

Name: _____

Admission No: Class:

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2017 Promotional Examination II

Pre-University 2

GEOGRAPHY (HIGHER 2)
Paper 2 Data Response Questions

9751/02
12 September 2017

3 Hours

Additional Materials: Answer Booklet/Paper
 1 Insert

INSTRUCTIONS TO CANDIDATES

Suggested Responses

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

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2
Section A

Theme 4: Geographical Investigation

- 1** A group of Geography students are interested to investigate the effectiveness of recent state-led efforts to improve urban liveability in Singapore. They selected the neighbourhoods of Kallang and Punggol for their investigation. Kallang is an inner city neighbourhood while Punggol is a planned new town.

The group of students were allocated three days for field investigation. They have access to secondary data detailing the range of implemented stage-led efforts to improve liveability in Kallang and Punggol extracted from the URA Master Plan (2013). Resource 1 details the recent state-led efforts to improve urban liveability in Kallang. Resource 2 details the recent state-led efforts to improve urban liveability in Punggol. Resource 3 shows the survey questionnaire results that the students have collected from the neighbourhood of Kallang.

- (a)** Suggest a suitable research question for the students' investigation with reference to Resources 1 and 2, and state **three** reasons why the research question is at a suitable scale.
[4]
- (b)** Explain possible risks that the students might have to confront when conducting the research investigation and suggest ways to mitigate them. [4]
- (c)** Recommend and explain other data collection methods to supplement the findings as shown in Resource 3.
[5]
- (d)** Select a suitable data representation method and sketch resident's perception of the environmental impacts of recent state-led efforts to improve urban liveability using information as shown in Resource 3.
[3]
- (e)** Evaluate the usefulness of the investigation in understanding the impacts of recent state-led efforts to improve urban liveability in Singapore.
[9]

Section B

Theme 1: Tropical Environments

Tropical Cyclone Enawo in Madagascar

- 2 Resource 4 shows the spatial and temporal distribution of tropical cyclones in the world. Resource 5 shows information on Tropical Cyclone Enawo that hit Madagascar in March 2017. Resource 6 shows the flooding situation in Antananarivo, Madagascar on 10 March 2017 as a result of Tropical Cyclone Enawo.

Note: A tropical depression has wind speed of below 63 kilometres per hour, a tropical storm has wind speed of 63 to 118 kilometres per hour while a tropical cyclone has wind speed above 118 kilometres per hour.

- (a) Describe the spatial and temporal distribution of tropical cyclones from 1851 to 2006 as shown in Resource 4. [4]

Award 1 mark for each description on the spatial/temporal distribution. Reserve 1 mark for spatial distribution and 1 mark for temporal distribution.

Possible responses

Spatial distribution:

- Generally located within 5 to 40° N and 5 to 30° S of the equator
- Anomaly: absent in southern Atlantic ocean within the tropics
- Highest frequency found in east Pacific and east Asia with 3 and more cyclone per year
- Lowest frequency found in south Asia and southwest Pacific, of less than 1 per year

Temporal distribution:

- In the N Hemisphere, cyclones are usually formed at the second half of the year, from around June to Dec, e.g. East Pacific is June – Oct while East Asia is May – Dec
- In the S Hemisphere, cyclones are formed at the first half of the year. For e.g. Southwest Pacific and West Australia from Jan – March

Data from Resource 4 should be used when appropriate to support responses

Point marked

Marker's Report:

- Many students failed to provide specific description
 - E.g. '30°N/S from the equator' but cyclones do not exist between 0° to 5°N/S of the equator! (see resource!!)
- For 'describe' questions, students should not be listing everything as seen in the resource. Instead, students should be describing the spatial/temporal distribution such that a reader without looking at the resource is able to visualise the distribution
- Some students managed to mention the general temporal distribution of cyclone

but failed to provide data from the resource to support the observation

- Cyclone tracks do not serve as spatial distribution of cyclones

- (b) With reference to Resources 4 and 5, explain the development of Tropical Cyclone Enawo at Madagascar in March 2017. [6]

