ANGLICAN HIGH SCHOOL
SECONDARY 4
PRELIMINARY EXAMINATIONS 2025

S4

GEOGRAPHY

2279/02

Paper 2

27 August 2025

MARKING GUIDE FOR TEACHERS

MAXIMUM MARK: 50

This document consists of **10** printed pages.

Question	Answer	Marks
1(a)	**Study Fig. 1.1 (Insert), which shows land use in Singapore.** **With reference to Fig. 1.1 (Insert), suggest reasons for the spatial pattern of industrial areas in Singapore.** Award 1 mark for each suggested reason given for the spatial pattern of industrial areas in Singapore. Possible responses include: ● Industrial areas are mainly clustered in the west of Singapore. [1 mark] ● Located away from main residential areas and nature areas to reduce air pollution in those areas. [1 mark] ● Clustering allows industries to tap on each other's expertise, share infrastructure, and access common facilities, fostering cooperation and collaboration. [1 mark] ● Locating industries close together improves logistics and transportation efficiency, as goods and raw materials can be moved more quickly between them and nearby ports. [1 mark]	**3**
1(b)	**Study Fig. 1.2, which shows an event poster from the Changi Simei Residents' Committee (RC) Centre.** **With reference to Fig. 1.2, describe how community activities can contribute to the effectiveness of disaster risk management plans.** Award 1 mark for each description of how community activities can help disaster risk management plans to be effective. Award a maximum of 1 additional mark for further development, where applicable Possible responses include: ● Community events strengthen relationships among residents and foster positive ties within the neighbourhood [1 mark], as events such as Racial Harmony Day provide opportunities for residents to participate and come together. [1 additional mark] ● Community events encourage residents to get to know their neighbours so that they can depend on one another during emergencies, hazards, or disasters. [1 mark] Hence, residents can get help faster from one another. [1 additional mark] ● Community events integrate people of different ages and backgrounds [1 mark], allowing vulnerable individuals such as the elderly and people with disabilities to be better supported [1 additional mark] or to contribute different experiences and skills during disaster risk management. [1 additional mark]	**4**

Question	Answer	Marks
1(c)	**Explain the disadvantages that people and nature may bring to each other.** Award 1 mark for each valid explanation of how people and nearby nature areas negatively affect each other, up to a maximum of 4 marks. Award an additional 1 mark for further development of each explanation, where applicable. If the response addresses only one direction of the relationship (e.g. only how people affect nature or only how nature affects people), award a maximum of 3 marks. Possible responses include: **How people bring disadvantages to nature** <u>Soil erosion and damage to vegetation</u> ● When people hike along non-designated trails in nature areas, they may cause soil compaction, which prevents rainwater from infiltrating the surface. [1 mark] ● This leads to higher surface runoff and soil erosion as flowing water washes away soil particles. [1 additional mark] ● Trampling on vegetation can damage plants and affect their growth. [1 mark] ● In 2014, human activities led to severe soil erosion and habitat degradation in Bukit Timah Nature Reserve. This resulted in the limiting of public access to the reserve for 2 years. [1 additional mark] <u>Worsening pollution and disturbing wildlife</u> ● Littering worsens pollution in natural areas. [1 mark] ● Animals can be cut by metal cans or become entangled in plastic containers and bags. [1 mark] ● Some animals may mistake litter for food and consume it. [1 mark] This may cause injury, suffering, and even death. [1 additional mark] ● Feeding wild animals can lead to changes in their habits and behaviour. Human–wildlife conflict may increase when animals start associating people with food. [1 mark] *Any relevant example may be credited.* [1 additional mark] **How nature may bring disadvantages to people** ● As wildlife populations in cities increase, people who do not know how to interact with them may unintentionally provoke animals, leading to attacks. [1 mark]	**4**

	● Some animals may become confused and fearful when they venture into unfamiliar open spaces, increasing the likelihood of attacks if triggered. [1 mark] ● Environmental protection may sometimes be perceived as limiting development. Some local communities may feel that protection of nature is done at the expense of their needs. [1 mark] *Example: The Cross Island Line was re-routed around the Central Catchment Nature Reserve to protect the rainforest, but this affected residents as it caused inconvenience, potential property damage, and the acquisition of some homes. [1 additional mark]*	

