Paya Lebar Methodist Girls' School (Secondary)
End-of-Year Examination 2023
Secondary 3 (Express)

ANSWERS

Answer **all** questions.

1 Section A: Geography in Everyday Life – 25 Marks

(a) Study Fig. 1, which shows the Therapeutic Garden at Bishan-Ang Mo Kio Park that was launched on 19 September 2017.

Fig. 1

(i) With reference to Fig. 1, describe how green spaces are essential for people's health. [2]

Provision of recreation space
- Green spaces in the nature offer numerous opportunities for outdoor activities where people can also use it to have direct and frequent interactions with nature. [1]
- This can provide various health and well-being benefits such as lowering of anxiety and regulating good blood pressure. [1]

OR

Removal of pollutants
- During the process of photosynthesis plants and vegetation absorbs carbon dioxide and other air pollutants and releases oxygen. [1]
- This will thus allow the level of pollution in a location to be reduced thus allowing people to absorb cleaner air to be inhaled. [1]

Accept any one reason with elaboration at 2m each

(ii) Using named examples, explain how wildlife from nature areas can negatively
impact people. [2]

- Due to urban expansion, wildlife may venture out of the nature areas in search of food or shelter as their natural habitats are affected/ shrinking due to the land space required for urban development. [1]

Examples:
- For example, wild boars which roam around urban neighbourhoods in Singapore (such as in Punggol). [1]

- As these wild boars might be unfamiliar in urban spaces, they may attack human due to human-wildlife encounters, causing harm onto human's health (e.g. injuries, scars etc) [1]

- OR When being provoked by humans due to not knowing how to deal with these wildlife, these wild boars may attack them, causing humans to suffer from injuries, thus risk upon their health. [1]

- OR At Punggol neighbourhood where the macaques cause a mess at the trash bin – looking for food but this impact negatively on people as their neighbourhood – would not feel safe if those macaques attack/ OR monkeys climbing into their homes – potential to steal their belongings [1]

1m – for example
1m - explanation

Accept any other plausible answers

(b) Study Fig. 2A and Fig. 2B, which shows the findings from a survey conducted on Singaporeans' perceptions about hawker centre.
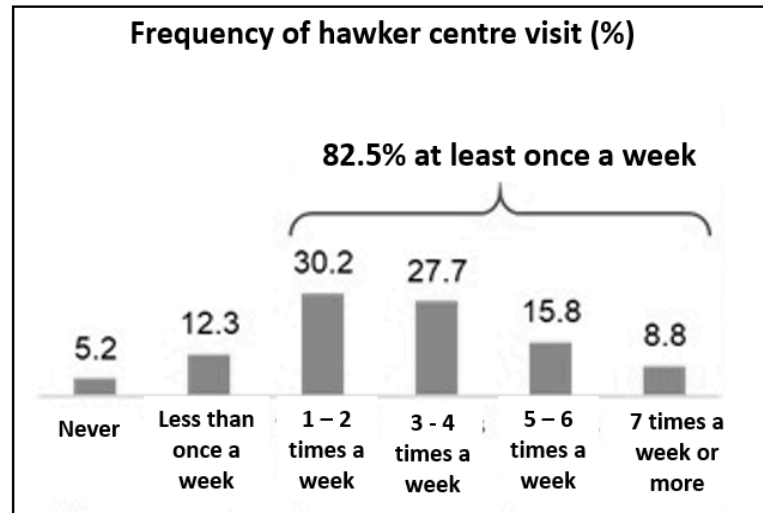
Frequency of hawker centre visit (%)

82.5% at least once a week

Never	Less than once a week	1 – 2 times a week	3 - 4 times a week	5 – 6 times a week	7 times a week or more
5.2	12.3	30.2	27.7	15.8	8.8

Fig. 2A

% of respondents' views on the following statement

Hawker Centre promote interactions among people from different age groups

Overall, 90.7% of respondents agree or strongly agree with the statement

9.1	70.8	19.9
Disagree	Agree	Strongly Agree

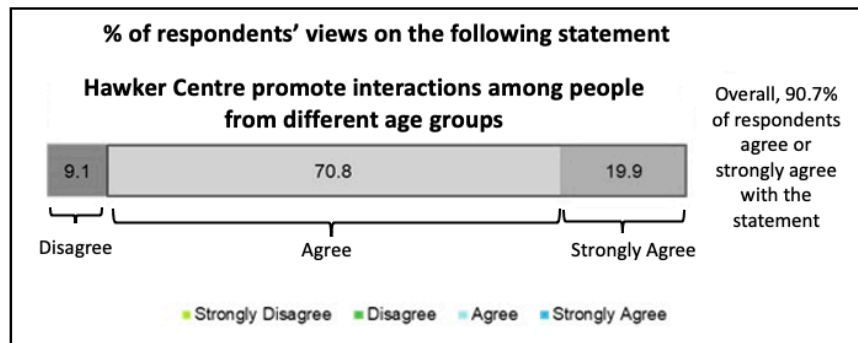■ Strongly Disagree ■ Disagree ■ Agree ■ Strongly Agree

Fig. 2B

Using information from Fig. 2A and Fig. 2B, describe how people can develop a sense of place for the hawker centre. [4]

Point #1: Repeated encounters – frequent going to Hawker centre – increase familiarity.