Indicative Content

Conditions:

- Due to the position of the overhead sun in the southern hemisphere in the early part of the year (December – March), the Indian Ocean is warmed up
- The warm ocean of at least 28°C to a depth of 60m and atmospheric humidity of up to 6km provides the necessary condition to initiate the formation of a cyclone where the warm sea heats the air above it
- Tropical cyclone started its formation in the warm ocean on 7 March

Track:

- Once formed, the cyclone is steered primarily westwards by the trade winds from 7 to 8 March
- Due to coriolis effect, the cyclone starts to move polewards once it fully develops (8 – 9 March)
- It then starts to move eastwards as they move into areas dominated by westerlies
- The cyclone takes on an anti clockwise direction (moving westwards, polewards and eastwards)

Intensity:

- Cyclone started off as a lower intensity tropical storm. As it crosses the ocean and picks up more moisture from the sea, the storm continues to grow in intensity. As the cycle continues, the surface pressure at the centre drops lower and lower causing the circulation of air to strengthen and the winds to grow increasingly stronger, thus creates a self-sustaining heat energy
- However, after it makes its landfall on the eastern coast of Madagascar, it starts to lose its source of energy which is the ocean, and starts to fall in its intensity (tropical cyclone at Sava vs tropical depression at Analamanga)

Levels marked

Level	Marks	Descriptors
3	5 – 6	Response demonstrates accurate knowledge of development of tropical cyclone, including at least 2 explanation relating to the conditions for its formation, the track of the tropical cyclone or its intensity. Good and accurate use of resources to explain for the development of Tropical Cyclone Enawo at Madagascar in March 2017. Response is clear, detailed and shows focus on the question.
2	3 – 4	Response demonstrates knowledge on the development of tropical cyclone, including at least 1 explanation relating to the conditions for its formation, the track of the tropical cyclone or its intensity. Some reference is made to the resource to explain for the development of Tropical Cyclone Enawo at Madagascar in March 2017. Explanation however may lack accuracy or details in parts. Response is mostly clear but may lack focus on the question at times
1	1 – 2	Response demonstrates some knowledge on the development of tropical cyclone, including at least 1 explanation relating to the conditions for its formation, the track of the tropical cyclone or its

		intensity. Limited or no reference is made to the resource to explain for the development of Tropical Cyclone Enawo at Madagascar in March 2017. Little or no explanation made. Response lacks detail, clarity and focus on the question.
0	0	No creditworthy response

Marker's Report:

- Some students misunderstood 'development' in the question as cyclone formation → Need to see the resource and understand what the question is asking. In this case, the question is asking for the explanation as to the development of the cyclone across days (from storm to cyclone), the conditions necessary for its formation and to explain its track
- Some students misinterpreted the movement of the cyclone from South to North when it's moving the other way round
- Many students were able to bring out the necessary conditions for the formation of cyclone but failed to use the resource(s) to support their answer
- Few students made use of the resource(s) purposefully to answer the question

- (c) With reference to Resource 5, describe the distribution of impacts at Madagascar due to Tropical Cyclone Enowa.
[5]

Award 1 mark for each description that is supported by evidence from Resource 5 where appropriate.

Possible responses:

- Regions that are most affected are along the track of tropical cyclone Enowa
- The eastern side of Madagascar receives greater impact as compared to west Madagascar; e.g. rainfall accumulations follow a gradient whereby highest rainfall of 250 – 500mm are received in the east like in Analanjirofo while places in the west like Morondava received no rainfall from the cyclone/similar for social impacts
- However, Atsimo Andrefana in the west and about 200km away from the cyclone track is one the areas that is most affected despite receiving low amount of rainfall from the cyclone
- Atsinanana is one of the worst affected region; with highest death toll of 23 people and suffering from 5 out of 8 of the impacts listed
- Least affected regions include Morombe, Morondava in the West where they received minima rainfall from the Tropical Cyclone and has no record of flood incidents or the loss of lives and properties

Data from Resource 5 should be used when appropriate to support responses

Point marked

Marker's Report:

- Many students failed to address the part on 'distribution' in the question → they merely address impacts across Madagascar
- Students did not apply the skills taught for questions that require skills to 'describe' a resource
 - I.e. general, specifics and anomaly
- Students are just randomly picking places out and describing the impacts there but not addressing how the impacts were distributed
- Some misread the legend of 'floods' as houses damaged – please read the legend properly, don't assume.

