Suggest how the students could minimize potential risk while conducting their investigations on the homeless elderly. [6]

Award 1 mark for each suggestion on how the students could minimize potential risk while conducting their investigations, up to a maximum of 6 marks.

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

Possible responses include:

- **Stranger Danger** – Students should always **go in groups of 2** for safety reasons [1m]. This is because they will be **approaching strangers**, and the investigation is done at **night** in places that are usually hidden (privacy for homeless). Some of these homeless might even **demand a favour** in return for the information they give [1 additional mark].
- **Risks from elements** – Students should be **alert** to safety concerns like **finding shelter** should there be a downpour or lightning occurring at night [1m]. This is because there are not many retail or eateries open to take shelter in at night. They can also check the weather forecast before going out to do their investigation [1 additional mark].
- **Risk from other persons** - They should also be alert to being a **target of unruly behaviour** of drunkards at night [1m]. This is because they are doing the investigation on a **Friday night**, so there and there might be drunkards from pubs who have finished partying and who they might run into during the late hours of the night [1 additional mark].

- **Health safety** – the students could wear masks to prevent transfer of diseases or viruses in the course of their investigations as not all homeless have access to healthcare and some of them might be unwell [1m]. Students can also take precaution to sanitise or wash their hands if they should accidentally touch items that could be contaminated as sometimes the homeless elderly might not have washed their clothes or belongings for a while [1 additional mark].

(d) Explain some possible impacts the students' investigation can have on the elderly. [5]

Award 1 mark for each explanation on the possible impacts the students' investigation can have on the elderly, up to a maximum of 5 marks.

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

Possible responses include:

- **Time consuming** – the homeless elderly might be **tired** after a long day and would likely want to **rest** for the night [1m]. By asking them questions and making them think, the students disturb the elderly's rest time, which some badly need to **be able to work** well the next day [1 additional mark].
- **Intrusion of privacy** - some elderly might feel that their **privacy is being intruded** upon if asked to answer questions that are quite private [1m]. This is especially so when students ask questions like **age** and **income level**. Students should **observe and gauge** if the homeless elderly are receptive to do the questionnaire and **not insist** if they do not wish to do it [1 additional mark].
- **Exposing the elderly and causing anxiety** – some elderly **do not want others to know where they go** to at night, especially when they are homeless [1m]. They might **feel anxious** especially when they are not sure if the students are from some organisation that is out to spy on them or relocate them [1 additional mark].

(e) Explain the best way students can present the data they collected from the questionnaire in Resource 2B. [5]

Award 1 mark for each explanation of the best way students can present the data they collected, up to a maximum of 5 marks.

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

Possible responses include:

- **Radial graph/ star graph** → from a bipolar survey → scores of -2 to 2 can be given based on the category [1m] → **very clear** what the **responses** are to the different questions and can **compare across questions**. [1 additional mark]
OR
- **Multiple bar graph/ stacked bar graph** → (can be 6 or 4 bars → to include one for no data also) [1m] → **so that it is clear what the response** from the homeless elderly who are interviewed are [1 additional mark]

- **Title block** → **draw** [1m] that is clear → **Results of Questionnaire survey on 24 elderly persons on a single Friday night**
- **Labelled x axis** (count/ number) and **Labelled y axis** → **draw** (questions and response) [1m]
- **Key** → **draw** to clearly show what is being represented → either shaded in or coloured [1m]

(f) Using Resources 1 and 2B, suggest what other data could be collected to help the students better understand the needs of the homeless elderly in Singapore. [6]

Award 1 mark for each suggestion on other data that could be collected to help the students better understand the needs of the homeless elderly, up to a maximum of 6 marks.

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

Possible responses include:

- **Physiological needs** – data on **healthcare and food availability** will help the students understand the **medical and dietary needs** of the elderly [1m]. These information will reflect if the homeless elderly can **afford medical care and food to keep them healthy**. This information can be used to compare with that in Resource 1 where the 1 in 4 homeless said they only had one meal a day to determine if that quarter that ate little were the elderly [1 additional mark].

OR

Information on **public transport usage** and **concession** will give the students an idea of whether the elderly homeless are mobile and if they can **afford to commute** for work or medical needs. [1m] Lack of **mobility and access** is sometimes a reason for not being able to find meaningful employment, and this can be used together with the information in Resource 1 (Employment profile) to determine if **mobility** needs affect **employment needs** amongst the homeless elderly [1 additional mark].

