



Catholic Junior College

JC2 Preliminary Examinations

Higher 1

GEOGRAPHY

8813/01

Paper 1

2 September 2019

3 Hours

READ THESE INSTRUCTIONS FIRST

Write your class and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **four** questions in total.

Section A

Answer Question 1.

Section B

Answer Question 2.

Section C

Answer two questions, each from a different theme.

The Insert contains all the Resources referred to in the questions.
You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.
Diagram and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

At the end of the examination, you are to hand in **each question separately**.
The number of marks is given in brackets [] at the end of each question or part question.

Start each question on a fresh sheet of paper. You will hand in each question separately.

This document consists of 5 printed pages with 1 blank page.

[Turn over]

BLANK PAGE

Section A

Theme 3: Geographical Investigations

- 1 A group of five 18-year-old students from Singapore wanted to study the liveability of residents in the neighbourhood of Tiong Bahru, Singapore. The students conducted their investigation from 9am to 12pm on a Saturday morning.

The students conducted a landuse survey of the neighbourhood by walking around the neighbourhood and recording the different landuse functions. They presented their findings in a landuse map.

They also conducted a bi-polar survey to assess the perception of the residents with regards to the facilities that were currently available. They stood in front of the Tiong Bahru Market which had high human traffic to distribute the questionnaire survey to the first 20 people who were willing to take the survey.

Resource 1 shows the landuse map of the Tiong Bahru neighbourhood. Resource 2 shows the bi-polar survey questions. Resource 3 shows selected results of the survey.

- (a) Suggest a research question for the investigation and explain why it is capable of research. [3]
- (b) Explain the limitations of the data representation methods shown in Resource 1 and 3, and suggest how it can be improved. [4]
- (c) The group concluded that the data collected for their questionnaire survey may not have been completely reliable and/or accurate. [6]

With reference to the preamble and Resource 2, explain why this is so and suggest how the data collection process of the students' geographical investigation could be improved.

- (d) Explain a potential risk in carrying out the research that you may encounter and propose how you would minimise it. [4]
- (e) Discuss the extent to which the findings in the investigation is a good measure of the liveability of residents in the Tiong Bahru neighbourhood. [8]

Section B

Theme 2: Urban Change

Atmospheric and Hydrological Processes in the Atacama Desert

- 2** The Atacama Desert has an average of less than 15mm of rain each year. Resource 4 shows the wind patterns and moisture available for precipitation in March, 2015, over South America. Resource 5 shows a satellite image of the Atacama Desert in South America. Resource 6 shows sea surface temperature anomalies along the Eastern Pacific Ocean during 20-24 March, 2015. Resource 7 shows the impacts of floods in the Atacama Desert as reported in 27 March, 2015.
- (a)** Describe variations in the total precipitable water over land in South America as shown in Resource 4. [3]
- (b)** With reference to Resource 4 and 5, account for the amount of total precipitable water over the Atacama Desert [4]
- (c)** With reference to Resource 4 and 6, and your own knowledge, explain why there may be an increase in temperature and rainfall over the Atacama Desert in March, 2015. [6]
- (d)** Suggest how the accumulated rainfall amount shown in Resource 7 may affect the flows and storages in the Atacama Desert. [5]
- (e)** With reference to some resources and your own knowledge, explain the factors that contributed to the impacts of floods in the Atacama Desert as shown in Resource 7. [7]

Section C

Answer **two** questions from this section. **Either** Question 3 **or** Question 4 and **Either** Question 5 **or** Question 6.

Theme 1: Climate Change and Flooding

- 3(a) Explain the anthropogenic activities in Less Developed Countries that have contributed to global warming. [9]
- (b) To what extent is alternative energy the best response to contemporary climate change? [16]
- 4(a) Explain the flood management strategies that countries with limited financial resources can use. [9]
- (b) "Global warming can bring about serious negative impacts to all countries." To what extent do you agree with this statement? [16]

Theme 2: Urban Change

- 5(a) Explain the waste management problems faced by countries with low levels of development. [9]
- (b) 'Lack of funding poses the greatest challenge to achieving urban liveability.' With reference to some strategies, to what extent do you agree with the statement? [16]
- 6(a) Explain the reasons for **either** fear **or** crowding in different parts of the city [9]
- (b) Discuss the effectiveness of strategies used to manage **either** fear **or** crowding in cities. [16]

**** END OF PAPER ****



Catholic Junior College
JC2 Preliminary Examinations
Higher 1

GEOGRAPHY

8813/01

Paper 1

2 September 2019

3 Hours

READ THESE INSTRUCTIONS FIRST

This Insert contains all the Photographs, Table and Figures referred to in the questions.