- Impact of accumulated rainfall was not mentioned by all students except one

(d) Using Resources 5 and 6, explain how hydrological processes could have been affected by Tropical Cyclone Enowa which resulted in river floods in Antananarivo, Madagascar.
[6]

Indicative Content:

- Antananarivo, Madagascar received 100 – 250mm rain accumulations from 5 to 12 March as shown in Resource 5
- Initially, rainfall brought about by tropical cyclone Enowa will infiltrate into the soil as long as the intensity is below infiltration capacity of the soil and when the soil has yet to reach saturation
- As the rain continues, soil moisture and groundwater storage starts to increase
- High intensity and long duration rainfall results in soil saturation to be reached
- As the soil reaches maximum saturation, rainwater can no longer infiltrate into the sub-surface
- It then flows over as saturation overland flow downslope into the river (increase in OLF), contributing to river discharge
- Ikopa and Sisaony rivers flood as their discharge exceeds bankfull discharge

Level	Marks	Descriptors
3	5 – 6	Response shows accurate knowledge of as well as clearly accounting for possible changes in the hydrological processes brought about by Tropical Cyclone Enowa that resulted in river floods in Antananarivo, Madagascar. Response uses resources accurately to account for the river flood is resulted. Response is clearly focused on the question throughout with a detailed account of how hydrological processes could have been affected by Tropical Cyclone Enowa and resulted in river floods in Antananarivo, Madagascar.
2	3 – 4	Response shows adequate knowledge of and attempts to account for possible changes in the hydrological processes brought about by Tropical Cyclone Enowa that resulted in river floods in Antananarivo, Madagascar. Response uses resources to account for how the river flood is resulted but the use of resources may be limited or lack accuracy at times. Response may lack detail and depth or lack a clear focus on the question of how hydrological processes could have been affected by Tropical Cyclone Enowa and resulted in river floods in Antananarivo, Madagascar.
1	1 – 2	Response shows limited knowledge of and makes limited attempt to account for possible changes in the hydrological processes brought about by Tropical Cyclone Enowa that resulted in river floods in Antananarivo, Madagascar. Little or no use of the resource to account for how the river flood is resulted. Use of resource where present will lack accuracy. Response lacks detail and focus on the question.
0	0	No creditworthy response

Levels marked

Marker's Report:

- A handful of students are not clear of what hydrological processes are – please revise on your content
- Many students focused on transfers only. Besides transfers, students can

mention about storages and output (river discharge)

- Many failed to get high marks for this question because they did not use the resource(s) purposefully to support the answer
 - E.g students mentioned that the cyclone brought heavy rainfall to the area. → How much of rainfall? (Can be seen in R5)
- Many did not explain clearly how the changes to the hydrological processes resulted in flood in the region.

- (e) Explain **two** impacts caused by the floods due to Tropical Cyclone Enowa in Antananarivo, Madagascar as shown in Resources 5 and 6. [4]

Award 2 marks for each full explanation on an impact to a maximum of 4 marks for 2 impacts given.