- **Security/ Self-esteem needs** – data on **employment** of the homeless elderly and the **types of work they do** will help students understand if the homeless elderly can find gainful employment and if that employment can meet their expenditure on **basic needs** [1m]. This will also help them better understand why 21 out of the 24 homeless elderly they surveyed say in Resource 2B that they *do not have a steady income to pay for monthly rental*. [1 additional mark].
- **Security/ Self-Esteem needs** – data on the **availability of other help available** (other than those in R3, of transitional shelters/ welfare homes/ religious sites where homeless can spend the night) will help students understand the extent elders have their needs met– especially when 12/24 in Resource 2B feel that the government hasn't provided enough housing [1m]. This information will help the students understand if it's because the **homeless elderly doesn't know of the help available in R3** or **not enough help** is

available pertaining to housing or **help is not what the homeless elderly expect**. [1 additional mark].

OR

This information is also important because **having a place to call home** (albeit temporary) gives the homeless elderly **self-esteem and security** and also helps them to move on to find work or employment. Both employment and housing gives them security and self-esteem. [1 additional mark]

- **Social needs** – data on **availability of clean water and sanitation** to help the students better understand if the **basic hygiene and physiological needs** of the elderly are being taken care of [1m].

(g) The students concluded that most of the lower income elderly were homeless because they cannot afford to pay for housing. With reference to all the Resources, evaluate the validity of their conclusion. [10]

Possible responses include:

Somewhat Valid:

- **Resource 2B Qn. 4** shows that 21 out of 24 respondents revealed that they do not have a steady income to pay for monthly rental. This inability to pay for rent is corroborated by Resource 1 which shows that 6 in 10 were working in low paying jobs with a median pay of \$1400. Their low earning power is likely to be due to low education attainment with 35% of the homeless surveyed having only primary school or lower education.
Their conclusions **seems valid** as data collected shows that **12 out of the 16 respondents in Q3 disagreed** that the government has provided enough housing for Singaporeans, indicating that the majority of the homeless elderly surveyed actually feel that the government **has not done enough for them** in terms of providing for housing
- However, the **12 samples in Resource 2B Q3 is only half** of the 24 surveyed, and even then, **8 did not respond** to this question. This **non-responsive data is not representative** of the population of the homeless even in the estates that the students were investigating on. It could at best be the **feelings** of the homeless who have the impression that the government has not done enough for them or perhaps **did not know** what help or resources were available for them.

Not Valid:

- According to **Resource 1**, although the students **sampled areas where they lived** (meaning that they were **familiar with their surroundings** and probably know where some of the homeless elderly can be found) the data collected **might not have given them a good sample** of the homeless or the homeless elderly, as the sample size is rather small, and **focused only on the estates** that the students live in.
Their results **might not be as valid/ reliable** compared to the one done in **Resource 1** by **NUS**. This is because according to **Resource 1**, the homeless

were congregated in certain areas of Singapore, like the Downtown area, Kallang, Bedok and areas near the south of Singapore. Maybe the reasons for the homeless elderly who are staying in the **Downtown area** could be **convenience to workplace** rather than not being able to afford to pay for housing per se.

- Moreover in relation to **Resource 1**, <30% of those interviewed said they had rented an HDB public rental flat or brought an HDB flat and hence has a roof above their heads. In addition, 37% were homeless due to family conflicts or family break-ups **rather than financial constraints as stated in the hypothesis**.
- **Resource 2A** – the questions in the questionnaire were **not clear and precise**. **Q1 does not give a clear indication** why the homeless elderly stayed out. It just states that they have no choice. It might not be due to finances, but maybe strained relationships with family. This is supported in Resource 1 which shows that 37% were homeless due to family conflicts or family break-ups rather than financial constraints as stated in the hypothesis.
- In **Resource 2B**, 20 indicated that they have no choice, but was not specific on the reasons as there was no option for them to elaborate because of the closed-ended nature of the questionnaire. Furthermore, **Q2** is a good reflection of possible reasons (eg. not wanting to stay with others they did not know) other than finances that the elderly are homeless.
- **Resource 2B** also shows that there were many questions in the students' survey that yielded "**No data**", showing that their conclusions could be **inaccurate** as many did not respond. This is especially so in **Q3** where they were asked about their **housing needs** and what they feel the government has done with 8 not responding to this question.
This could be due to **fear/ insecurity** on the part of the homeless, unsure of the purpose of the survey or what the information would be used for, thus unwilling to give sensitive information. The question on approximate income level might also have made the respondents more wary and suspicious, thus reducing their willingness to give information or accurate information.
- **Resource 3** – in the secondary data provided in Resource 3, the cost of renting a 1 room HDB **seems affordable** for those who earn very little, especially if they are 1st timers (less than 5% of their pay), so the conclusions that the students draw are actually **not representative** of the population. Also, those who really cannot afford can turn to other forms of help, like **transitional shelters, welfare homes or religious sites**. This **discrepancy** and **inaccuracy** in the data collected by the students to those by **seedly.sg** could be due to the fact that the students only managed to conduct a **small sample**, reducing the **accuracy** and **reliability** of the investigation.