- Repeated encounters with objects and people during our daily travel reinforces our sense of place [1]

- Evidence from Fig. 2A – where 82.5% responded they frequent the hawker centre at least once a week [1]

Point# 2: A place for people to build relationships with others through interactions.
- The hawker centre may provide an idea for some interaction and to make connections, thus this may create a safe space for building of relationships as many can chat over food or drinks.[1]

- Evidence: 90.7% agree or strongly agree that hawker centre promote interactions among people from different age groups. [1]

1 described way [1] + Evi [1]

Accept any other plausible answers.

(c) Study Fig. 3, which shows an integrated transport hub in Yishun, Singapore.

Northpoint Shopping City Centre

Residential units

Yishun MRT station

Entrance to air-conditioned Yishun Bus Interchange

Fig. 3

Using Fig. 3, explain **two ways** how spatial associations can enhance everyday living.   [4]

#First way: Co-location of train stations and bus interchange [1]
- Convenient for residents to travel to farther away destinations by combining different modes of travel [1]
- OR Proximity maximises the number of people taking trains, sustaining its operations [1]

#Second way: Shopping mall near to various transport options [1]
- Increase access to the shopping mall, where it ensures the sustainability of businesses found in the mall [1]

#Third way: Residential areas are near to shopping mall / transportation [1]
- Allow residents to purchase their daily necessities/goods and services → promote convenience as they do not have to travel far [1]

Accept other plausible answers.

(d) Study Fig. 4, shows the spatial hierarchies of town planning in Singapore.

Spatial hierarchies of town planning in Singapore

Fig. 4

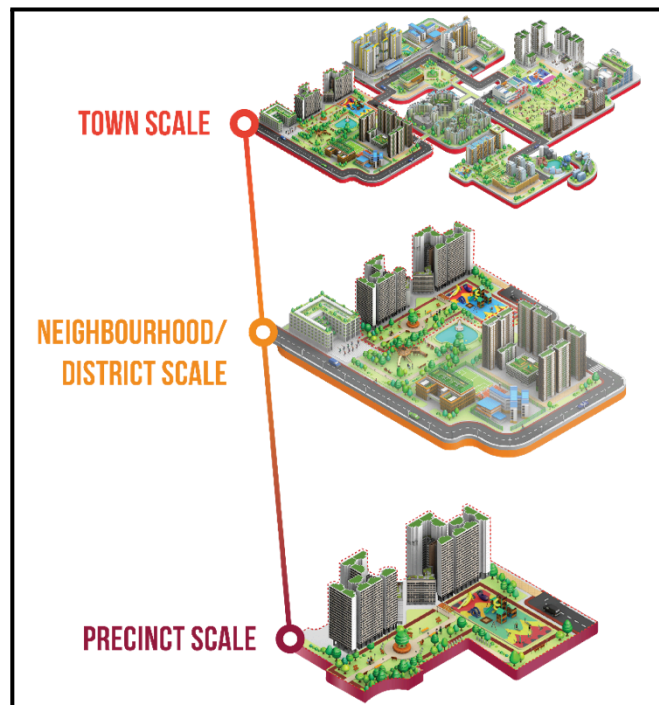**(ii)** With reference to Fig. 4, briefly describe the characteristics of each level of the hierarchy shown. [3]

- Many residential units (400 to 800) form **a precinct** [1] / Facilities within the precinct are within close proximity, for example children's playground [1]
- Many precincts form **a neighbourhood** and serves between 4000 to 6000 residents [1] / Each neighbourhood has its own shops and schools that serve residents [1]
- Many neighbourhoods from **a town**. [1] / with land allocated for housing, industrial and commercial development [1]

One point each allocated to each level of hierarchy.

(e) Study Fig. 5, which shows the 2022 Environmental Performance Index where it provides data on the state of sustainability around the world.