This document consists of **8** printed pages with **1** blank page.

[Turn over]

BLANK PAGE

Resource 1 for Question 1



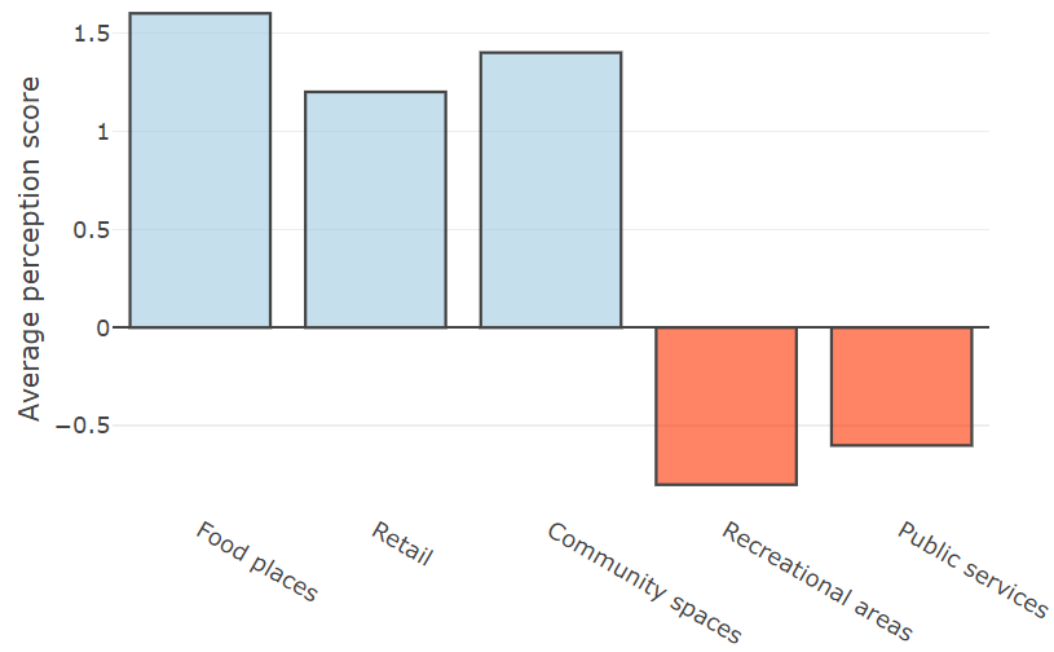
Resource 2 for Question 1

Bi-polar Survey Questions

Resident in Tiong Bahru: Yes/No Gender: Male/Female Age: _____						
Sufficiency of services and amenities index						
Lower Quality	-2	-1	0	1	2	Higher Quality
Insufficient food places						Sufficient food places
Insufficient retail stores						Sufficient retail stores
Insufficient community spaces						Sufficient community spaces
Insufficient recreational areas						Sufficient recreational areas
Insufficient public services						Sufficient public services
Total score:						