THUS, it can be seen that the student's conclusions are **not as reliable and accurate** for analysis given the gaps in both the **methodology** of the investigation and the **data that is collected**.

Levels marked using Generic Level Descriptors for H2 fieldwork evaluative questions.

Levels	Marks	Generic Level Descriptors for H2 Fieldwork Evaluative Question
3	9–10	Evaluation is analytical and coherent. Response addresses the question and demonstrates good knowledge and understanding of fieldwork methods relevant to the given context.
2	5–8	Evaluation is mostly analytical and coherent. Weaker responses in this level will have evaluation that is broadly analytical and generally coherent. Response generally addresses the question and demonstrates adequate knowledge and understanding of fieldwork methods relevant to the given context.
1	1–4	Response is descriptive with limited or no analysis and evaluation. Response is fragmented and lacks clarity. Response lacks focus on the question and may be largely irrelevant to it. Response shows basic knowledge and understanding of fieldwork methods. Response has some, though limited, relevance to the given context.
0	0	No creditworthy response

Section B

2. Many people's livelihoods, including 20 percent of the world's freshwater fish catch, are dependent on the monsoonal ebb and flow of the Mekong. Since the 1990s, eleven massive dams straddle the mighty Mekong River before it leaves China and flows into Myanmar, Laos, Thailand, Cambodia and Vietnam. Since the early 1990s, the downstream countries are worried that China could use its massive dams and cascade of reservoirs (they have a total capacity of more than 40,000 million cubic meters) to hold them hostage.

Resource 4 shows the major dams along the Mekong River. Resource 5 shows the impact of the Nuozhadu Dam on the Mekong River. Resource 6 shows the disasters along the Mekong River as reported by IRIN News.

(a) With reference to Resource 4, describe the distribution of dams along the Mekong River. [4]

Award 1 mark for each description of the distribution of dams along the Mekong River, up to a maximum of 4 marks.

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

Possible responses include:

- Most of the **6 major completed dams** are along the **Lancang/ Upper Mekong River (China)**, with one in **Laos** (*Xayaburi*) and one in **Cambodia** (*Dou Sahong*) [1m]
- There are also **4 more dams** that are **under construction** along the **Lancang/ Upper Mekong River (China)** → *Wunouglong, Huangdeng, Dahuaqiao, Miaowei*, with none in other countries. [1m]
- There are also **10 dams planned** for construction along **other parts of the Mekong** in countries like **Laos, (Thailand), Cambodia** [1m] – **and when fully constructed**, there will be dams along the Mekong **on almost every country** that the river flows through – except Vietnam [1 additional mark].
- **Myanmar** and **Vietnam** currently has **no dams** being built [1m].

(b) With reference to Resource 5, describe the impacts of the Nuozhadu dam on the river height of the Mekong. [4]

Award 1 mark for each description on the impacts of the dam on the river height of the Mekong, up to a maximum of 4 marks.

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

Possible responses include:

Wet season:

- During the wet seasons, the actual river height has always been **slightly lesser** than the expected height [1m].
- Since the Nuozhadu Dam came online 2012-2013, the height has **decreased by 1-2meters** during the wet seasons from 2013-2019 [1m].

- From 2019-2020, as water was **held back during the drought** during the *supposed wet season*, river height **decreased by about 4 meters** from the expected height as compared to before the dam came online [1m].