2022 Environmental Performance Index

Fig. 5

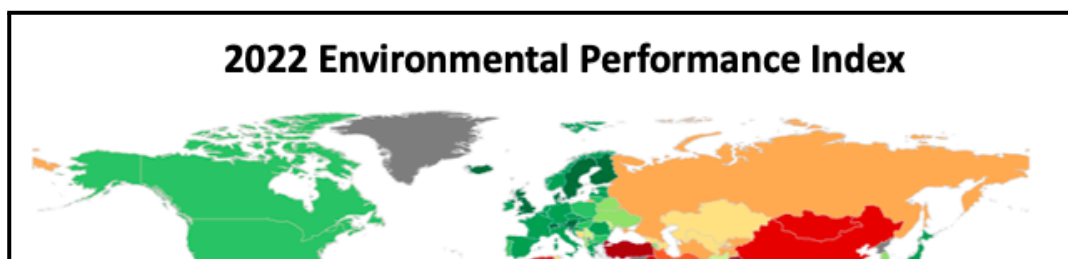Using Fig. 5, describe the global distribution of the state of sustainability around the world.   [3]

- Better EPI: USA, Australia and Canada has a much better/ has a good performance for its environmental performance index as (evidence) it is within the range of 1 to 72 EPI (in the green coloured).
- Worse EPI: Countries such as India, China, Indonesia, Mongolia has a poor performance for its EPI within the range of 144 and above (108 to 180) – red-coloured
- Moderate EPI: Countries such as Russia, Kazakhstan, Argentina has a moderate performance for its EPI within the 90-120 range.
- Exception: Despite Africa continent experiencing poor performance in EPI, there are some areas/countries which indicates a good EPI (at the South of African continent)

Max 2m for distribution
- **identifying the distribution of better EPI [1]**
- **identifying distribution of worse EPI [1]**
- **- identifying exception [1]**

Reserved 1m – for quoting evidence

(f) Study Fig. 6, which is an article about a fire incident which took place in Jurong East neighbourhood, Singapore.

Resident killed in fire at Jurong East flat, 3 others rescued from unit next door

One resident was killed in a fire which broke out in a Jurong East flat. The fire was raging inside the unit when firefighters arrived.

Three residents from a neighbouring flat had to be rescued by firefighters.

Affected residents have been provided with alternative accommodation in the vicinity and will be given assistance, said a spokesman from the Housing Board.

The interior of the affected unit at Block 236 Jurong East Street 21 on Aug 16, 2022. (Photo: Singapore Civil Defence Force)

Fig. 6

(i) Using Fig. 6 and other information studied, explain the impacts of such fire hazard in an urban neighbourhood. [3]

1. Fires may cause people to lose their lives. As quoted from Fig. 6, "one resident was killed in a fire".
   - This suggests that people may suffer from burn injuries and if they are not able to evacuate in time, it may lead to fatality [1] as raging fire was unable to be put out fast enough/ Resident could have suffered from high levels of carbon monoxide – may have difficulty in breathing when trying to escape from fire.
   - As resident might not escape in time, too much carbon monoxide may cause the resident to have loss of consciousness and facing death. [1 - AM]

2. Fire in one unit may cause other residents to be affected–" Three residents from neighbouring flat had to be rescued by firefighters".
   - This suggests that the fire could have caused other residents to suffer from difficulties in breathing, [1]
   - Suffocated by the smoke – which may permanently damage their respiratory system. [1 - AM]

3. Property Damage
   - "Residents have been provided with alternative accommodation" the fire could have led to properties in their homes to be destroyed causing them to require a temporary accommodation for them to live under while their house required further repair from the damage caused [1]
   - As most of their property are damaged, this led to economic losses where further costs are incurred after the fire to repair and rebuild properties that were damaged [1 - AM]

Explanation of ONE impact at 1m each
If additional elaboration is provided for ONE impact, max 2m can be awarded.

(ii) Using a named example, explain two ways how an urban neighbourhood in Singapore can build its community resilience. [4]

Strengthening relationship among residents
   - Residents are encouraged to get to 'know their neighbours' so that they can depend on one another during an emergency.
   - For example, The People's Association (PA) organises a wide range of community activities aimed at fostering positive relationships amongst

residents living in the neighbourhood. This builds the community's resilience and it was evident throughout the COVID-19 pandemic as residents came together to provide assistance to others in need (e.g. mask and food distribution).

Developing the ability to organise and equip with resources to adapt and recover

- Residents in the neighbourhood can participate in a participatory, inclusive planning process that involves community leaders, civil society organisations and the government.
- For example, the Community First Responders (CFRs) volunteers are instrumental to supporting the government on search and rescue operations, relief work as well as reaching out to communities for skill building on simple first-aid and basic firefighting. This helps SCDF optimise its emergency resources to attend to life-threatening and other higher-priority cases.

