

Name: _____

Class: _____



JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2019

GEOGRAPHY
Higher 1

Paper 1

8813 / 01
September 2019

3 hours

Additional materials: Writing Paper
 1 Insert
 World outline map (upon request)

READ THESE INSTRUCTIONS FIRST

Write your name and civics class 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 or graphs.
Do not use staples, paper clips, 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 question.
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, fasten all your work securely together.
The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **4** printed pages.

Section A

Theme 3: Geographical Investigation

- 1 A group of eight 18 year-old students wanted to examine the needs of elderly living in urban neighbourhoods. They selected the neighbourhood of Choa Chu Kang in Singapore for their investigation. They had access to census information about the percentage of elderly living in the neighbourhood and their dwelling type.

The students wanted to gain further information on access to healthcare services and green spaces to gain a fuller picture of liveability of Choa Chu Kang neighbourhood for the elderly. They were allocated two days for field investigation at the beginning and at the end of August. They conducted a questionnaire survey with 50 elderly residents of Choa Chu Kang and asked questions regarding their satisfaction of their neighbourhood amenities and infrastructure. The survey results were represented in a table for analysis.

Resource 1 shows the demographic data of the elderly resident population in the Choa Chu Kang neighbourhood in 2018. Resource 2 shows the location of clinics in the neighbourhood. Resource 3 shows the Choa Chu Kang Park Connector that spans a total of 5.4 kilometres. Resource 4 shows the survey results collected on the general satisfaction with the neighbourhood amenities and infrastructure of Choa Chu Kang.

- (a) With reference to Resources 2 and 3, suggest a possible hypothesis for the students' investigation and state two reasons why the hypothesis is at a suitable scale. [3]
- (b) Explain how the students can address **two** possible ethical issues that may arise during the investigation. [4]
- (c) Explain an appropriate sampling method to collect the survey results as shown in Resource 4. [5]
- (d) Explain **two** limitations of the data representation method shown in Resource 4 and suggest how the data representation method can be improved. [5]
- (e) Using all the resources, evaluate the usefulness of this investigation in assessing the liveability of Choa Chu Kang neighbourhood for the elderly. [8]

Section B**Theme 2: Climate Change and Flooding**

- 2** Resource 5 shows the annual emission of carbon dioxide (CO₂) by country for 2016. Resource 6 shows the Climate Change Vulnerability Index for 2017. Resource 7 shows various statements on climate change from leaders of Small Island Developing States (SIDS).
- (a)** Describe the global pattern of annual CO₂ emissions in 2016 as shown in Resource 5. [3]
 - (b)** Suggest possible reasons for the variations in CO₂ emission within Asia as shown in Resource 5. [6]
 - (c)** Describe the pattern of vulnerability to climate change as shown in Resource 6. [4]
 - (d)** With reference to Resource 7, explain the factors that can affect a country's vulnerability to climate change. [6]
 - (e)** With reference to Resource 7 and your own knowledge, explain possible strategies to minimise the impact of climate change in developing countries. [6]

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 why rainfall patterns vary between the Tropical Rainforest (Af) and Tropical Desert (BWh) climates. [9]
- (b) 'The effects of climate change pose the greatest risks to countries at low levels of development.' How far do you agree with this statement? [16]
- 4 (a) Explain the factors contributing to the shape of flash flood hydrographs in the humid and arid tropics. [9]
- (b) To what extent are hard engineering strategies more effective than soft engineering strategies in managing fluvial floods? [16]

Theme 2: Urban Change

- 5 (a) Explain how the concept of *urban metabolism* is important in understanding waste management in cities of countries at varying levels of development. [9]
- (b) Evaluate the effectiveness of strategies used to manage non-hazardous solid waste in urban areas. [16]
- 6 (a) Explain the factors that contribute to crowding **or** fear produced in cities of countries at high levels of development. [9]
- (b) Evaluate the effectiveness of strategies used to mitigate the issue of **either** crowding **or** fear in the city. [16]