Dry Season:

- During the dry seasons before the dam came online, the river height has always been low, but not fluctuating. However, after the dam came online 2012-2013, the **river height fluctuated much more** than before [1m].
- In 2013, 2015, 2016 and 2018, the actual river height was **similar** to that of expected river height before the dam was built, although it was fluctuating. However, in 2014, 2017 and 2019, the actual river height was **1-2 meters higher** than the expected level. [1m]

(c) With reference to Resource 6, suggest three tradeoffs as a result of dams already built along the Mekong River. [6]

Award 1 mark for each suggestion of a tradeoff as a result of dams built along the Mekong, up to a maximum of 6 marks.

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

Award a maximum of 2 marks if only one tradeoff is given.

Possible responses include:

- **Environmental tradeoff** → the effects are devastating to the environment and **biodiversity** of the river, like the **reduction of fishes** [1m]. As dams regulate water, during dry weather and periods of drought, the combined effects of aridity and lower river flow occurs as waters are held back behind the dams reduces fish stock [1 additional mark].
- **Social tradeoff** → there are **deaths** due to the lack of water during the heat wave and lack of drinking water as a whole [1m]. In Thailand, there were 21 deaths, in Vietnam, 2 million people are **short of drinking water**. [1 additional mark].
- **Economic tradeoff** → due to the low level of the river and the **salinization** of the water as a result of the dam, the economy and lives of the farmers were affected (food security) [1m]. There was **destruction of 10% of the country's rice paddies** due to the building of the Nuozhadu dam as saltwater penetrated further upstream due to the reduction in river level [1 additional mark].

(d) With reference to Resource 4, explain two possible transboundary conflicts that can result from more dams being built along the Mekong River. [4]

Award 1 mark for each explanation of a possible transboundary conflict that can result, up to a maximum of 4 marks.

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

Award a maximum of 2 marks if only one conflict is given.

Possible responses include:

- Tension **between China and the Lower Mekong countries** as the impacts of reduction in flow will be long term [1m] and some (or most) downstream countries have no means to adapt to the dire conditions or afford to mitigate → pressure for China to either regulate flow (ST) or stop constructing more dams (LT). [1 additional mark] **OR**
- As China build more dams (R4 → 10+1 dam) along the upstream Lancang-Mekong River, they have more control over water downstream and if the level of water remains low or continue to decrease, 80% of the 60 million people living in the Lower-Mekong region that depend on the river for food and livelihood will be affected [1 additional mark].
- Tension **between the Lower Mekong states** – esp Cambodia and Thailand and Vietnam against Laos, as Laos is beginning to plan and build dams like China [1m]. This could further impact the vitality of the Mekong and the development of downstream countries where the communities that live near the Mekong depends on the river for livelihood and sustenance (water) [1 additional mark]. **OR**
- As the lower Mekong countries also begin to plan and construct dams in their countries for HEP and energy security/ for economic growth, the low flow of water will be an issue as the efficiency of dams will be affected [1 additional mark].

(e) Suggest three possible strategies that downstream riparian states from the Nuozhadu dam can put in place to ensure that their livelihoods do not worsen from that suggested in Resource 6. [6]

Award 1 mark for each suggestion of a strategy that can be put in place, up to a maximum of 6 marks.

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

Award a maximum of 2 marks if only one strategy is given.

Possible responses include:

- 1) **Co-operative water management** → promotes peaceful management, striving towards a common goal, and consulting all stakeholders, sometimes even involving a 3rd party [1m]. This can ensure that there will be **peaceful talks** between China and the countries in the Lower Mekong and strive towards a **win-win situation** → eg .the Mekong River Commission in 1995 [1 additional mark].
- 2) **International water agreements** → theses allow countries to manage conflicts and diffuse potential hydro wars [1m]. This is useful as it has a **legal framework** and can hold countries like China who has control over the upper Mekong responsible [1 additional mark].
- 3) **Integrated water resource management** → this allows coordinated development and management of water, land and related resources to ensure that water is used effectively [1m]. it is useful as it is a **multi-sectoral approach** involving various stakeholders → eg .the 2014-19 Mekong Delta Water Resource Management project (IWRM) [1 additional mark].