OR

- **Through reducing panic hence better response to danger [1]: Example:** With more residents being trained in First Aid, CPR-AED and Fire Safety [1], residents are more assured during these emergencies as they are aware of what to do/ someone has been trained thus increasing the community resilience in Singapore [1]

OR

- **Through clear official messaging system i.e. SG Secure [1]:** With an official messaging system, residents would be more prepared to react and follow disaster plan as they know the messages are from a secure source [1] thus reducing panic/ increasing speed of reaction [1], and increasing community resilience

2 Section B: Climate – 25 Marks

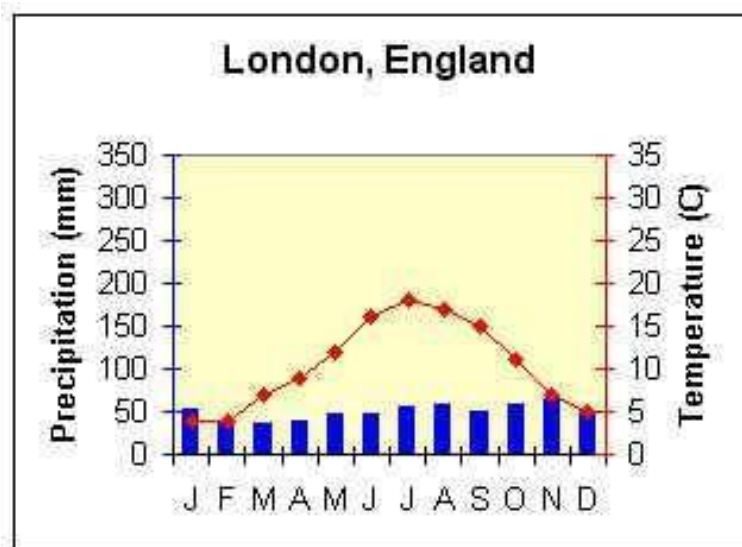**(a)** Study Fig. 7, which shows the climograph of London, England.

Fig. 7

(i) Identify the type of climate experienced in London, England. [1]

Cool Temperate Climate

AO2

(ii) Describe the temperature patterns shown in Fig. 7. [3]

- London, England has a moderate mean annual temperature of 11°C.
- The hottest month is in July and the monthly mean temperature is at about 18°C.
- The coolest month is in Jan/Feb and the monthly mean temperature is at about 4°C.
- London, England has moderate annual temperature range of 14°C.
AO2

(b) Study Fig. 8, which shows a type of rain commonly formed over the Himalayas Mountain Range.
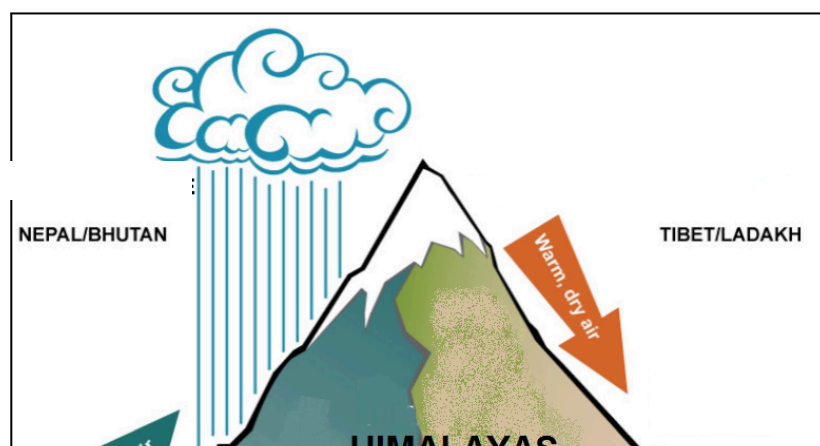
Fig. 8

Explain the formation of rain commonly formed over the Himalayas Mountain [3]
Range.

- Prevailing winds pick up moisture over the sea, and push the moist air up the windward side of a mountain.
- The rising moist air cools and condenses on condensation nuclei at dew point temperature. Clouds are formed.
- Water droplets in the clouds collide and coalesce, and when they become large and heavy enough, they fall to the ground as rain on the windward side.
- As most of the moisture has fallen on the windward side, the leeward side experiences dry descending air and is thus dry.

AO1

(c) Study Fig. 9, which shows the location of two American cities, Dallas and San Diego.

Fig. 9

Using Fig. 9, account for the seasonal temperature differences you would [4]
expect at both Dallas and San Diego.