End

Name: _____

Class: _____



JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2019

GEOGRAPHY
Higher 1

Paper 1

INSERT

8813 / 01

September 2019

3 hours

READ THESE INSTRUCTIONS FIRST

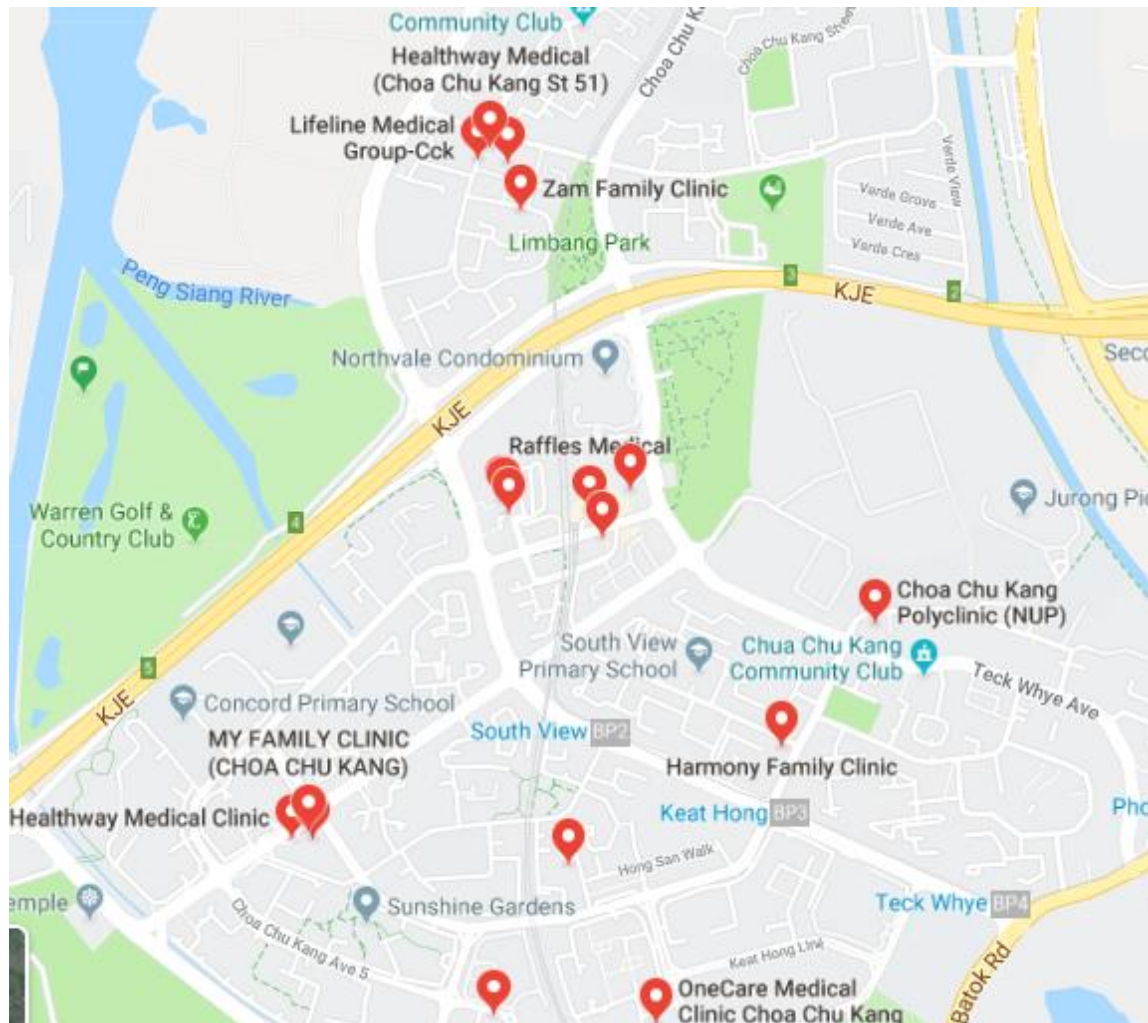
This insert contains all the Resources referred to in the questions.

This document consists of **5** printed pages and **1** blank page.

