	Class	Register number
Name		

GEOGRAPHY (2279/02)
Paper 2

Monday   **26 AUGUST 2024**   **1 hour 45 minutes**

VICTORIA SCHOOL

PRELIMINARY EXAMINATION
SECONDARY FOUR

Candidates answer on the Question Paper

READ THESE INSTRUCTIONS FIRST

Write your name, class and register number on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use paper clips, highlighters, glue or correction fluid.

Candidates should support their answers with the use of relevant examples.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

Answer **all** questions.

The insert contains additional resources referred to in the questions.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 50.

ANSWER SCHEME

Setter: Mr Heng Yan Kai and Mr Kelvin Koh

This question paper consists of **15** printed pages (including this cover page).

Answer **all** questions.

1   **Cluster 1: Geography in Everyday Life**

(a)	Explain how environmental stewardship can be fostered to build sustainable urban neighborhoods. [2]
	Award 1 mark for each explanation to a maximum of 2 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. **Possible responses include:** • Promoting volunteerism among neighborhood residents to share knowledge with others about the importance of healthy ecosystems. [1] • This helps residents become more aware of what they can and should do responsibly use and protect the natural environment. [1 additional] • Partnership of public and private sectors is crucial for to steward the environment. [1] • Different stakeholders contribute to environmental efforts as they have different perspectives, resources, and expertise to enhance the environmental stewardship efforts. [1 additional] **AO1**
(b)	Fig 1.1 is an exemplary residential estate in HDB's Green Towns Programme. **Fig 1.1**

	Sketch the residential estate as shown in Fig 1.1. Annotate the sketch to show two features that promote environmental sustainability. [3]	
	Award 1 mark for a sketch of the residential estate. Award 1 mark for each annotation of features to promote environmental sustainability. **Possible annotations to show:** • Beautifying of estates using greenery with ample protection and maintenance of nature [1] • Facilities that support green commute such as cycling, reducing carbon output [1] • Using solar panels to harness solar energy, it is an energy efficient design approaches for buildings and landscapes [1] **AO2**	
(c)	Explain how media representations of place may affect an individual's sense of place. [3]	
	Award 1 mark for each explanation to a maximum of 3 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. **Possible responses include:** • Individuals respond well to representations that agree with how we feel about places in our neighborhood. [1] • It adds new layers of meaning to these places by revealing interesting information about them, thus enhancing their sense of place. [1 additional] • However, individuals may respond defensively to media content that challenges to their sense of place. [1] • This causes people to dismiss the media content, perceiving them as distortions or untruths, further justifying and strengthening their sense of place. [1 additional] • People may be affected when media content turns out to be true, which negatively impacts their sense of place as the positive meanings they used to form are altered. [1 additional] **AO1**	

(d) Fig 1.2 (Insert) shows the distribution of industrial estates, business nodes, institutes of higher learning, airports and ports in Singapore.