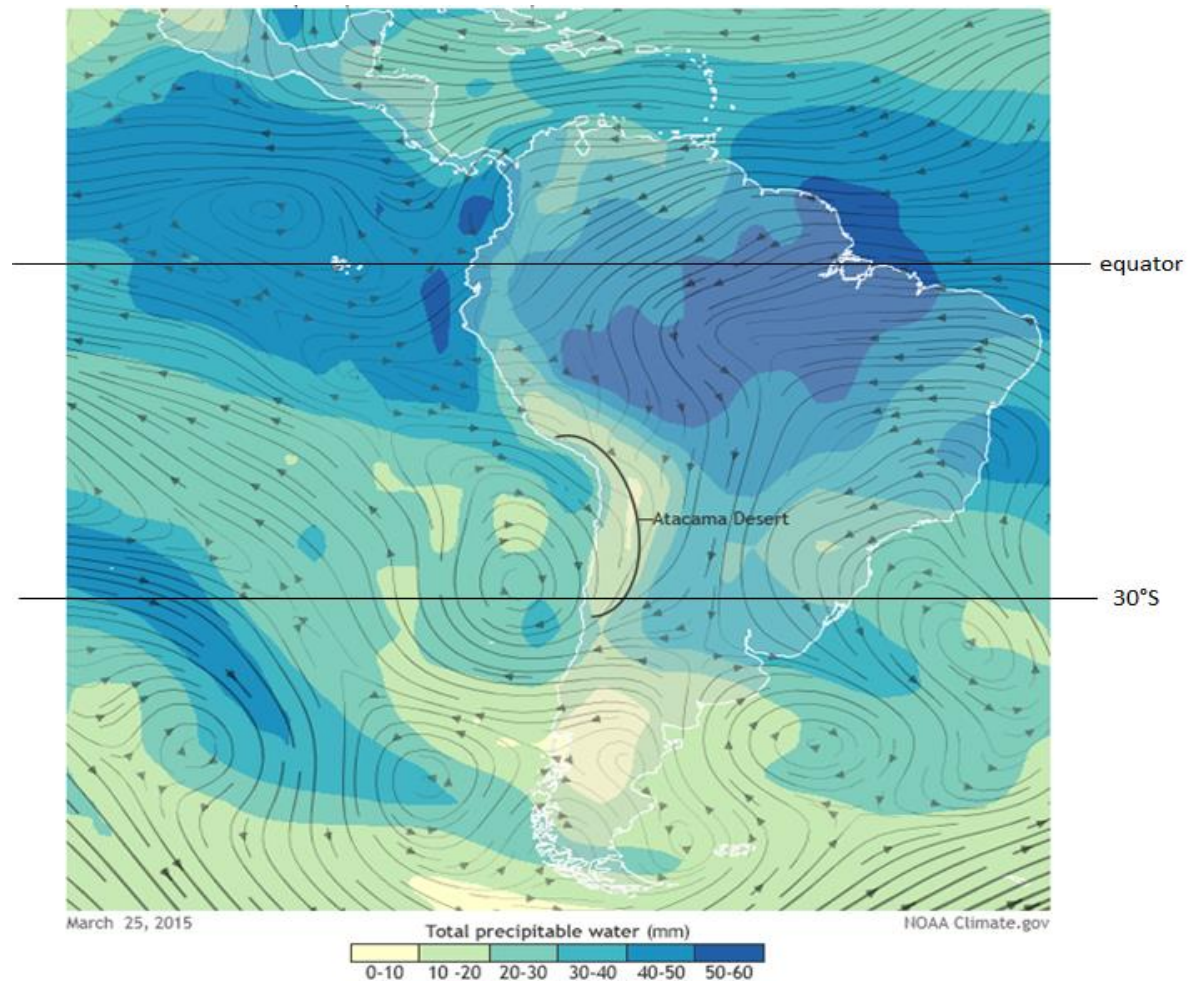
Resource 3 for Question 1

Sufficiency of services and amenities in the Tiong Bahru neighbourhood



Resource 4 for Question 2

Wind patterns and moisture available for precipitation in March, 2015, over South America



→ **Wind direction**

***Total Precipitable water** is the amount of water potentially available in the atmosphere for precipitation i.e. amount of water vapour available.

[Source:<https://www.climate.gov/news-features/event-tracker/flooding-chile%E2%80%99s-atacama-desert-after-years%E2%80%99-worth-rain-one-day>]