Possible responses:

- Disruption of daily activities
From Resource 5, it indicated that Antananarivo is one of the most affected region by the heavy rainfall of 100-250mm brought about by the cyclone that caused floods. People's homes could be flooded and livelihood disrupted as people may have difficulties going to work
- Economic loss
From Resource 5 and 6, it is observed that some parts of Antananarivo are affected by the river floods. Economic activities may come to a standstill as communication links and infrastructure may be damaged and disrupted. This leads to the dysfunction of normal life for a period much beyond the duration of the flooding

Data from Resources 5 and 6 should be used when appropriate to support responses
Point Marked

Marker's Report:

- Again, many students failed to read the resource(s) properly. There are many students who talked about loss of lives and damaged houses when in R5, they clearly did not show these impacts in Antananarivo
- Take note that the question only asked for TWO impacts. Students should not be providing more than two impacts as only the first 2 will be taken into account for assessment

Theme 1: Tropical Environments

Mojave Desert

- 3 Resource 7 shows global distribution of arid tropical climates and deserts. Resource 8 shows the climograph of Mojave Desert, California, USA. Resource 9 shows a landform found in the Mojave Desert. Resource 10 shows a newspaper excerpt of a mudslide incident in the Mojave Desert.

- (a) With reference to Resource 7, describe the distribution of Tropical Desert (BWh) climate in the world. [3]

Award 1 mark for each description, up to a maximum of 3 marks

Possible responses:

- They are distributed generally between 15 to 40 deg N/S of equator
- The distribution of BWh climate occupies a larger area in the northern hemisphere compared to the southern hemisphere

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- They are mostly found in North Africa, central Asia and South-western Australia
- In the North America and South America continent, BWh climates are found along the west coast

Data from Resource 7 should be used when appropriate to support responses

Point marked

- (b)** Using Resources 7 and 8, account for the climate that Mojave Desert in California, USA has. [5]

Indicative Content

- Resource 7 shows that Mojave desert is at about 35°N of the equator (link to subsiding limb of Hadley cell)
- Due to air subsidence associated with the subsiding limb of the Hadley cell, there is little formation of clouds and thus rain → account for the low total annual precipitation Mojave Desert has (99mm of rain as observed in Resource 8)
- However, in some periods of the year (e.g. Nov-Feb), there is presence of convectional rainfall (due to high temperature in the subtropics that lead to high evaporation rates and thus formation of clouds and rain)
- Mean annual temperature of Mojave Desert is high (23°C) due to its geographical location within the tropics
- But there is a high annual temperature range (21°C) due to shifting of position of overhead sun (where monthly temperature reaches its highest of 33°C during Northern hemisphere summer and lowest of 12°C during northern hemisphere winter)

Levels marked

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge in accounting for the climate of Mojave Desert. Good and accurate use of both resources to account for the climate. Response is clear, detailed and shows focus on the question.
2	3 – 4	Response demonstrates knowledge in accounting for the climate of Mojave Desert. Some reference is made to at least 1 resource to account for the climate. Explanation however may lack accuracy or details in parts. Response is mostly clear but may lack focus on the question at times
1	1 – 2	Response demonstrates some knowledge in accounting for the climate of Mojave Desert. Limited or no reference is made to the resource to account for the climate. Little or no explanation made. Response lacks detail, clarity and focus on the question.
0	0	No creditworthy response

- (c)** Explain how the landform shown in Resource 9 is formed. [4]

Award 1 mark for each explanation, up to a maximum of 4 marks

Possible responses:

- Resource 9 shows a sand dune, which is an arid depositional feature
- When saltating sand grains encounter small patches of sand, their kinetic energy is dissipated and they accumulate
- Once the height of such accumulations increases above 30cm, a slipface starts to form
- The constant flow of new material makes a slipface a type of avalanche slope: Sand builds up as it moves over the crest of the dune to the brink;

then it avalanches, falling and cascading as the slipface continually adjusts, seeking its angle of repose (usually 30° to 34°)

Point marked

- (d) Explain **two** conditions required for the formation of the landform shown in Resource 9. [4]

Award 2 marks for each well-explained condition, up to a maximum of 4 marks

Possible responses:

- Lack of presence of vegetation
Scarcity of vegetation **can help to reduce air movement, increase wind velocity and erosivity of wind** that is required to form sand dunes. The lack of presence of vegetation, which act as obstacle to trap sediment, **helps in eolian transportation of grains** and provides **favourable conditions for winds to form**
- Sufficient strong wind
Wind has to be sufficiently strong enough **to initiate soil movement** (entrainment, transportation). **Small particles are difficult to move** due to the particles exerting mutual cohesiveness and how they present a smooth surface to the wind. However, **once entrained, particles can be transported by lower wind velocities**

Point marked

- (e) With reference to Resources 9, 10 and your own knowledge, evaluate the extent to which the mudslide in Mojave Desert is caused by natural factors. [9]

Indicative content

- Students should make use of both resources to discuss how natural factors and human activities could have contributed to the occurrence of mudslide
- Resource 10 indicated that the mudflows were 'unleashed by powerful thunderstorms' → heavy intense rainfall causes slope to be unstable as the water adds weight to the slope which increases shear stress acting on it and also reduces shear strength of slope by reducing the cohesiveness of particles that make up the slope
- It is also observable from Resource 10 that a highway is constructed near the hillslope in Mojave Desert. Human activities have an impact on the occurrence of mass movement too. By undercutting a slope, the gradient of the slope is made steeper which increases the shear stress acting on it, hence more likely for shear stress to exceed shear strength of slope, causing the mudslide to occur
- From Resource 9, it is observable that the landscape of Mojave Desert has a lack of presence of vegetation. Vegetation helps to bind particles together which helps to increase shear strength of slope. There is a lack of vegetation in the arid landscape to anchor particles down, causing the slope to have low shear strength.

Levels marked

H2 Generic Level Descriptors for Open-ended 9m DRQ on Themes 1, 2 & 3		
Level	Marks	Descriptors
3	7-9	Response demonstrates clear knowledge and understanding of the context in the question. Uses relevant detailed and accurate factual information and conceptual understanding. Reflects strong critical thinking skills and may include perceptive insights for the strongest responses. Source(s) is well used to support the response.

		<ul style="list-style-type: none"> Provides a logical and well-developed evaluation well founded on evidence and/or different viewpoints <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> Makes a decision which clearly addresses different elements of the issues and/or interests of different stakeholders
2	4-6	<p>A satisfactory response which is generally sound and contains relevant points, but may not always focus on the context in the question. Uses factual information and conceptual understanding that is generally relevant to the given context but lacks detail and may contain some inaccuracies. Displays general critical thinking skills. Source(s) is used to support parts of the response.</p> <ul style="list-style-type: none"> Provides an evaluation, which may be limited in depth and insufficient evidence and support used <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> Shows some attempt to address different elements of the issue and/or views of different stakeholders when making a decision but is not well developed
1	1-3	<p>Response shows a poor understanding of the context in the question. Uses basic factual information and conceptual understanding which has some, but limited, relevance to the question. Source(s) is not used or not accurately used to support the response.</p> <ul style="list-style-type: none"> Provides little to no evaluation <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> Evidence of decision-making, if present, is simple and may be flawed
0	0	No creditworthy response

Theme 3: Sustainable Development

Transport Situation in Australia

- 4 Resource 11 shows the distance travelled by car vehicles in kilometres (kms) per capita in major cities of Australia from 1989 to 2010. Resource 12 shows the growth in public transport use in major cities of Australia from 2006 to 2011. Resource 13 shows the computer modelling results of estimated future traffic congestion situation by the Office of Auditor General (OAG) of Western Australia (WA), focusing on the main roads in and around Perth, Australia in the year 2015 before and after factoring in public transport use and outcomes from current projects being done to alleviate traffic problems. Resource 14 shows an infographic about the perceived and actual cost of owning a car in Western Australia (WA).

- (a) Describe the trends in the car vehicle kms per capita in the major cities of Australia as shown in Resource 11. [4]

I: Describe

R: What are the trends in the car vehicle kms per capita in the major cities of Australia as shown in Resource 11?