Map of Industrial Estates, Business Nodes, Institutes of Higher Learning, Airports and Ports in Singapore
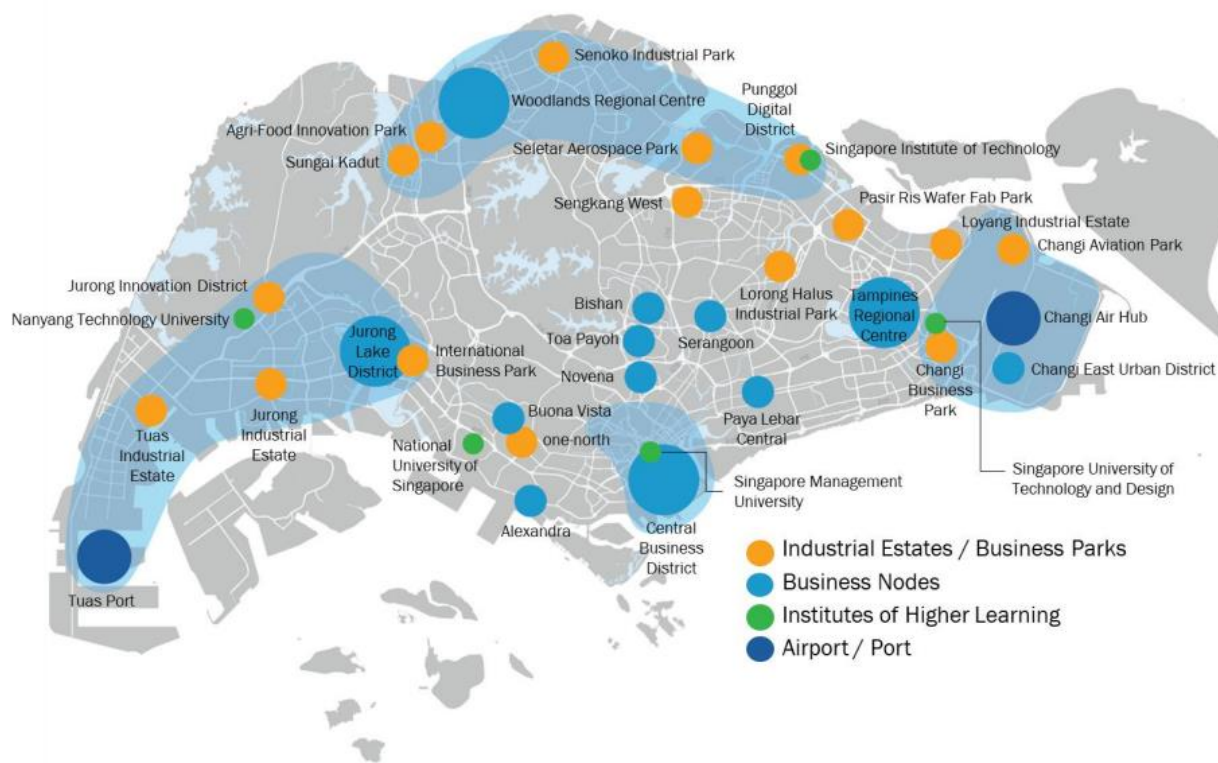

Fig 1.2

With reference to Fig 1.2, describe the spatial pattern that is shown on the industrial estates of Singapore. [2]