Resource 5 for Question 2

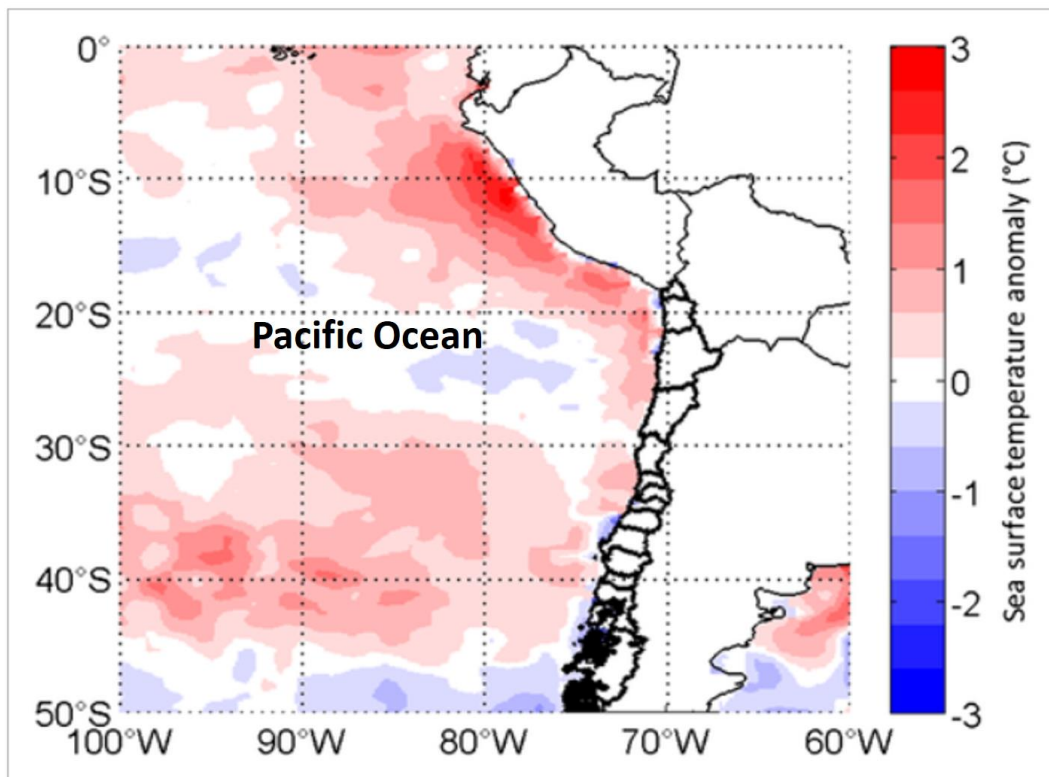
Satellite image of the Atacama Desert in South America



[Source: <https://visibleearth.nasa.gov/view.php?id=73630>]

Resource 6 for Question 2

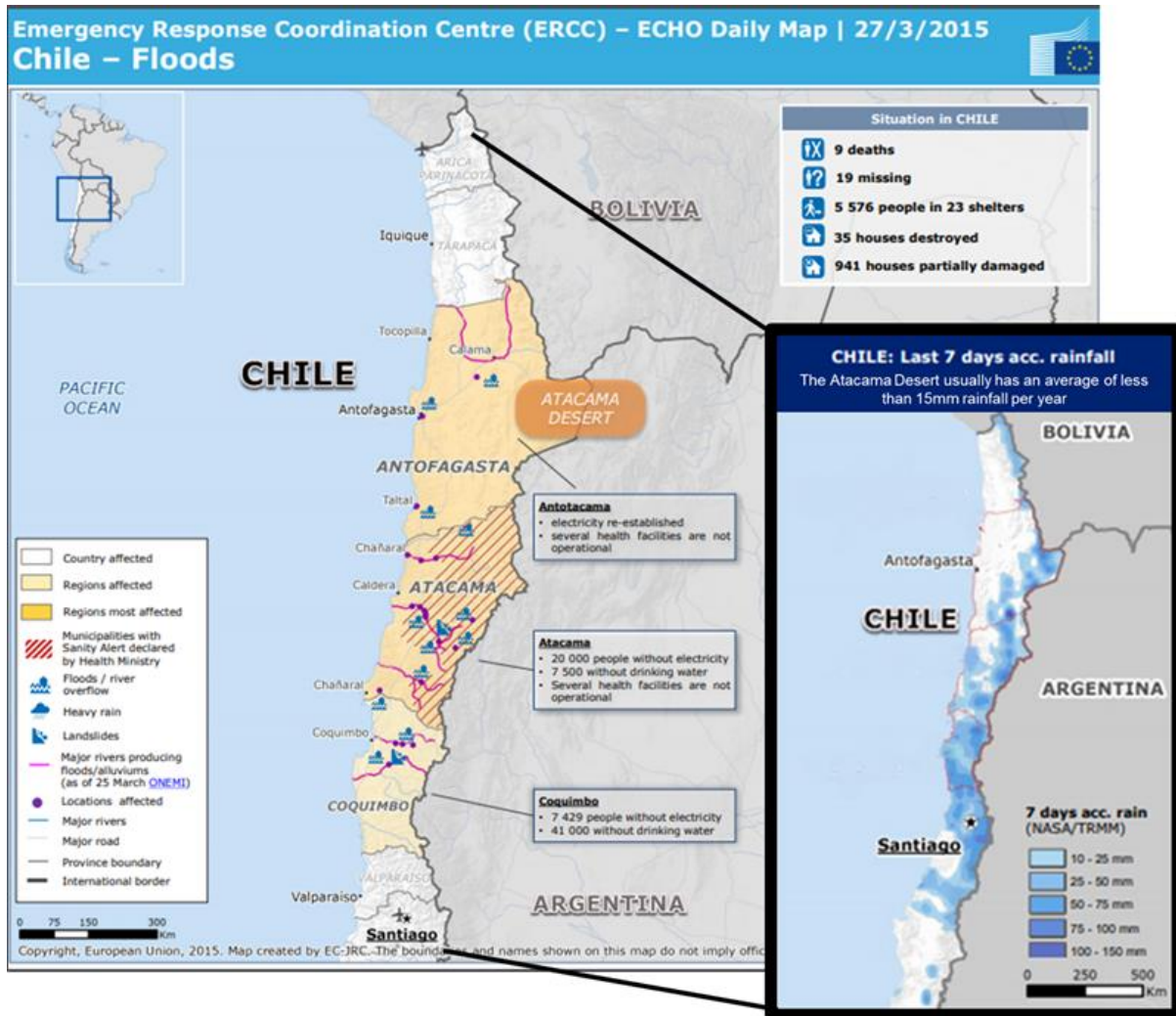
**Sea surface temperature anomalies along the Eastern Pacific Ocean for 20-24
March, 2015**