Resource 1 for Question 1
Demographic Data of Elderly Residents (65 years and above) in Choa Chu Kang

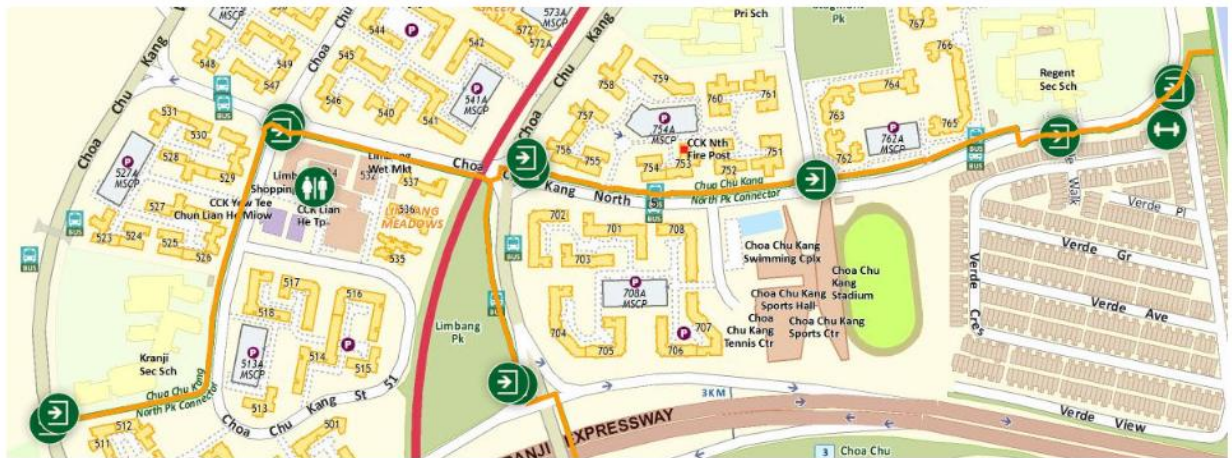
Age Group	Percentage (%)
65-69	46
70-74	33
75-79	16
80-84	4
85 and above	2
Type of Residence	Percentage (%)
HDB Public Housing	86
Condominium	12
Landed Property	2

Resource 2 for Question 1
Map showing the location of clinics in Choa Chu Kang



Resource 3 for Question 1

Map showing the Choa Chu Kang Park Connector



Legend



Park Connector

Resource 4 for Question 1

Data collected from elderly residents about their perceptions of their neighbourhood amenities and infrastructure

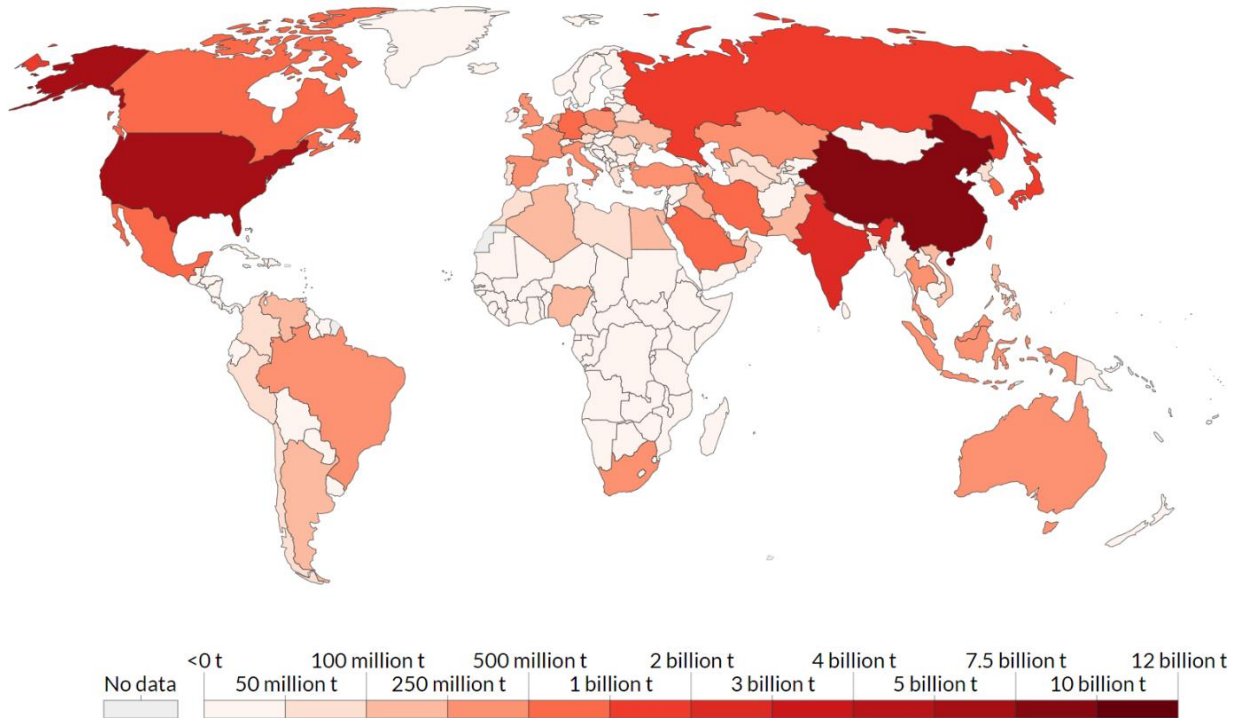
General satisfaction with neighbourhood amenities and infrastructure	Agree and Strongly Agree (%)
There are adequate clinics providing healthcare services in this neighbourhood.	75.1
The nearest clinic is within walking distance.	67.6
There is good access to green space in this neighbourhood.	65.4
The Choa Chu Kang Park connector is within walking distance.	50.4
The footpaths in this neighbourhood are adequate.	84.1