Award 1 mark for each description, up to maximum of 2 marks.
Award a maximum of 1 additional mark for further development of each point.
Students are expected to use key concepts in their description.
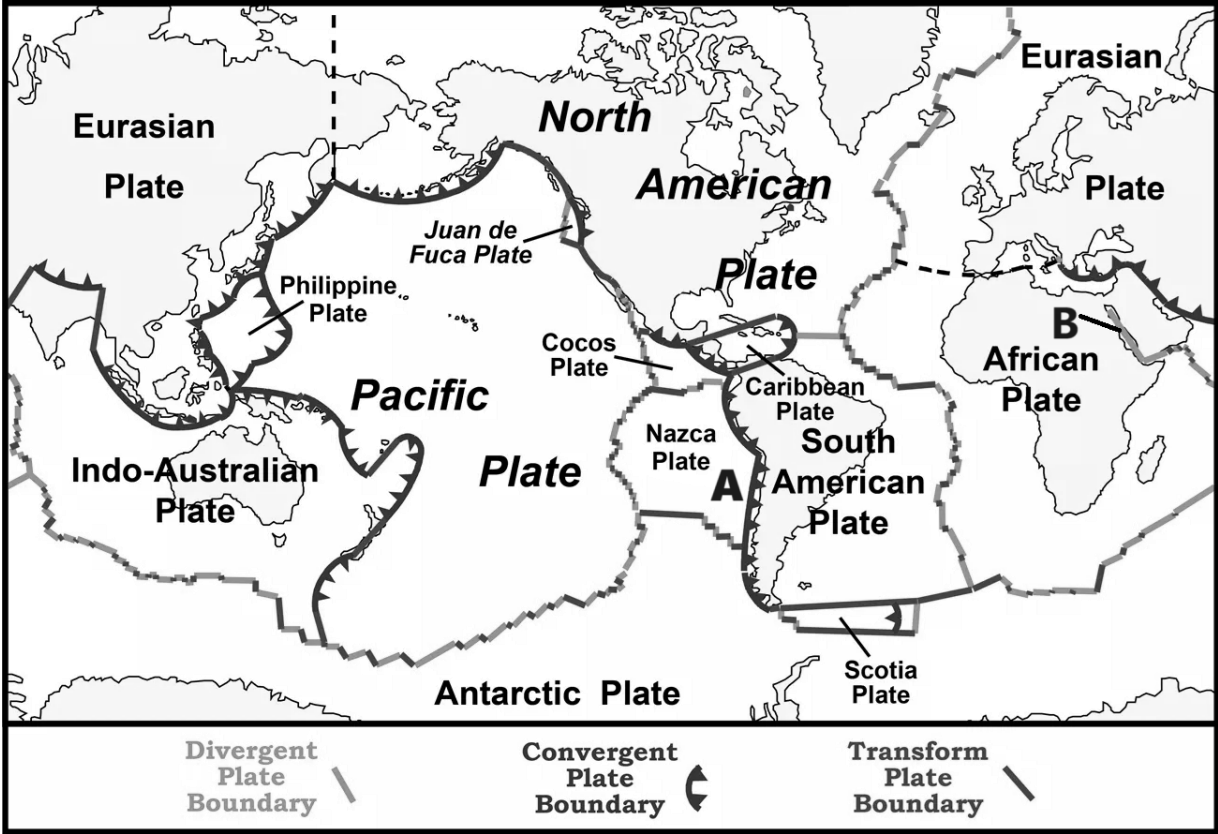
Possible responses include:
- Towards western, northern, southern and eastern region of Singapore, it can be observed that there are **non-random arrangement** of industrial estates, a central business nodes and at least one institutes of higher learning clustered together. [1]
- For example, the western region consist of a cluster of Tuas industrial estate, Jurong industrial estate, Jurong innovation district, accompanied with the Jurong Lake Business district and National technology university. [1 additional]

AO2

(e)	Describe the negative impacts of fire hazards on the community. [3]
	Award 1 mark for each description, up to maximum of 3 marks. Award a maximum of 1 additional mark for further development of each point. **Possible responses include:** • People may suffer from burn injuries when they are unable to evacuate in time. [1] • Severe burn injuries may lead to disabilities or deaths. [1 additional] • High levels of carbon monoxide and carbon dioxide may be released during a fire can cause carbon monoxide poisoning. [1] • Carbon monoxide poisoning may cause headache, dizziness, weakness and confusion and even loss of consciousness or death. [1 additional] • These symptoms from CO poisoning can cause difficulty for people to escape from fires which results in other physical injuries or death. [1] • Smoke inhalation can also cause breathing difficulties and suffocation. [1] **AO1**
(f)	Fig. 1.3 shows flooding along Holland Road and one of the environmental management strategies employed in Singapore. **HOW EXCESS STORMWATER ENTERS AND EXITS THE SDT** 1 Stormwater flows into Holland Road drain 2 During heavy rain, gates allow excess stormwater to overflow into weir chamber 3 Water flows by gravity into Stamford Detention Tank via twin inlet pipes 4 Excess stormwater is temporarily stored in the tank (38,000 m³ storage volume) 5 When water level in the drains at Holland Road and Napier Road falls, water in Stamford Detention Tank is pumped back into the drainage network *SDT stands for Stamford Detention Tank **Fig 1.3**

Using Fig 1.3, explain how this disaster risk management strategy enhances the sustainability of the neighborhood. [2]

Award 1 mark per explanation, to the maximum of 2 marks.
Students are required to identify or define the issue before explaining how the strategy would work.