[Source: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016JD024835>]

Resource 7 for Question 2

Impacts of floods in the Atacama Desert, Chile



[Source: <https://reliefweb.int/map/chile/chile-floods-echo-daily-map-2732015>]

Catholic Junior College
JC2 Preliminary Examinations
Higher 1

GEOGRAPHY

8813/01

Paper 1

2 September 2019

3 Hours

READ THESE INSTRUCTIONS FIRST

Write your class and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **four** questions in total.

Section A

Answer Question 1.

Section B

Answer Question 2.

Section C

Answer two questions, each from a different theme.

The Insert contains all the Resources referred to in the questions.
You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.
Diagram and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

At the end of the examination, you are to hand in **each question separately**.
The number of marks is given in brackets [] at the end of each question or part question.

Start each question on a fresh sheet of paper. You will hand in each question separately.

This document consists of 4 printed pages and 1 blank page.

[Turn over]

BLANK PAGE

Section A

Theme 3: Geographical Investigations

- 1 A group of five 18-year-old students from Singapore wanted to study the liveability of residents in the neighbourhood of Tiong Bahru, Singapore. The students conducted their investigation from 9am to 12pm on a Saturday morning.

The students conducted a landuse survey of the neighbourhood by walking around the neighbourhood and recording the different landuse functions. They presented their findings in a landuse map.

They also conducted a bi-polar survey to assess the perception of the residents with regards to the facilities that were currently available. They stood in front of the Tiong Bahru Market which had high human traffic to distribute the questionnaire survey to the first 20 people who were willing to take the survey.

Resource 1 shows the landuse map of the Tiong Bahru neighbourhood. Resource 2 shows the bi-polar survey questions. Resource 3 shows selected results of the survey.

- (a) Suggest a research question for the investigation and explain why it is capable of research. [3]

Point-marked

- Are there sufficient services and amenities for residents in the Tiong Bahru neighbourhood?
- Capable of research because: 3 hours sufficient, five 18 year olds enough to cover just 1 site, site is accessible and easy to find residents, data is measurable

- (b) Explain the strengths and limitations of the landuse map shown in Resource 1 and suggest how it can be improved. [4]

Point marked

- Resource 1 (Landuse map): Lack of clarity in the definition of some categories (e.g. 'other services', 'mixed land use', colours may be too similar. To improve: clearly define the categories (e.g. specify type of services)
- Resource 2 (bi-polar bar graph): Average perception score may not provide information on how results may vary across ages, Upper and lower limit of the perception score not stated. To improve: Create more bar graphs to represent different categories of age groups, state the upper and lower limit of the perception score.

- (c) The group concluded that the data collected for their questionnaire survey may not have been completely reliable and/or accurate. [6]

Explain why this is so and suggest how the data collection process of the students' geographical investigation could be improved.