A:

Award 1 mark for each description, up to a maximum of 4 marks

1m – [General observations] Car vehicle kms per capita in major cities in Australia is generally on an upward trend before 2003, peaking around year 2003-2005, before registering a considerable drop from 2005 to 2010.

1m – [Evidence from specific data] Perth generally registers the highest kms per capita, reaching as high as 8250kms per capita in 2004-2005 before dropping thereafter. However, even as its kms dropped after 2005, it remains the highest kms per capita amongst the 5 cities.

1m – [Evidence from specific data] Sydney, on the other hand, registered the lowest car vehicle kms throughout the years, with a peak reading only at 6700kms per capita, which is much lower than the lowest reading for all the other cities.

1m – [Anomaly] It is noted that Melbourne registered an unusually large decline in car vehicle kms from 2004 onwards, from about 8200 at its peak in 2005 to 7000 in 2009, which is even below its first reading of about 7200 in 1989, which no other cities in Resource 11 has achieved.

Point marked

Marker's Report:

- *Candidates are unable to describe a general trend – most described the trend as 'increasing', when it is clear that the general trend should be divided into 2 segments – before 2003-2005 which is increasing and post-2005 which is decreasing. To describe it as 'increasing' for all cities will be misleading – Melbourne and Sydney registered similar or lower readings at 2010 as compared to 1989.*
- *Most are able to pick out and describe the cities with the highest and lowest readings.*
- *Only 1 candidate picked out the anomaly of Melbourne having a lower reading in 2010 as compared to 1989.*

- (b) Compare the journeys to work and overall patronage growth in public

transport use in the major cities of Australia as shown in Resource 12. [3]

I: Compare

R: What are the difference between the journeys to work and the overall patronage growth in public transport use in the major cities of Australia in Resource 12?

A:

Award 1 mark for each comparison, up to a maximum of 3 marks

1m – Generally, there are higher growth in the journeys to work than overall patronage for all major cities in Australia in Resource 12.

1m – Melbourne's and Melbourne+'s difference between the 2 variables are the less apparent – the 2 variables are almost similar in terms of % growth.

1m – Adelaide and Sydney are the only 2 cities in Resource 12 with % growth in journeys to work to be at least twice that of the growth of overall patronage.

Point marked

Marker's Report:

- *Candidates were able to point out the difference but a handful established relationship between the 2 variables instead of comparing.*
- *Only 1 candidate pointed out the large difference between the 2 variables reflected by Adelaide and Sydney.*

- (c) With reference to Resources 11 and 12, discuss the extent to which growth in public transport use can explain the trends observed in Resource 11. [5]

I: Discuss the extent

R: To what extent can growth in public transport use can explain the trends observed in Resource 11?

A:

Indicative Content

- Resource 11 shows overall decrease in car vehicle kms per capita for all the cities. From Resource 12, all cities registered growth in overall patronage in public transport use. Specifically, Resource 12 has shown that journeys to work using public transport use has increased minimally by 12%. This may help to explain the reason for car vehicle kms to be reduced in all the major cities in Australia as journeys to work would have constituted a large percentage of the distance travelled by car vehicles by city dwellers.
- However, to totally attribute the drop in total distance travelled by car vehicles in Australia to the use of public transport would be erroneous and misleading. This is because from Resource 11, Melbourne registered the largest drop in car vehicle kms between 2006 and 2011. However, its increase in use of public transport and for journeys to work is still lower than that of Perth, which actually did not register a huge drop in the car vehicle kms. Thus, other than taking public transport, there may also be other factors which can contribute to lower car vehicle kms, such as telecommuting, or cycling to work instead of driving.