Possible responses include:
- This temporary storage system reduces the reliance on a single drain and will regulate the output of water into the drain, preventing surface from flooding and damaging the properties in the neighborhood. [1]
- For instance, the excess stormwater is temporarily stored in the tank (38 000 m^3 storage tank) [*or any relevant points quoted in the figure*]. [1]

AO2

2   Cluster 4: Tectonic

(a)	Explain how slab-pull force causes the movement of tectonic plates. [2]
	Award 1 mark for each explanation to a maximum of 2 marks. **Possible responses include:** • When two plates converge, the denser of the two is pulled down by gravity as it subducts under the other less dense plate [1]. • The denser plate sinks deeper into the mantle under its own weight, pulling the rest of the plate with it, contributing to the plates moving towards each other [1]. **AO1**
(b)	Study Fig 2.1, which shows information about the different plate margins in the world.

Map of Plate Boundaries on Earth

Fig 2.1

With reference to Fig 2.1, compare the processes and tectonic features formed at the plate boundaries **A** and **B** respectively. [4]

Award 1 mark for a similarity in process, to a maximum of 1 mark.
Award 1 mark for a difference in process, to a maximum of 1 mark.
Award 1 mark for a similarity in tectonic feature, to a maximum of 1 mark.
Award 1 mark for a difference in tectonic feature, to a maximum of 1 mark.

Possible responses include:
Similarity in Process
- Both processes are driven by the Earth's internal heat and convection at the mantle, which cause the movement of tectonic plates. [1]

Difference in Process
- At plate boundary A, the plates move towards each other, while at plate boundary B, the plates move away from one another [1].
- At plate boundary A, there is subduction as the oceanic plate goes under the continental plate while at plate boundary A, there is faulting as the continental plates move away from one another [1].

Similarity in Tectonic Feature
- Both will see the formation of volcanoes. [1]
- Both will also see the formation of mountains. [1]

Difference in Tectonic Feature
- Volcanoes will form on the edges of the less dense continental plate near the subduction zone while volcanoes will form at the faults when two continental plates diverge. [1]
- In the convergence of oceanic-continental plate boundary, the fold mountains are formed while the divergence of two continental plates will see the formation of block mountain. [1]

AO2

(c)	Study Fig 2.2, which shows the death rates from tsunamis in Japan between the 1923 to 1993.

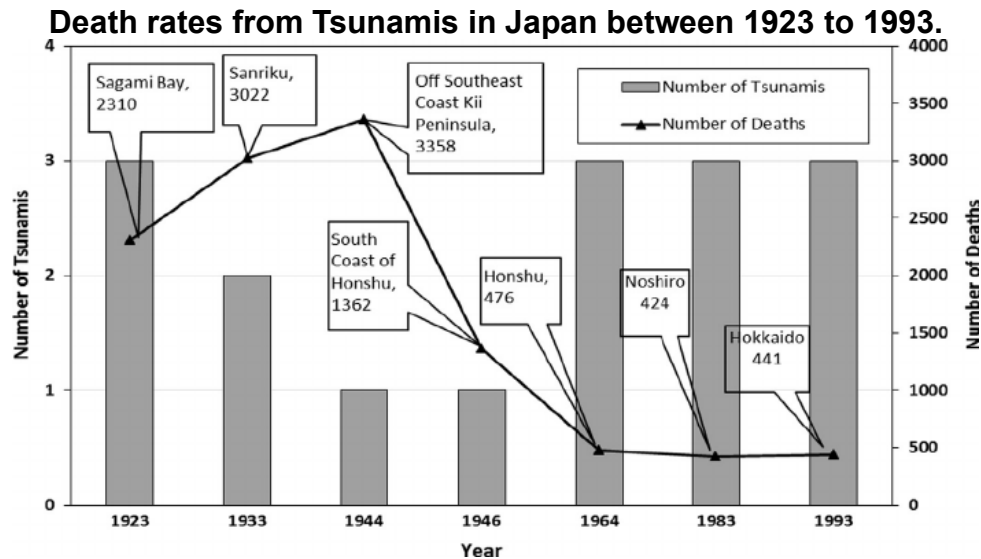**Death rates from Tsunamis in Japan between 1923 to 1993.**

Fig 2.2

Using Fig 2.2, comment on any relationship between the number of tsunamis in Japan and the number of deaths from the Tsunamis from 1923 to 1993. [3]

Award 1 mark per comment, to the maximum of 3 marks.