Resource 5 for Question 2

Annual carbon dioxide emissions by country, 2016

Annual CO₂ emissions, 2016

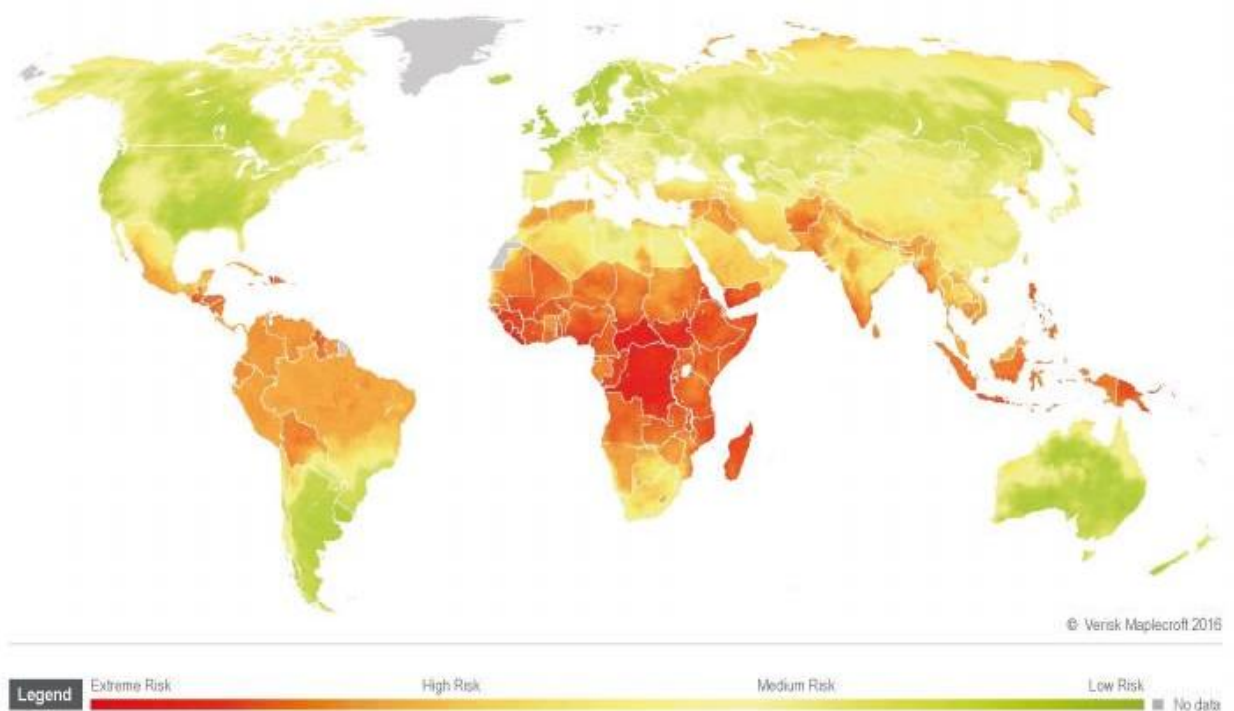
Annual carbon dioxide (CO₂) emissions, measured in tonnes per year.