Level	Marks	Descriptors
3	5	Response is analytical and demonstrates accurate knowledge and a good understanding of the relationship between public transport and private vehicle use. Good use of the resources with supporting data used to back up response. Response is clear, detailed and shows focus on the question.
2	3-4	Response is mostly analytical and reflects adequate understanding on the relationship between public

		transport and private vehicle use. Some reference is made to the resource to back up response. Response is mostly clear but may lack focus on the question at times.
1	1-2	Response is descriptive and reflects limited understanding on public transport and other alternative transport modes. Little or no reference is made to resources to back up responses. Response lacks clarity, detail and focus on the question.
0	0	No creditworthy response

Levels marked

Marker's Report:

- *Candidates are not able to use resources adequately to infer that the lowering of car vehicles kms may not be because of public transport use. For example, they are unable to quote from the resource that although Melbourne registered the largest drop in car vehicle kms, it did not register as large increase in public transport usage as Perth. Overall, analysis of data can be seen to be weak for this question.*

- (d) With reference to Resource 13, explain the impact of public transport use and projects done to alleviate traffic problems for Perth, Australia. [6]

I: Explain

R: How have public transport use and projects done to alleviate traffic problems for Perth, Australia be effective?

A:

Indicative Content

- From Resource 13, it can be observed that public transport use and projects done to alleviate traffic problems have been effective in major roads leading to the city centre of Perth. For example, the comparing the maps before and after in 2021, roads south and Southeast of the city centre are projected to be extremely 'not congested' after the projects. As there are more people who take up public transport as their main mode of commuting, this will mean there will be less private vehicles on the road, which will definitely ease congestion.
- However, it should be noted that whilst the projects are able to alleviate traffic congestions in the city, the city centre of Perth is projected to be still highly congested as seen from the 'after' map in 2016 and 2021. This may be due to the high concentration of employment and services in the city centre and would therefore be a lot more difficult to direct traffic and pedestrian flow way from the city centre to ease congestion.
- Also, judging from the new roads which are projected to be built after 2011, it can be posited that even with new roads being built as part of alleviating poor traffic conditions, it will not help to ease traffic congestions and may lead to even more traffic congestions as seen from the 'before' map in 2021 where there are new roads projected to be built or extended at the Northeast and Northern part of the city.

Level	Marks	Descriptors
3	5-6	Response is analytical and demonstrates accurate knowledge and a good understanding of the possible extent of the impact on urban public transport use. Good use of the resources with supporting data used to back up response. Response is clear, detailed and shows focus on the question.
2	3-4	Response is mostly analytical and reflects adequate

		understanding on the possible extent of the impact on urban public transport use. Some reference is made to the resource to back up response. Response is mostly clear but may lack focus on the question at times.
1	1-2	Response is descriptive and reflects limited understanding on public transport and other alternative transport modes. Little or no reference is made to resources to back up responses. Response lacks clarity, detail and focus on the question.
0	0	No creditworthy response

Levels marked

Marker's Report:

- *Most candidates could adequately describe point 1 given in the indicated content. However, the use of resource to substantiate is extremely weak.*
- *Few candidates pointed out the high level of congestion persisting in the city centre of Perth.*
- *Very few candidates noticed about the building of new roads and how this actually led to even more congestion even as new roads were built. In fact, this could be the reason why city centres remain congested even after public transport has been factored in.*

- (e) With reference to Resources 13, 14 and your own knowledge, explain possible strategies to alleviate traffic problems in Perth, Australia. [7]

I: Explain

R: With reference to Resources 13, 14 and your own knowledge, explain how strategies can help to alleviate traffic problems in Perth, Australia.

A:

Indicative Content

- Resource 13 shows the impact of developing public transport and its usage to alleviate traffic congestion in the city of Perth. It is feasible in the city of Perth given that the city should be well endowed with adequate capital to develop better and more efficient public transport system such as developing seamless transport system and enlarging its fleet of buses and trains to connect commuters from their suburban homes to their places of employment. As can be observed from Resource 13, the level of congestion of main roads leading to Perth city centre will indeed be lowered after factoring in public transport use.
- However, from resource 13, it has also been noted that traffic congestion in the Perth city centre remains a concern. This may be due to the fact the most employment and services are found in the city centre and congestion is inevitable as long as commuters have to travel into the city centre for work and other services. As such, the government of Perth may want to consider promoting other forms of transport on top of providing public transport, such as alternative modes of transport such as cycling into the city centre or even encourage telecommuting, where organisations can consider allowing their employees to complete their work from home and thereby reducing the need to commute to the city centres on selected days of the week. The government may even want to introduce the idea of alternative working hours, such as encouraging firms to allow their employees to start and end work later, so as to effectively reduce congestion during peak hours of work days.
- From Resource 14, there seems to be a gross under-estimation of the cost of owning and using private vehicles amongst the residents in Perth. Education and awareness programme of the high cost of owning private

vehicles should be introduced to allow commuters to consider other forms of commuting. The government could even consider increasing the *cost* of owning and using private vehicles such as issuing certificates of entitlement (to increase the cost of **owning** a car) or Road pricing system (to increase cost of **using** a car) to deter people from buying and using their private vehicles.

Levels	Marks	Descriptors
3	6-7	Response is analytical and demonstrates accurate knowledge and a good understanding of the possible extent of the impact on strategies to alleviate traffic problems. Good use of the resources with supporting data used to back up response. Response is clear, detailed and shows focus on the question. .
2	3-5	Response is mostly analytical and reflects adequate understanding on the possible extent of on strategies to alleviate traffic problems. Some reference is made to the resource to back up response. Response is mostly clear but may lack focus on the question at times.
1	1-2	Response is descriptive and reflects limited understanding on strategies to alleviate traffic problems. Little or no reference is made to resources to back up responses. Response lacks clarity, detail and focus on the question.
0	0	No creditworthy response

Levels Marked

Marker's Report:

- *Weak reference to resources, although many candidates could explain the different strategies which could be used to alleviate transport issues. This type of responses could only warrant a low L2.*

- End of Paper -

Copyright Acknowledgements:

Question 1 Resource 1 & 2	http://www.fendylee.com/master-plan-2013/archives/11-2013/3 (Last accessed: 21 August 2013)
Question 1 Resource 3	Millennia Institute
Question 2 Resource 4	http://www.geocoops.com/tropical-storms.html
Question 2 Resource 5	http://www.gdacs.org/datareport/dailymap/TC/1000341/20170310_Madagascar_TC_ENAWO.pdf (Last accessed: 10 August 2017)
Question 2 Resource 6	https://maps.mapaction.org/dataset/5338c40f-3446-4aaf-abb9-07eb7ec3edbb/resource/8e9478ba-7958-43df-a259-5e006f2d8cad/download/ma003antananarivofloods10032017-300dpi.pdf (Last accessed: 10 August 2017)
Question 3 Resource 7	http://www.geo.hunter.cuny.edu/tbw/wc/notes/15.climates.veg/climate/B/arid.seimarid.climates.world.map.jpg (Last accessed: 11 August 2017)
Question 3 Resource 8	http://7continents1globe.com/mojave-desert/ (Last accessed: 11 August 2017)
Question 3 Resource 9	https://www.flickr.com/photos/sieren/5609982041/ (Last accessed: 11 August 2017)
Question 3 Resource 10	http://www.fox5ny.com/news/34017262-story_ (Last accessed: 11 August 2017)
Question 4 Resource 11	https://chartingtransport.files.wordpress.com/2011/10/car-vkms-per-capita.png (Last accessed: 14 August 2017)
Question 4 Resource 12	https://chartingtransport.files.wordpress.com/2013/02/jtw-versus-overall-pt-growth-v2.png (Last accessed: 14 August 2017)
Question 4 Resource 13	https://audit.wa.gov.au/reports-and-publications/reports/main-roads-projects-address-traffic-congestion/demand-road-network-increased-traffic-congestion-predicted-get-worse/ (Last accessed: 14 August 2017)
Question 4 Resource 14	https://greengurus.com.au/car-sharing-is-coming-to-perth/ (Last accessed: 14 August 2017)