Possible responses include:
- 1923 to 1944, number of tsunamis in a year dropped from 3 to 1 but the death rates increased from 2310 in 1923 to 3358 in 1944, increase of 1048. [1]
- However, there is a stark drop in death rate from 1944 to death rate of 1362 in 1946 although the number of tsunami in that year remains at 1. [1]
- The death rate further dropped to 476 in 1964 and hovers around the range of 420 to 470 since then even though the number of tsunamis per year from 1964 to 1993 increased to 3 tsunamis a year. [1]

AO2

(d)	Discuss how effective is increasing residents' preparedness for response and recovery is in building community resilience to earthquakes. [6]
	Award 1 mark for each evaluation, up to maximum of 6 marks. Award a maximum of 1 additional mark for further development of each point. Responses must have a mix of both effectiveness and ineffectiveness/limitations. **Possible responses include:** *Effective* • Raising public awareness of hazards through education provides people with the knowledge of the hazards and how to respond to them [1]. • Providing first-aid training enables people to administer basic medical care to the injured and keep them mobile so that they can evacuate if needed [1]. • Conducting of evacuation drills so that people are familiar with evacuation procedures and routes, reducing the likelihood of them being trapped in collapsed buildings. [1] • For tsunamis, the drills would familiarize people with the designated tsunami inundation zones and the marked evacuation routes, so they would avoid the tsunami waves. [1 additional] • Developing plans to ensure that people are taken care of post disaster and are able to get back to their lives as soon as possible. [1] • These include having plans for makeshift shelters, and provision of medical care, food and water [1 additional]. *Ineffective* • The effectiveness depends on the extent of community's resources. [1] • The lack of resources, including technological and financial resources, may cause challenges in building community resilience. [1 additional] • It may influence the ability of the community to reduce vulnerability and exposure to tectonic hazards and to recover from the impacts of disasters. [1 additional] • The capability of the community to organize itself for disasters which may be limited by the lack of efforts to educate and train the community. [1] • The community may not have adequate knowledge to respond and recover from tectonic disasters [1 additional] • Political instability such as civil unrest and corruption may lead to loss of funding meant to build community preparedness [1]. **AO3**

3 Cluster 5: Singapore

(a)	Explain why Singapore is vulnerable to energy insecurity. [2]
	Award 1 mark for each explanation, up to maximum of 2 marks. Award a maximum of 1 additional mark for further development of each point. **Possible responses include:** • Singapore has no domestic fossil fuel resources. [1] • Therefore, it is heavily reliant on external sources of fuel, such as all-natural gas that are imported through existing pipelines from Malaysia and Indonesia/or in a liquid form known as liquefied natural gas. [1 additional] • This can lead to energy insecurity as we are highly exposed to fluctuations in fossil fuel prices due to global demand and supply shocks. [1 additional] **AO1**
(b)	Describe how climate change could impact Singapore. [3]
	Award 1 mark for each description, up to maximum of 3 marks. Award a maximum of 1 additional mark for further development of each point. **Possible responses include:** • Floods – Singapore's drainage system may not be able to cope with more intense rainfall which can result in flash floods. [1] • There is a likelihood of severe damage from the flash flood as there is very little response time. [1 additional] • Urban heat island effect – it is caused by the replacement of Singapore's natural land cover with buildings, roads, pavements and other surfaces that absorbs and retains heat. [1] • Air-condition, cars and factories emits heat and raise the surface temperature, this leads to possible heat exhaustion and heat stroke. [1 additional] • Vector-borne disease – many are widespread in the tropics where Singapore is located where the climatic conditions that is warm and humid tends to result in high rainfall, and thus, lead to ideal conditions for mosquitos such as the aedes mosquitos to breed in stagnant waters. [1] • This leads to spread of dengue fever. [1 additional] **AO1**

(c) | **(i)** Fig 3.1 shows a map that indicates the intensity of shaking at each area of Singapore in the event of an earthquake in a neighboring country.