Source: Global Carbon Project; Carbon Dioxide Information Analysis Centre (CDIAC)

Resource 6 for Question 2

Climate Change Vulnerability Index 2017



Resource 7 for Question 2**Statements on climate change by leaders of Small Island Developing States**

“The Maldives is an archipelago consisting of tiny islands scattered in a vast expanse of the Indian Ocean. Over 80% of the land area have less than one meter above mean sea level, climate change and its associated sea level rise would undoubtedly be a catastrophe and threaten the livelihood of the islanders in the Maldives alike many thousands of others in low-lying island states. Sixteen years ago in April 1987, Maldives experienced unusual high waves causing extensive damage to the islands. Two thirds of the whole Maldives, including the capital island, Malé, was inundated for two days causing extensive damage to the infrastructure. Male International Airport, the only gateway to the Maldives, was closed for two days, causing delays in receiving the relief assistance from the international community, cancellation of tourist arrivals and lot more.”

Statement by Mr. Abdullahi Majeed (Maldives) December 2003

“Our Pacific island nations, including my own country, know from bitter experience of cyclones that regularly batter our region, of the disheartening effect of disasters in setting back in a matter of hours hard-earned development achievements of many years. SIDS concerns and the vulnerability of our nations are therefore quite real. While we accept the primary responsibility for achieving the goals of the [Barbados] Programme of Action, the reality is that the support of the international community is indispensable to success.”

Statement by Tuila’Epa Sailele Malielegaoi, Prime Minister of Samoa, 2004

“As an island nation, Sao Tome and Principe continues to see our very existence threatened by global warming. Our shorelines erode, our national territory shrinks as the seas rise. Is my small country to end up nothing but a tiny volcanic peak sticking up above the waves with the last of our people clinging to the land left unclaimed by the rising sea? The Kyoto Protocol must be implemented by all for the benefit of all.”

Fradique Bandeira de Melo de Menezes President, Sao Tome and Principe, 2004

End

BLANK

Section A - GI

- 1 (a) **With reference to Resources 2 and 3, suggest a possible hypothesis for the students' investigation and state two reasons why the hypothesis is at a suitable scale. [3]**

Award 1 mark for any testable and sensible hypothesis related to availability of healthcare services and green space and liveability.

Possible hypothesis:

- There are sufficient healthcare services and green spaces in CCK neighbourhood to meet the social needs of the elderly.

Possible reasons why the hypothesis is at suitable scale.

- The dependent and independent variables of healthcare services and green spaces and social needs are identified. Healthcare services and green spaces are measurable.
- Clearly defined research areas are identified as Res 2 and Res 3 show the location, availability and accessibility of various clinics and park connector in the CCK neighbourhood.
- A group of 8 students to conduct survey for 50 elderly is adequate on two days in August.

Point Marked.

- (b) **Explain how the students can address two possible ethical issues that may arise during the investigation. [4]**

Possible responses include:

- The elderly may be reluctant to express their honest opinions to the more sensitive questions so students have to make sure that the survey questions do not ask for sensitive information from the respondents.
- Elderly are reluctant to do the survey so students have to seek permission first and reassure respondents the purpose of the survey and the survey results is confidential.
- The elderly may have health issues that can affect the survey; e.g. eyesight issue, hearing issue and fatigue so students may have to enlist the help of any family member or caregiver and have to ensure that the survey does not take too long.

Award 2 marks for a strategy to address the ethical issues identified.

- (c) **Explain an appropriate sampling method to collect the survey results as shown in Resource 4. [5]**

Indicative content

Candidates should describe an appropriate sampling method to collect the survey results, e.g. in stage 2 of developing a plan. A higher level response would make good reference to the context of CCK neighbourhood and consider a mix of sampling method; stratified and quota sampling due to the demographic data of elderly in CCK neighbourhood. As seen in Resource 1, there are 46% of elderly in the 65-69 age group so the students to ensure that 46% of the survey respondents fall under this category.

Levels marked.

Level	Marks	Descriptors
3	5	Response demonstrates accurate sampling method to collect the survey results. Detailed explanation of the sampling method of collecting the survey results with reference to the context of CCK neighbourhood.
2	3 – 4	Response demonstrates some sampling method to collect the survey results. Explanation may be limited in depth and detail.

		Some references made to the context of CCK neighbourhood.
1	1 – 2	Response shows limited knowledge of the sampling method to collect the survey results. Inappropriate or incorrect explanation of method. Response may be of limited relevance to the given context.
0	0	No creditworthy response.

