

St. Joseph's Institution
Year 4 Preliminary Examination 2026
Geography 2279/02
Marking Scheme

Qn	Answer	Marks
1a	Using Fig. 1.1, explain why Punggol can be considered a region. Award 1 mark for a valid explanation of what makes Punggol a region. Award 1 additional mark for further development of the explanation, where applicable. Possible responses include: • The area is predominantly residential, with housing estates found throughout Punggol [1 mark]. • The area shares similar urban characteristics, such as a common MRT/LRT transport network and bus interchange, serving residents across the region [1 mark].	2
1b	Describe how a Town Council is a sphere of influence in a neighbourhood. Award 1 mark for each explanation of how Town Council has a sphere of influence in the neighbourhood, to a maximum of 3 marks. Award 1 additional mark for further development of each explanation, where applicable. Possible responses include: • The Town Council creates a sphere of influence by managing and maintaining residential estates and community facilities within the neighbourhood [1 mark]. Residents depend on the Town Council for services such as estate maintenance, cleanliness and landscaping, allowing the Town Council to influence residents' daily lives [1 additional mark]. • The Town Council provides essential infrastructure such as sheltered walkways, transport nodes near residential areas [1 mark]. Residents rely on these facilities to travel safely and conveniently, enabling the Town Council to influence residents' movement patterns within the neighbourhood [1 additional mark]. • The Town Council collaborated with other stakeholders such as the grassroot organisations like the People's Association (PA) or Residents' Committee (RC) to organise community programmes and creates shared community spaces for residents [1 mark]. These activities encourage social interactions and community bonding, extending the Town Council's influence over the neighbourhood [1 additional mark].	3

1ci	Using Fig. 1.2, explain how the features provide both regulating and cultural ecosystem services to residents in the neighbourhood. Award 1 mark for explaining how regulating or cultural ecosystem services benefit the residents, to a maximum of 2 marks. Award 1 additional mark for further development of each explanation, where applicable. Possible responses include: <u>Regulating Ecosystem Services</u> Climate Regulation: • Trees provide shade and cool the surrounding environment, helping to reduce the urban heat island effect [1 mark] • The vegetation cools the surrounding air through evapotranspiration as the water that the leaves absorb through their roots is released into the air as water vapour. Evapotranspiration uses heat from the surrounding, cooling the surrounding air. [1 mark] Air Quality Regulation: • Trees and vegetation absorb air pollutants from the atmosphere, such as carbon monoxide, sulphur dioxide, nitrogen oxide, improving air quality in the neighbourhood [1 mark] • Leaves intercept small particles and air pollutants (particulate matter like haze and smoke), which are washed to the ground when it rains. [1 mark] Water Flow Regulation: • The stepped platforms and surrounding vegetation help to slow down surface runoff by promoting water infiltration into the soil, reducing the risk of flooding during heavy rainfall [1 mark] <u>Cultural Ecosystem Services</u> • Recreation: The paved paths and open spaces provide opportunities for residents to jog, cycle and relax, enhancing their physical and mental well-being [1 mark] • Social interactions: Facilities such as seating areas, shelters and amphitheatre provide spaces for residents to gather, interact and strengthen community bonds [1 mark]	4
1cii	Suggest one way residents in Punggol can act as environmental stewards to contribute to the sustainability of the neighbourhood. Award 1 mark for identifying a valid environmental stewardship action and 1 mark for explaining how the action contributes to environmental sustainability in the neighbourhood. Possible responses include:	2