ARSI map of Singapore
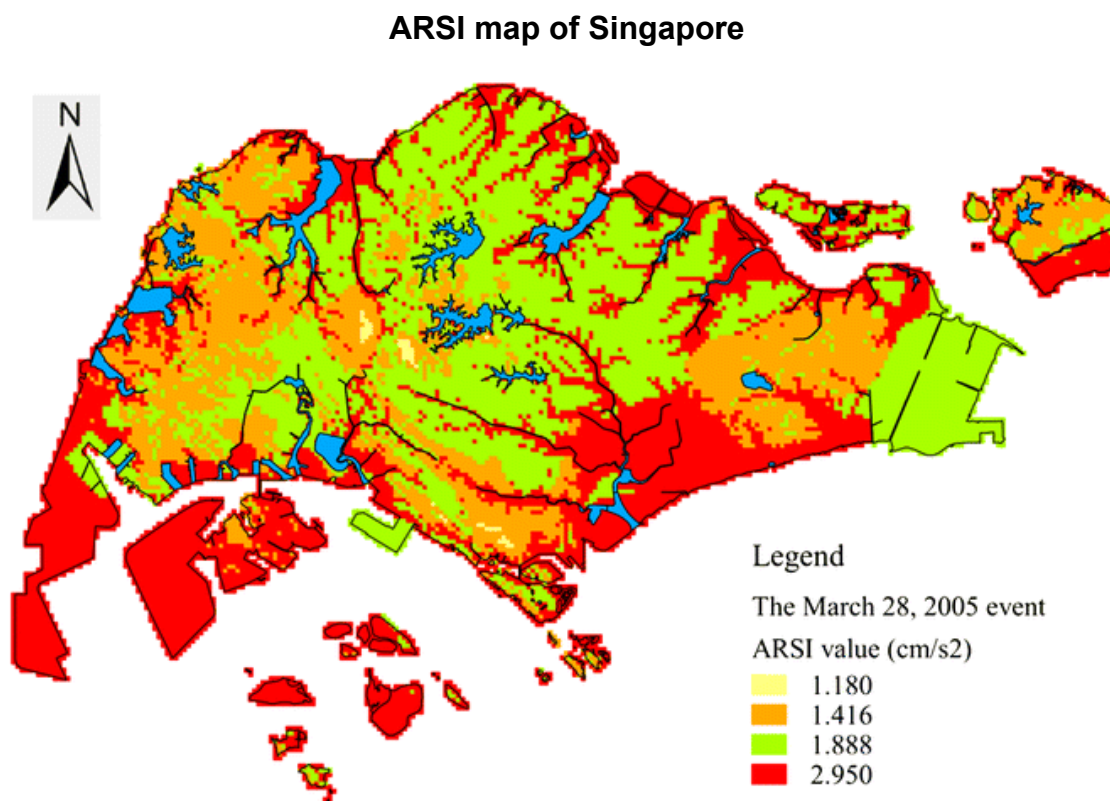
*Average Response Spectrum Intensity (ARSI) is a way of communicating general level of shaking a structure might face during an earthquake. The higher the value, the stronger the shaking of a structure built in the area in the event of an earthquake.

Fig 3.1

Using Fig 3.1, describe the distribution of building shaking intensity in Singapore due to earthquakes in neighboring countries. [3]

Award 1 mark for each description, up to maximum of 3 marks.
Award a maximum of 1 additional mark for further development/data of each point.
Possible responses include:
- The greatest shaking intensity of buildings tend to be found in coastal regions around Singapore.
- Largely towards the western and south-eastern region of the country. [1]
- The intensity is relatively high at 2.950 cm/s sq. [1 additional]
- Relatively low intensity shaking can also be found further from the coastal areas towards the middle. [1]
- Low intensity is at 1.416 cm/s sq [1 additional]
- Medium intensity is felt in the central region. [1]
- At 1.888 cm/s sq [1 additional]

AO2

(ii) With reference to Fig 3.1 and what you have learnt from Fig 1.2 (Insert) in question 1, explain how earthquakes in another country can pose a risk on the economy of Singapore.