- (d) Explain two limitations of the data representation method shown in Resource 4 [5] and suggest how the data representation method can be improved.

Indicative content

Possible limitations include Res 4 does not allow easy/visual comparison between data on agree and disagree as only data on agree and strongly agree are included, the data shown in Res 4 also hides the disparity between strongly agree and agree.

It can be improved with another data representation method, e.g. a bar graph, to show all the survey results including strongly agree, agree disagree and strongly disagree for the different questions in the survey.

Levels marked.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge on data representation methods. Detailed explanation of the limitations of Resource 4 and how the data shown can be improved.
2	3 – 4	Response shows some knowledge on limitations of Resource 4 and how it can be improved. Explanation may be limited in depth and detail.
1	1 – 2	Response shows limited knowledge on data representation methods. Inappropriate or incorrect explanation of limitations of Resource 4 and how it can be improved.
0	0	No creditworthy response.

- (e) Using all the resources, evaluate the usefulness of this investigation in assessing [8] the liveability of Choa Chu Kang neighbourhood for the elderly.

Indicative content:

Candidates to weigh the usefulness and limitations of this investigation using all the resources. Response should justify why this investigation is useful in assessing the liveability of CCK neighbourhood to a small extent due to its narrow scope. Higher level response will consider the 3 aspects of liveability.

Level	Marks	Descriptors
3	7 - 8	Response demonstrates accurate knowledge and understanding of geographical investigation skills and methods relevant to the given context. Provides a logical and well-developed evaluation that reflects strong critical thinking skills and a good understanding of the requirements of the question. Make reference to all the 4 resources.
2	4 – 6	Response demonstrates good knowledge and understanding of geographical investigation skills and methods relevant to the given context. 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.

		Make reference to at least 2 resources.
1	1 – 3	Response shows inadequate knowledge and understanding of geographical investigation skills and methods relevant to the given context. Provides a little or no evaluation. May include material that is irrelevant to the question. Make reference to at least 1 resource.
0	0	No creditworthy response.

Section B – Theme 2: Climate Change and Flooding

- 2 Resource 5 shows the annual emission of carbon dioxide (CO₂) by country for 2016. Resource 6 shows the Climate Change Vulnerability Index for 2017. Resource 7 shows various statements on climate change from leaders of Small Island Developing States (SIDS).

(a) Describe the global pattern of annual CO₂ emissions in 2016 as shown in [3] Resource 5.

- There is an uneven distribution of annual CO₂ emissions in 2016
- The highest emitters of CO₂ annually are China and United States producing between 10 to 12 billion tonnes.
- The lowest emitter of CO₂ annually are Scandinavian countries (Norway, Sweden, Denmark), central African countries, South American countries (Ecuador, Paraguay, Bolivia, Uruguay, Suriname, Guyana, Cayenne), Central American countries (Nicaragua, Costa Rica) producing between 0 to 50 million tonnes.

(b) Suggest possible reasons for the variations in CO₂ emission within Asia as shown [6] in Resource 5.

CO₂ emission within Asia varies between the highest (China) between 10 to 12 billion tonnes and the lowest (Nepal, Bhutan, Mongolia, Myanmar, Laos, Cambodia) between 0 to 50 million tonnes as shown in R5. Responses should explain possible reasons for the variations in CO₂ emissions in countries of varying levels of development in Asia.

Level	Marks	Descriptors
3	5-6	Response demonstrates accurate knowledge of the possible explanation of variations in CO ₂ emission in Asia. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the possible explanation of variations in CO ₂ emission in Asia. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible explanation of variations in CO ₂ emission in Asia. Explanation lacks detail. Overall the response does not address the context of the question. No reference made to resource.
0	0	No creditworthy response

(c) Describe the pattern of vulnerability to climate change as shown in Resource 6. [4]

- The pattern of vulnerability of climate change (R6) shows uneven distribution varying from low risk to high risk.
- The areas which are at between extreme risk and high risk tend to be located in the tropics between

23°N and S.

- The extreme risk countries are mainly found in central Africa (e.g. Central African Republic, Democratic Republic of the Congo, South Sudan), West Africa (Liberia), Madagascar, Yemen, Central America and Sumatra, Borneo, Papua New Guinea.
- The low risk countries are mainly found in Europe (Denmark, UK, Iceland, Ireland), Russia, Australia, USA and Canada and parts of southern South America (Argentina, South-eastern Brazil, Uruguay)

(d) With reference to Resource 7, explain the factors that can affect a country's vulnerability to climate change. [6]

Responses should explain factors that can affect a country's vulnerability to climate change. Examples of factors include both physical and human factors.