Question	Answer	Marks
1(d)	**Study Fig. 1.3 (Insert), which shows the environment of Bishan–Ang Mo Kio Park.** **With reference to Fig. 1.3 (Insert), explain the benefits residents can gain from the park's regulating ecosystem services.** Award 1 mark for each explanation of the benefits residents can gain from the park's regulating ecosystem services. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Possible responses include: ● Trees in the park can regulate climate by lowering surface and air temperatures by providing shade to residents. [1 mark] ● Trees and other plants in the park regulate air quality by removing pollutants from the atmosphere. [1 mark] ● The vegetation cover in the park can regulate water flow by reducing surface runoff so that water is retained in the soil. [1 mark] This is also known as water flow regulation. [1 additional mark] ● Forests can help to cool areas by generating rainfall, thus increasing water availability both locally and regionally. [1 mark]	**4**
2(a)(i)	**Study Fig. 2.1, which shows the various parts of an earthquake.** **Identify the parts of an earthquake marked X and Y shown in Fig. 2.1.** Award 1 mark each for the correct identification of X and Y. X: Epicentre Y: Focus	**2**
2(a)(ii)	**With reference to Fig. 2.1, describe the processes that result in earthquakes.** Award 1 mark for each valid description of a process that results in earthquakes, to a maximum of 4 marks. ● Earthquakes generally occur along plate boundaries, which contain systems of deep fractures called faults. [1 mark]	**4**

	● Rock masses on either side of a fault are pushed by tectonic forces; friction causes the rocks to become locked, and stress builds up. [1 mark] ● When the stress exceeds the strength of the fault, the rocks snap or suddenly move to a new position, causing seismic waves to be released at the focus. [1 mark] Seismic waves radiate energy from the focus to the point above the Earth's surface (epicentre), where shaking is generally felt most strongly, resulting in earthquakes. [1 mark]	

Question	Answer	Marks
2(b)	**Study Figs. 2.2 and 2.3, which show the disaster risks caused by earthquakes in Myanmar.** **'Disaster risks caused by earthquakes are most influenced by vulnerable conditions.'** **With reference to Figs. 2.2 and 2.3, to what extent do you agree with this statement? Explain your answer.** <u>Relevant content</u> Nature of hazard ● Duration of shaking ● Time of shaking Vulnerable conditions ● Quality of building design and construction ● Soil and rock properties Exposure ● Population density ● Distance from epicentre <u>Possible approaches:</u> Vulnerable conditions versus nature of hazard In conclusion, although the nature of an earthquake influences the level of hazard, it does not by itself determine the severity of disaster risk. What matters more is the level of vulnerability within affected communities. Poorly constructed buildings, fragile infrastructure, unsuitable ground conditions, and weak emergency systems are the key factors that turn a natural hazard into a human disaster. While seismic events cannot be prevented or controlled, vulnerability can be significantly reduced through planning, regulation, and preparedness. This makes vulnerability, not the natural hazard, the most important factor in shaping the scale and impact of earthquake disasters. The statement is therefore strongly supported.	**9**

OR

Vulnerable conditions versus exposure

In conclusion, both vulnerable conditions and exposure contribute to the scale of disaster risk during an earthquake, but vulnerable conditions are the more critical factor. High population exposure increases the number of people at risk, but it is the vulnerability of the built environment, the quality of infrastructure, and the capacity to respond that largely determine the extent of damage and loss of life. Even in areas with high exposure, effective planning and strong building standards can significantly reduce disaster impacts. Therefore, while exposure plays a role in shaping potential risk, it is the presence of vulnerable conditions that ultimately has the greatest influence on the severity of earthquake-related disasters.

Generic Level Descriptors for 9-mark AO3 Questions		
Level	**Marks**	**Descriptors**
3	7–9	Develop arguments that support 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	Develop arguments that support one side of the discussion well, using one or two points with some elaboration. Example(s) 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.

Question	Answer	Marks
3(a)	**Study Fig. 3.1 (Insert), which shows an aerial view of solar panels on a green rooftop at Rifle Range Nature Park in Singapore.** **Sketch the aerial view of Rifle Range Nature Park shown in Fig. 3.1 (Insert). Annotate your sketch to show two features that contribute to Singapore's efforts in sustainable development.**	**3**

	Award 1 mark for a relevant sketch that shows both solar panels and greenery. Award 1 mark for each relevant annotation that links the feature to sustainable development, up to a maximum of 2 marks. Possible responses for annotations include: ● Solar panels: renewable energy sources that reduce the need to burn fossil fuels to generate electricity. [1 mark] ● Greenery: keeps the environment cool by releasing moisture through evapotranspiration. [1 mark] ● Greenery: removes air pollutants and purifies the air. [1 mark]	
3(b)(i)	**Study Fig. 3.2 (Insert), which shows the numbers of live births and deaths in Singapore from 2019 to 2023.** **Using Fig. 3.2 (Insert), compare the numbers of live births and deaths in Singapore from 2019 to 2023.** Award 1 mark for each valid point of comparison that clearly compares the numbers of live births and deaths, with reference to the data. Possible responses include: ● Live births decreased every year, while deaths increased every year. [1 mark] ● The highest number of live births was in 2019, while the highest number of deaths was in 2023. [1 mark] ● The lowest number of live births was in 2023, while the lowest number of deaths was in 2019. [1 mark] ● The greatest difference between live births and deaths was in 2019, at 17 833. [1 mark] ● The smallest difference between live births and deaths was in 2023, at 6 653. [1 mark]	**3**