Levels marked

Possible points:

- Sensitive questions (age) → provide an age range option instead
- Lack of preamble to ensure confidentiality, residents may not be fully honest → include a preamble/introduction explaining rationale of survey and to ensure privacy of data
- No definition of some categories such as community spaces and public services

Sampling method (convenience sampling) + duration/timing of investigation, hence results may not be representative → conduct quota/stratified sampling + survey large sample size / frequency

Level	Marks	Descriptors
3	5-6	<ul style="list-style-type: none"> • Response demonstrates accurate knowledge of geographical investigation skills and methods relevant to the given context • Reflects a good understanding of the context of liveability and appropriate select of data required to measure it.
2	3-4	<ul style="list-style-type: none"> • Response demonstrates good knowledge of geographical investigation skills and methods. • Description may be limited in depth and detail. • Some of the responses may focus on generic urban fieldwork issues and improvements may not be relevant to the context of the investigation.
1	1-2	<ul style="list-style-type: none"> • Response shows some knowledge of geographical investigation skills and methods • Explanation may be incorrect, inappropriate or irrelevant to the context of the investigation.
0	0	No creditworthy response.

- (d) Explain one potential risk in carrying out the research that you may encounter and propose suitable ways of minimising them. [4]

Point marked

Potential conflict during the distribution of questionnaire surveys due to unhappiness from survey respondents

- Conduct fieldwork in pairs to ensure safety
- Use appropriate language during the distribution of questionnaire surveys
- Assure respondents on privacy of data and do not force them to take the survey if they are unwilling to do so

- (e) Discuss the extent to which the findings in the investigation is a good measure of the liveability of residents in the Tiong Bahru neighbourhood. [8]

Levels marked

Level	Marks	Descriptors
3	7-8	<ul style="list-style-type: none"> • Response demonstrates accurate knowledge and understanding of geographical investigation skills and methods relevant to the context of Tiong Bahru • Provides a logical and well-developed evaluation that reflects strong critical thinking skills and a good understanding of the requirements of the question, including links to reliability, accuracy and validity of data.
2	4-6	<ul style="list-style-type: none"> • Response demonstrates good knowledge and understanding of geographical investigation skills and methods relevant to the context of Tiong Bahru. • Provides an evaluation, which may be limited in depth and detail. • Response reflects critical thinking skills in general but may not always be relevant to the question.
1	1-3	<ul style="list-style-type: none"> • Response shows inadequate knowledge and understanding of geographical investigation skills and methods relevant to the context of Tiong Bahru. • Provides a little or no evaluation. • May include material that is irrelevant to the question.
0	0	<ul style="list-style-type: none"> • No creditworthy response.

Possible points for usefulness of findings

- Secondary data may not be available, hence primary data of residents perception would be useful in measuring liveability
- Sufficiency of services and amenities a relevant benchmark of measuring liveability as they contribute to the well-being and standard of living of the residents

Possible points for limitations of findings

- Data collection method not completely reliable due to small sample size, lack of qualitative data

- Needs of certain groups may not be covered (especially minority groups such as the elderly and the disabled)
- Sufficiency of services and amenities not the only benchmark to measure liveability. Also need consider other factors such as accessibility to transport, affordability of services, traffic congestion, pollution.

Section B

Theme 2: Urban Change

Section B

Theme 1: Climate Change and Flooding

Atmospheric and Hydrological Processes in the Atacama Desert

- 2 The Atacama Desert has an average of less than 15mm of rain each year. Resource 4 shows the wind patterns and moisture available for precipitation in March, 2015. Resource 5 shows a satellite image of the Atacama Desert in South America. Resource 6 shows sea surface temperature anomalies along the Eastern Pacific Ocean during 20-24 March, 2015. Resource 7 shows the impacts of floods in the Atacama Desert as reported in 27 March, 2015.

- (a) Describe variations in the total precipitable water over land in South America as shown in Resource 4. [3]

Point marked

- High precipitable water (30-50mm) concentrated around NE of South America near the equator
- Low precipitable water (0-20mm) around West coast and South of South America
- Moderate precipitable water (20-30mm) around the Eastern and Northern most part of South America

- (b) With reference to Resource 4 and 5, account for the amount of total precipitable water over the Atacama Desert. [5]

Levels marked

Level	Marks	Descriptors
3	5	<ul style="list-style-type: none"> • Accurate knowledge of the likely reasons for the amount of total precipitable water over the Atacama Desert. • Uses resources accurately. • Clear focus on the question with detailed account of the reasons for the amount of total precipitable water over the Atacama Desert.