Award 1 mark for each description, up to maximum of 3 marks.
Award a maximum of 1 additional mark for further development/data of each point.

Possible responses include:
- Tremors from earthquakes could result in damages in the infrastructures, especially on areas where there are high ARSI values. [1]
- Cracks would appear on building, older buildings and infrastructure may also run the risk of collapsing. These damages affecting factories or industries would cause the functions to come to a halt. [1 additional]
- Tremors from earthquakes in the region might result in liquefaction in land where it is not stable, especially land where it is reclaimed nearing the coastal areas that also have high ARSI values. [1]
- This results in damage to infrastructure and buildings in these areas of Singapore that is high in number of industry estates, affecting the economy especially in these sectors. [1 additional]
- Moreover, ports could be affected by the shaking and liquefaction leading to damages that will affect the functions of the trades in Singapore. [1]
- Money will also be needed to repair the places and infrastructure needed for the industries to recover, losing money. [1 additional]

AO2

(d) Figs 3.2 and 3.3 shows some of the considerations Singapore took in building social resilience in its citizens.
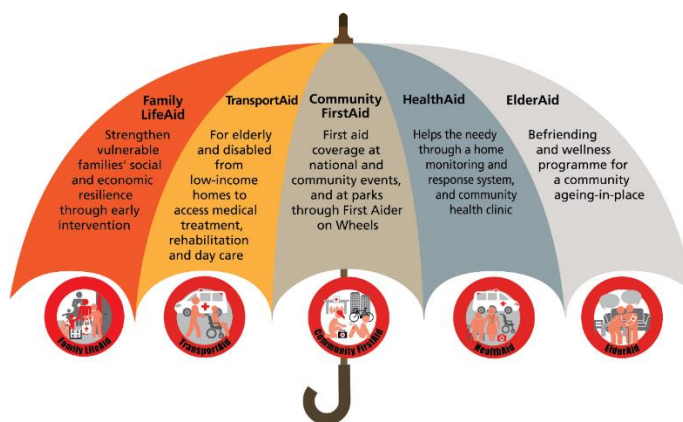
Community Services provided by Singaporean Volunteers

Fig 3.2

Vulnerable Groups in each Domain of Resilience

Fig 3.3

With reference to Figs 3.2 & 3.3, evaluate Singapore's social resilience efforts. [9]

Level 3: 7-9
Develops arguments that support both sides of the discussion clearly using range of points with good elaboration. Examples used demonstrated a comprehensive understanding of the issue or phenomenon. Evaluation is derived from a well-reasoned consideration of arguments.

Level 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.

Level 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.

Relevant content (pg 57, Singapore):
- Social resilience – ability for citizens to resist, adapt and recover from impacts of any disasters in a timely and efficient manner.
- Mobilising communities in preparedness measures (e.g. total defence framework, healthaid from Fig 3.2)
- Developing skills throughout life (e.g. skills future, community first aid from Fig 3.2, picking up first aid skills to volunteer and help)
- Creating shared spaces (e.g. HDB initiative, ElderAid from Fig 3.2)

Possible approach
- Responses can explore looking at how each of Singapore's social resilience efforts would contribute to the target group in Fig. 3.3, making reference to the examples from Fig 3.2 as well as their contextual knowledge.
- Possible limitations can also be brought up if students are able to make connection between social resilience efforts and the social challenges and vulnerability that Singapore is facing
- These challenges are, to name a few, ageing population, increasingly diverse society, labour shortages, economic slowdown.
- Answer could also bring in ideas of how the different social resilient efforts could be more effective.
- It is possible to also bring in the concept of interdependence, how can people work better together, including other age groups. Also how to better make use of existing resources to overcome the challenges.
- Also possible to bring in the concept of scale and space to talk about improvements on certain existing efforts.
- Evaluation could then weight the effectiveness of the efforts base on their ability to keep up with the challenges Singapore is facing/would face, or comparing between the different resilient efforts to conclude which might be the best.

AO 3