Question	Answer	Marks
3(b)(ii)	**Explain the social issues Singapore faces due to changing demographics, as shown in Fig. 3.2.** Award 1 mark for each explanation of the social issues Singapore faces due to changing demographics, as shown in Fig. 3.2. Award a maximum of 1 additional mark for further development, where applicable. Possible responses include: ● The local population is starting to decline. [1 mark] More reliant on foreign labour/manpower from other countries. [1 additional mark] ● Increasingly diverse society, including Singapore citizens, new citizens, permanent residents, international students, and migrant/domestic workers (at	**4**

	least 3 mentioned). [1 mark] May result in disputes among people due to differences between various groups. [1 additional mark] ● Ageing population with a higher proportion of elderly residents. [1 mark] Greater demand for healthcare services and elderly support facilities. [1 additional mark]	

Question	Answer	Marks
3(c)	**Study Figs. 3.3 and 3.4 (Insert), which show the Urban Heat Island (UHI) Index and a regional map of Singapore, respectively.** **With reference to Fig. 3.3 and Fig. 3.4 (Insert), explain the spatial distribution of the Urban Heat Island (UHI) Index in Singapore.** Award 1 mark for each explanation of the spatial distribution of the Urban Heat Island (UHI) Index in Singapore, up to a maximum of 4 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Possible responses include: **High UHI** ● UHI intensity generally decreases from the central region of Singapore (e.g. Downtown, Central Business District (CBD), Orchard, Bugis, Marina Bay, Toa Payoh) to the outskirts (e.g. Mandai). [1 mark] **OR** ● The central and southern parts of Singapore have higher UHI intensity compared to the northern areas, which have lower UHI intensity. [1 mark] ● The concentration of concrete surfaces, lack of natural vegetation, and human activities in these areas absorb and retain heat, leading to higher UHI. [1 mark] ● These urbanised areas have air-conditioning systems and cars, which emit heat and raise surface temperatures. [1 additional mark] **Moderate UHI** ● Moderate UHI in towns such as Ang Mo Kio, Clementi, Jurong East, and Tampines. [1 mark] These areas have significantly built-up surfaces, but some green covers such as parks and roadside trees help moderate the heat to an extent. [1 additional mark] **Lower UHI** ● Lower UHI in the nature reserves and water catchment areas (e.g. Bukit Timah, Central Catchment), coastal parks (e.g. East Coast Park, Pasir Ris Park), and water bodies such as reservoirs and the Southern Islands. [1 mark] These areas have trees that provide shade and evapotranspiration, cooling the air or water bodies that moderate temperature by absorbing heat during	**4**

	the day and releasing it slowly at night. [1 additional mark] (depending on which point is stated)	

Question	Answer	Marks
3(d)	**Study Fig. 3.5, which shows an extract about the Sumatra Earthquake in Indonesia in 2016.** **With reference to Fig. 3.5, evaluate the possible impacts on Singapore due to the occurrence of tectonic hazards in the region.** Award 1 mark for each explanation of a possible impact on Singapore due to the occurrence of tectonic hazards in the region. Award a maximum of 1 additional mark for further development of each explanation, where applicable. Award a maximum of 5 marks if only positive or only negative impacts are given. Possible responses include: **Negative impacts** ● Infrastructure may be damaged due to the swaying. [1 mark] ● People may be hurt by falling or swaying objects at home due to the tremors. [1 mark] ● Places built on reclaimed land are more prone to liquefaction. [1 mark] **Positive impacts** ● The possibility of earthquake tremors in Singapore has led to national preparedness plans. [1 mark] Island-wide public sirens warn and alert people living in specific neighbourhoods about threats they may face during a disaster. [1 additional mark] ● Since 1997, all new houses and flats must, by law, have shelters incorporated into their development. [1 mark] ● Technology is harnessed to monitor tectonic movements to better prepare Singapore for any hazards that might arise. [1 mark] NEA's regional earthquake and tsunami monitoring alert information service can be accessed via its website or mobile app to alert people. [1 additional mark]	**6**