2	3-4	<ul style="list-style-type: none"> • Adequate knowledge of the amount of total precipitable water over the Atacama Desert. • Uses resource to respond to the question but may be limited or lacks accuracy. • Lacks depth, breadth and clear focus on the question.
1	1-2	<ul style="list-style-type: none"> • Limited knowledge and identifies some reasons for the amount of total precipitable water over the Atacama Desert. • Largely descriptive. • Little or no use of resource. • Use of resource where present will lack accuracy.
0	0	No creditworthy response.

Possible points:

- Total precipitable water mostly between 10-20mm, with a small strip along the coast between 20-30mm
- Lack of water potentially available for precipitation due to lack of exposed water bodies in the desert for evaporation to occur (low ACTET), soil moisture deficit
- Absence of vegetation reduces evapotranspiration rates
- Position near 20-30S near sinking limb of the Hadley cell, descending air prevents evaporation and condensation from taking place
- Position at leeward side of Andes mountains
- Slightly higher precipitable water near the coast due to evaporation from the Pacific ocean forming clouds + direction of wind blowing towards the Atacama Desert may bring about more moisture

- (c) With reference to Resource 4 and 6, and your own knowledge, explain [6]
why there may be an increase in rainfall over the Atacama Desert in March, 2015.

Levels marked

Level	Marks	Descriptors
3	5-6	<ul style="list-style-type: none"> • Accurate knowledge of the likely reasons for the increase in rainfall over the Atacama Desert. • Uses resources accurately. • Clear focus on the question with detailed account of the reasons for the increase in rainfall over the Atacama Desert.
2	3-4	<ul style="list-style-type: none"> • Adequate knowledge of the likely reasons for the increase in rainfall over the Atacama Desert. • Uses resource to respond to the question but may be limited or lacks accuracy. • Lacks depth, breadth and clear focus on the question.
1	1-2	<ul style="list-style-type: none"> • Limited knowledge and identifies some reasons for the increase in rainfall over the Atacama Desert. • Largely descriptive.

		<ul style="list-style-type: none"> • Little or no use of resource. • Use of resource where present will lack accuracy.
0	0	No creditworthy response.

Possible points include:

- Wind direction blowing from Pacific ocean towards land, brings moisture to the area
- Increase in SST anomalies (around 0.5 to 2.5 degrees Celsius of positive anomaly) along Eastern Pacific Ocean increases evaporation rates → may lead to condensation at dewpoint temperature and rain
- This increase in temperatures may be due to El Nino and/or global warming. Explain in detail.

- (d) With reference to Resource 5 and 7, suggest how the accumulated rainfall amount as shown in Resource 7 may affect the flows and storages in the Atacama Desert. [4]

Point marked

- Increase HOF due to sudden increase in rainfall (between 10-75mm of rain over 7 days when annual average is 15mm) & baked desert ground that may be low in porosity
- Increase in infiltration may lead to increase in soil moisture storage and throughflow due to higher rainfall and low antecedent soil moisture
- Increase in percolation may lead to increase in groundwater storage and baseflow
- Increase in channel flow due to higher input levels and contributions from the above flows

- (e) With reference to some resources and your own knowledge, explain the factors that contributed to the impacts of floods in the Atacama Desert as shown in Resource 7. [7]

Levels marked

Level	Marks	Descriptors
3	6-7	<ul style="list-style-type: none"> • Accurate knowledge of the factors that contributed to the impacts of floods in the Atacama Desert. • Uses resources accurately. • Clear focus on the question with detailed account of the reasons for the factors that contributed to the impacts of floods in the Atacama Desert.
2	3-5	<ul style="list-style-type: none"> • Adequate knowledge of the likely reasons for the factors that contributed to the impacts of floods in the Atacama Desert. • Uses resource to respond to the question but may be limited or lacks accuracy.

		<ul style="list-style-type: none"> Lacks depth, breadth and clear focus on the question.
1	1-2	<ul style="list-style-type: none"> Limited knowledge and identifies some reasons for the factors that contributed to the impacts of floods in the Atacama Desert. Largely descriptive. Little or no use of resource. Use of resource where present will lack accuracy.
0	0	No creditworthy response.