- <u>San Diego</u> experiences the maritime effect where its <u>coastal location</u> regulates its temperature where as <u>Dallas</u> will be affected by the continental effect due to its <u>inland location.</u> [1]
- During summer, the air over the sea gains heat slower than land. The cooler air over the seas helps lower the temperature, leading to cooler summers in San Diego.
- During winter, the air over the sea takes a longer time to lose heat. The warmer air over the seas helps to raise the temperature of the coastal areas, leading to warmer winter in San Diego.
- On the other hand, the air over the land heats up quickly leading to warmer summers in Dallas.
- During winter, the air over the land loses heats quickly leading to colder winters in Dallas.

AO1

(d) 'Anthropogenic factors are the main cause of climate change.'

To what extent do you agree with this statement? Explain your answer. [9]

Level	Marks	Generic Level Descriptors
3	7 - 9	Develops arguments that supports both sides of the discussion clearly using a range of points with good elaboration. Examples used demonstrate a comprehensive understanding of the issue or phenomenon. Evaluation is derived from a well-reasoned consideration of the arguments.
2	4 - 6	Develops arguments that support one side of the discussion well using one or two points with some elaboration. Example(s) used demonstrate a good understanding of the issue or phenomenon. Evaluation is well supported by arguments.

| 1 | 1 - 3 | Arguments are unclear with limited description or may be listed. No examples provided or examples are generic, demonstrating a basic understanding of the issue or phenomenon. Evaluation is simple, missing or unclear. |
| 0 | 0 | No creditworthy response |

Sample answer:

Anthropogenic factors are the main cause of climate change as large scale human development has led to our massive need for space and the burning of fossil fuels, increasing temperatures all around the world. On the other hand, natural factors have always been taking place and have a smaller impact on temperatures in the recent years as compared to anthropogenic factors.

Anthropogenic factors are the main cause of global warming due to deforestation and burning of fossil fuels. (P) Deforestation is the loss of forests due to the removal or clearance of trees in forested areas to make products such as paper and building materials. Forests absorb carbon dioxide through photosynthesis, taking in a significant amount of global greenhouse gas emissions. With deforestation, there are fewer trees and other plants to absorb carbon dioxide, leading to an increase in carbon dioxide levels in the atmosphere. Deforestation also exposes soil to sunlight, leading to carbon oxidation whereby carbon dioxide is produced. (EL) For example, between 2000 and 2010, 52000 square kilometres of forests are cleared every year, leading to an increase in carbon dioxide levels. (EX)

Also, more fossil fuels are burnt to meet the energy demands of agriculture, industry and an increasing urban population. When people live in urban areas, there will be a greater demand for energy for lighting of roads, buildings and the maintenance of other common facilities. This contributes to an increase in greenhouse gases by producing large amounts of carbon dioxide when burnt. (EL) For example, in 2010, global carbon dioxide emissions totalled 30.6 billion tonnes, which led to an increase in global temperatures. (EX) Therefore, anthropogenic factors are the main cause of global warming due to the large amount of carbon dioxide emissions produced as well as the clearance of carbon stores like trees and soil. (L)

Natural factors have a smaller impact on global warming than anthropogenic factors. (P) The sun emits varying amounts of solar radiation due to changes in its magnetic field. During periods of intense solar magnetic activity, the number of sunspots increases, resulting in higher solar radiation. The number of sunspots rises and falls with an approximate 11 year cycle. (EL) For example, in 2000, the most number of sunspots were observed due to higher solar activity, leading to an increase in global temperatures. When the number of sunspots reached its minimum in 2009, global temperatures were also temporarily lower than global temperatures in the past 20 years. (EX) However, natural factors have always been present and have not led to a drastic increase in global temperatures. Rather, it is anthropogenic factors

that have resulted in an exponential increase in temperatures in the recent years. Therefore, natural factors have a smaller impact on global warming than anthropogenic factors. (L)

In conclusion, anthropogenic factors are the main cause of global warming due to the massive amount of deforestation and burning of fossil fuels that have occurred over the recent decades., leading to an exponential increase in global temperatures. Natural factors are not the main cause of global warming as they have always been present and have not led to a massive increase in global temperatures.

AO3

END OF PAPER

Assessment Specification Grid

Question	Max Mark	Question Part	AO1	AO2	AO3
1	25	(a)(i)	2		
		(a)ii)	2		
		b)		4	
		c)	4		
		d)	3		
		e)		3	
		f) i)	3		
		f) ii)	4		
		Total for Qn 1	18	7	
2	20	(a)(i)		1	
		(a)(ii)		3	

		(b)	3		
		(c)		4	
		(e)			9
		Total for Qn 2	**3**	**8**	**9**
		Overall	**21**	**15**	**9**