Refer to Lecture notes on Transboundary conflict

- (f) Using all the Resources, explain the challenges that may arise from the implementation of the *Lancang-Mekong Cooperation* in managing conflict and development in the Mekong basin. [6]

Award 1 mark for each explanation of the challenges that may arise, up to a maximum of 6 marks.

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

Possible responses include:

- **Political challenge** because the conflict will not be easily resolved even with the Lancang-Mekong Cooperation (LMC) as some riparian states feel that China is using soft power [1m]. This is because **China seems to have growing control over the regions water resources being on the upper course of the Mekong (R6)**. [1 additional mark]
- **Environmental challenge** as there will be an increasing exploitation of the Mekong for HEP and irrigation as more dams are being built, unless the LMC calls for a reduction in the number of dams being built [1m]. The **number of dams being built along the lower stretches of the Mekong (R4)** shows that riparian states are also following China's lead in exploiting the Mekong River, and there is danger that one day the Mekong will be overly dammed [1 additional mark].
- **Social challenges** as the Lancang- Mekong Cooperation could be used by China or the riparian states to justify the need for economic development and as a result economic gains supersede the social needs [1m]. This is especially true when the **focus of the LMC is development (R6)** and **China can hold back the waters during droughts (R5)** [1 additional mark].

Section C

3. 'Impacts of extractive industries vary spatially.' Evaluate this statement. [20]

Possible Approaches:

Candidates could approach the question by making a judgement on whether impacts of extractive industries vary spatially through a consideration of the economic, social and environmental impacts. Candidates could evaluate the variations in the impacts in terms of the spatial scale, the temporal scale (LT/ ST) and impacts on progress towards sustainable development. Candidates could also consider the variations in impacts on different stakeholders such as indigenous population, businesses, local communities, workers and their families, women, and government etc.

Candidates could also approach the question by making a judgement on whether impacts can be similar in some contexts and different in other contexts through a consideration of two or more case studies. Candidates could consider the contextual factors such as political competency, income and educational level of the people, and the nature of the extractive industry that may have contributed to the variations in the impacts of extractive industries between places.

Levels marked using Generic Level Descriptors for 20m H2 essays

4. 'Countries can mitigate the effects of climate change and adapt to its consequences successfully.' Evaluate this statement. [20]

Possible Approaches:

Candidates could approach the question by making a judgement on whether there are countries who can mitigate the effects of climate change and adapt to its consequences successfully through a consideration of two or more case studies. Candidates could evaluate whether the mitigation and adaptation strategies in each case study achieved the intended aims and targets. Candidates could also analyse the contextual factors and challenges such as the geography of the contexts, level of economic development, effective institutions and governance, receptivity of the stakeholders etc, which may have affected the success of the countries.

Candidates could also approach the question by making a judgement on whether mitigation and adaptation strategies can be implemented successfully by countries through a consideration of criteria such as spatial scale of the strategies, amount of carbon captured, costs of the strategies, ability to bring about long-term solution and ability to address root causes of climate change. Candidates could also analyse the challenges in managing climate change and its consequences.

Levels marked using Generic Level Descriptors for 20m H2 essays

Levels	Marks	Generic Level Descriptors for H2 Essays
5	18–20	Evaluation is consistently analytical and coherent. Response is well-supported by relevant material, including the effective use of examples. Response features accurate geographical knowledge and reflects good understanding of the subject content relevant to the question.
4	14–17	Evaluation is analytical and coherent. Response is mostly well-supported by relevant material, including the appropriate use of examples. Response features accurate geographical knowledge and reflects adequate understanding of the subject content relevant to the question.
3	10–13	Evaluation is broadly analytical and generally coherent. Response is moderately well-supported by relevant material, including some appropriate use of examples. Response features accurate geographical knowledge and reflects adequate understanding of the subject content relevant to the question.
2	6–9	Response is largely descriptive with limited analysis and evaluation. Response is partly coherent and may lack clarity in parts. Response is poorly supported by relevant materials, including the limited use of examples. Response features inaccurate geographical knowledge and poor understanding of the subject content relevant to the question.
1	1–5	Response is descriptive with no analysis or evaluation. Response is fragmented and lacks clarity. Response consists of unsupported assertions. Response features largely inaccurate geographical knowledge and a lack of understanding of the subject content relevant to the question.
0	0	No creditworthy response