Level	Marks	Descriptors
3	5-6	Response demonstrates accurate knowledge of the factors affecting a country's vulnerability to climate change. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the factors affecting a country's vulnerability to climate change. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the factors affecting a country's vulnerability to climate change. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

(e) With reference to Resource 7 and your own knowledge, explain possible strategies to minimise the impact of climate change in developing countries. [6]

Responses to explain possible strategies to minimise the impact of climate change in developing countries. Strategies should look at both mitigation and adaptation aspects to tackle climate change. Better answers would look at spatial variations in the developing counties.

Level	Marks	Descriptors
3	5-6	Response demonstrates accurate knowledge of the possible explanation of strategies to minimise the impact of climate change in developing countries. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the possible explanation of strategies to minimise the impact of climate change in developing countries. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible explanation of strategies to minimise the impact of climate change in developing countries. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

Section C - Essay

H1 Generic Level Descriptors for 9m SEQ sub-part (a)

Level	Marks	Descriptors
3	7 - 9	Response is consistently analytical and explanatory rather than descriptive. There is a clear focus on the question. Depth of relevant knowledge and understanding exemplified throughout. The response is coherent and the use of terminology is accurate.
2	4 – 6	Response includes analysis and explanation but is generally dominated by description for weaker responses. Response reflects relevant knowledge and understanding of the question. Response is structured and organised satisfactorily but may be unclear in parts. Use of terminology is generally accurate.
1	1 – 3	Response does not address the requirements of the question fully. Depth of knowledge and understanding shown is limited. Response is generally fragmentary and lacks a clear structure and organisation. There may be many unsupported, brief or incomplete assertions and/or arguments with some inaccurate use of terminology.
0	0	No creditworthy response.

H1 Generic Level Descriptors for 16m SEQ sub-part (b)

Level	Marks	Descriptors
4	13 - 16	Response shows strong evaluative elements. Evaluation is relevant and comprehensive. Response fully addresses the question and features accurate knowledge, reflecting depth of understanding. The argument or discussion is coherent and well-supported by relevant material. Use of terminology is accurate.
3	9 - 12	Response displays a sound evaluative element. Response addresses the question and features accurate knowledge, reflecting depth of understanding. The argument or discussion is coherent and supported by relevant material. Use of terminology is relevant and mostly accurate.
2	5 – 8	Response has some elements of evaluation but is broadly descriptive. Response exemplifies knowledge and understanding of the question and is generally relevant. The weakest responses may lack balance and/or depth. Response structure is broadly coherent but may lack clarity. Use of terminology is inconsistent though generally accurate.
1	1 – 4	Response shows little or no evaluation. Response lacks focus on the question and may be largely irrelevant to it. Response is fragmentary and lacks clarity. There may also be unsupported assertions and/or arguments with limited or no use of terminology.
0	0	No creditworthy response.

Theme 1: Climate Change and Flooding

- 3 (a) Explain why rainfall patterns vary between the Tropical Rainforest (Af) and Tropical Desert (BWh) climates. [9]**

Indicative content

Candidates should respond spatial rainfall variations between tropical rainforest (Af) and tropical desert (BWh) as specified. Responses should describe the variations of these two tropical climates. Factors to explain these variations should include influence of ITCZ and Sub-tropical High Pressure systems, ENSO, Monsoons, ocean currents and localised scale like relief/topographic effects on onshore or offshore wind flow .

A higher level response will offer detailed explanation of the factors focusing on ITCZ, STHP and at least localised factor accompanied by well-annotated diagrams (e.g. location of ITCZ on the World Outline Map, ENSO, formation of orographic rain). Responses that make reference to places in the climatic zones should be credited with higher marks.

- (b) 'The effects of climate change pose the greatest risks to countries at low levels of development.' How far do you agree with this statement? [16]**

Indicative Content

Candidates should discuss how the effects of climate change would bring the greatest risks to the LDCs as compared to other higher levels of developments such as DCs and NIEs. Criteria for evaluation would include the scale of impacts in relation to the LDCs and DCs/NIEs, ability of respond and adapt well to climate change and high reliance on economic sectors that are climate-sensitive and limitations faced by LDCs in terms of physical attributes, lack of resources and institutional constraints.