Possible points include:

- Desert ground low in permeability → high rates of surface run off (HOF) increasing overland flow and subsequently channel flow contributing to the extent of flood
- Proximity to ocean increases flood vulnerability
- Unexpected large amount of rainfall compared to usual rainfall amounts → lack of flood preparation measures such as warning systems, hard and soft engineering methods to cope with floods
- Lack of preparedness worsen with possibly poor existing infrastructure easily susceptible to damage to electricity, water supply and inadequate health facilities

Section C

Answer **two** questions from this section. **Either** Question 3 **or** Question 4 and **Either** Question 5 **or** Question 6.

Theme 1: Climate Change and Flooding

- 3(a) Explain the anthropogenic activities in Less Developed Countries that have contributed to global warming. [9]

Responses should consider a range of human activities in LDCs that have contributed to global warming. Points could include the increase focus on agriculture, animal farming, rapid urbanisation and industrialisation, little funds to invest in alternative energy sources. Explanation as to how these has contributed to global warming is required.

Better responses will explain the contextualisation of human activities from LDCs in detail, and rank the significance of these activities in contributing to global warming.

- (b) To what extent is alternative energy the best response to contemporary climate change? [16]

Responses should consider the range of strategies that can be used to address or adapt to climate change. They include increasing carbon sinks, adaptation strategies like agricultural practices, geoengineering to cope with the heat, water conservation. All have their pros and cons.

Better responses will be able to articulate that the best response is that which is holistic and suited for the context of the country's resources and needs. Evaluation criteria can include the longevity of strategies, the cost effectiveness for country involved and if they address the root cause of the problem. Better responses also have detailed examples consistently used to argue for their points.

- 4(a) Explain the flood management strategies that countries with limited financial resources can use. [9]

Responses should focus on soft and hard measures of flood protection – hard engineering e.g. levees, walls etc, as well as soft measures e.g. zoning, evacuation, monitoring, afforestation. Better responses will contextualise to cheaper methods.

- (b) “Global warming can bring about serious negative impacts to all countries.” To what extent do you agree with this statement? [16]

Responses should consider that while there are negative impacts to be had, there are possibly good impacts for some, and the type and extent of negative impacts will differ across all countries.

Better responses will be able to articulate that a country's level of development, geophysical condition, access to strategies will determine the extent of negative impacts. Better responses will also have detailed examples that are consistently used.

Theme 2: Urban Change

- 5(a) Explain the waste management problems faced by countries with low levels of development. [9]

Reasons should explain the reasons for waste management problems in countries with low levels of development. This may include difficulties in the collection of waste, the dependency on scavenging as a source of livelihood, and the lack of financial resources / government planning to invest in more environmentally friendly waste disposal methods.

- (b) ‘Lack of funding poses the greatest challenge to achieving urban liveability.’ With reference to some strategies, to what extent do you agree with the statement? [16]

Students should provide a well-evaluated argument to discuss the extent to which political factors determine the effectiveness of strategies used to achieve urban liveability. These factors should be contrasted against other factors such as socio-economic and environment factors. A range of urban liveability issues such as urban reimaging, meeting the needs of minority groups and coping with fear in the city should be discussed. Arguments should be well-exemplified. Overall stand should be consistent and well justified.

Better responses would also analyse how the effectiveness of strategies is dependent on the type of strategies being implemented as the success of some strategies may be more easily achieved through a top-down approach from the government than others.

- 6(a) Explain the reasons for **either** fear **or** crowding in different parts of the city [9]

Reasons should include links to the environmental and social thesis for fear in the city. This includes reasons associated with the physical and social characteristics of the place, along with the characteristics of the individual that may alter the perception of fear. Better responses will have clear examples and focus on linking the factors to the different parts of cities.

- (b) Discuss the effectiveness of strategies used to manage **either** fear **or** crowding in cities. [16]

Students should provide a well-evaluated argument to discuss the effectiveness of different strategies at the individual and government scale used to manage fear in the cities. Links should be made to both the fear of crime and the fear of terrorism. Arguments should be well-exemplified. Overall stand should be consistent and well justified.

Better responses should include an analysis of how the context of the cities and the varying reasons for the fear would affect the relative effectiveness of such strategies

**** END OF PAPER ****