A high level response would evaluate the impacts in terms of social, economic and environmental aspects with appropriate examples to support. The counter argument to the statement could examine that climate change is a global issue and the effects of climate change also pose some risks to all countries but not as great as those in LDCs.

- 4 (a) Explain the factors contributing to the shape of flash flood hydrographs in the humid and arid tropics. [9]**

Indicative content

Candidates should discuss how flash floods could occur in the humid and arid tropics and how it can be represented by flood hydrographs. Candidates should explain why shapes vary between two climates in terms of climatic characteristics as well as nature of the drainage basin of the location.

A higher level response will offer detailed explanation of factors contributing the variation in the shape of flood hydrography of the two climates (Af and BWh) and how that affects the various components of flash flood hydrographs. Candidates providing a well-annotated diagram of the two different types of flash flood hydrographs would be credited.

- (b) To what extent are hard engineering strategies more effective than soft engineering strategies in managing fluvial floods? [16]**

Indicative content

Candidates should weigh both hard and soft engineering strategies according to various criteria such as space, time, scale and system. Hard engineering strategies include the construction of embankments (levees), channel deepening and straightening, use of gabions, overflow or relief channels, storage areas, dam construction. Soft engineering strategies (both in the urban area and its catchment) include afforestation of watersheds, contour ploughing in the river basin, land-use zoning, evacuation and flood insurance.

A higher level response should consider a diverse range of strategies. Candidates could agree with the statement and provide justification where hard engineering strategies were successful. Alternatively, candidates could explain how hard engineering strategies work and in instances where they don't, these are often exception than the norm. Candidates could also disagree with the statement and emphasises how successful examples of flood management always include both hard and soft engineering strategies.

Theme 2: Urban Change

- 5 (a) Explain how the concept of *urban metabolism* is important in understanding waste management in cities of countries at varying levels of development. [9]**

Indicative content

- Candidates should be able to explain the concept of urban metabolism; the characteristics of both linear and circular urban metabolism and the idea of it being linear and circular is reflected in how cities choose to waste management (cities with strategies that promote recycling can be seen as attempts towards achieving circular metabolism).
- A higher level response will offer detailed examples of how cities in varying levels of development are doing waste management hence differ in urban metabolism.

- (b) Evaluate the effectiveness of strategies used to manage non-hazardous solid waste in urban areas. [16]**

Indicative content

Candidates should weigh the strategies used to manage non-hazardous solid waste according to various criteria such as space, time and stakeholders. Strategies include landfill, incineration, recycling and takeback programmes. Responses should weigh between the solutions and issues of non-hazardous solid waste management and an awareness of the relative success of the strategies put in place.

A higher level response could provide detailed examples to illustrate the points. Good candidates may use examples to demonstrate how specific local conditions can influence the effectiveness of strategies carried out, particularly in affecting sustainable urban development in the urban areas.

Levels marked using H1 generic level descriptors for 16m SEQ sub-part (b).

- 6 (a) Explain the factors that contribute to crowding or fear produced in cities of countries at high levels of development. [9]**

Indicative content

Response may include how cities at high levels of development (e.g. economic, social, and environmental) may host factors which contribute to fear. Fear in the city may also be defined in part in relation to gender, such as for a woman traveling around or living in the city on her own, and age, where the young and the elderly may be less secure and more vulnerable to fear.

A higher level response will identify traits or characteristics associated with cities at high levels of development and make explicit links to how these contribute to fear in cities. For instance, a city with a high level of economic development may raise the international profile of the city and makes it a possible target for terrorists and hence increased fear amongst residents in the city.

- (b) Evaluate the effectiveness of strategies used to mitigate the issue of either crowding or fear in the city. [16]**

Indicative content

Answers should include a discussion of both successes and failures in mitigating the chosen issue (crowding or fear). Candidates should address more than one strategy to mitigate crowding/fear. For the former, the answer could include urban design improvements. For the latter, they could discuss enhancing legal powers of law enforcers.

A higher level response could look at the effectiveness of strategies with reference to a specific case study. Another possible approach could be to analyse the application of selected strategies in different cities and account for the success (es) and failure(s).

Levels marked using H1 generic level descriptors for 16m SEQ sub-part (b).

End