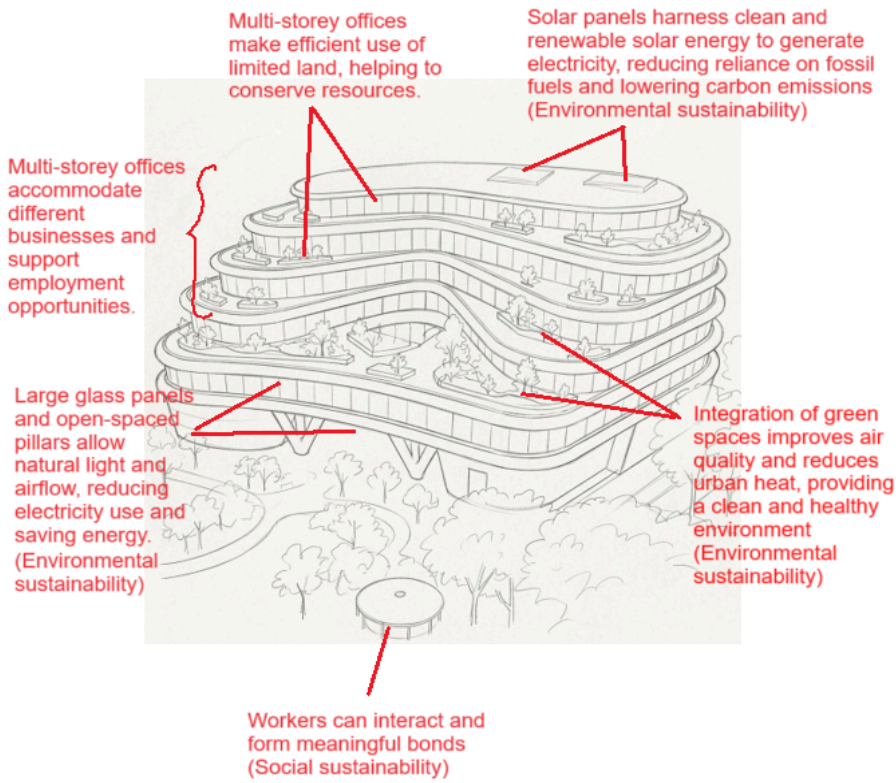
	- Residents can volunteer in community gardening to help maintain green spaces [1 mark] and share knowledge with others about the importance of healthy ecosystems [1 additional mark] - Residents can volunteer in clean-up activities [1 mark] and educate others on proper waste disposal and the importance of clean environmental quality [1 additional mark]. - Residents can participate in tree-planting or biodiversity conservation activities [1 mark] and raise environmental awareness about protecting local flora and fauna [1 additional mark]. - Residents can participate in recycling efforts [1 mark] and educate other residents on sustainable practices such as recycling and reducing waste to encourage responsible environmental behaviour [1 additional mark].	
1d	With reference to Fig. 1.3, assess the effectiveness of such programmes in reducing the impacts of disasters on neighbourhoods. Award 1 mark for each valid explanation of either an effectiveness or a limitation of how such programmes can reduce the impacts of disasters on neighbourhoods, to a maximum of 2 marks. Award 1 additional mark for further development of each explanation, where applicable. Possible responses include: <u>Effective</u> - It equips residents with emergency response skills such as first aid skills, CPR and basic fire-fighting skills to resist, adapt and recover from a disaster [1 mark]. This enables them to provide immediate assistance during emergencies, reducing injuries and loss of life, enhancing community resilience [1 additional mark]. - Residents become more aware of emergency procedures and are better prepared to respond during disasters [1 mark]. Trained residents can assist vulnerable groups during emergencies, reducing the overall impacts of disaster on the neighbourhood [1 additional mark]. <u>Not effective</u> - The option of self-directed e-learning component provides limited opportunities for hands-on practice [1 mark]. Participants may not be confident or proficient in applying lifesaving skills effectively during actual emergencies [1 additional mark]. - The programme is conducted only in English [1 mark]. Residents who are not proficient in English may have difficulty understanding and will not be effectively prepared with the skills [1 additional mark].	4

2a	With reference to Fig. 2.1, explain how magnetic striping provides evidence for the plate tectonic theory. Award 1 mark for each explanation of how different polarities provides evidence of seafloor spreading, to a maximum of 4 marks. Award 1 additional mark for further development of each explanation, where applicable. Possible responses include: • Magnetic striping is the symmetrical pattern of alternating bands of rocks with normal and reversed polarity found on both sides of a mid-oceanic ridge [1 mark]. • As iron-rich lava erupts at the mid-oceanic ridge, it cools and solidifies [1 mark]. • Its magnetic materials point towards Earth's magnetic North, recording evidence of Earth's polarity at that time. When Earth's polarity reverses, the rocks record the reversals [1 mark]. • The symmetrical pattern shows that new oceanic crust is formed at the ridge and moves away equally on both sides through seafloor spreading, providing evidence that tectonic plates are moving [1 mark].	4
2bi	With reference to Fig. 2.2, describe one impact of tsunamis. Award 1 mark for each valid description of how a tsunami affects the natural or human systems, to a maximum of 2 marks. Award 1 additional mark for further development of each explanation, where applicable. Possible responses include: <u>Impacts on natural systems</u> • Tsunami seawater can flood large coastal wetlands and forests, damaging habitats [1 mark]. The debris carried by the waves can pollute ecosystems and kill wildlife [1 additional mark] <u>Impacts on human systems</u> • High-energy tsunami waves and debris can destroy homes, buildings and infrastructure [1 mark], causing injuries and loss of life as people may drown or be struck by debris carried by the waves [1 additional mark]. • Electricity and communication cables can be damaged, disrupting essential services [1 mark]. • Roads and railways can be destroyed, making rescue operations and emergency aid difficult [1 mark]	2

2bii	With reference to Fig. 2.3, evaluate the effectiveness of the advisory in reducing the vulnerability of local communities to tsunamis. Award 1 mark for each evaluation of the tsunami advisory, to a maximum of 3 marks. Award a maximum of 1 mark for further development of each evaluation, where applicable. Possible responses include: <u>Effective</u> • The advisory sends warnings about potential hazards upon detecting seismic waves using sensors and monitors [1 mark]. This gives authorities and residents ample time to respond, including evacuating to a safer place [1 additional mark]. • The advisory also increases awareness by providing information on the location and timing of an earthquake as well as actionable information for residents [1 mark]. This provides guidance on when to evacuate to a safer place or what actions to take [1 additional mark]. <u>Not effective</u> • The Pacific Tsunami Warning Centre may issue false alarms because not all underwater earthquakes generate tsunamis, so its advisories may sometimes be inaccurate [1 mark]. • A tsunami may reach nearby coastal areas within minutes of an earthquake, leaving residents with limited time to evacuate despite the warning [1 mark]. • The advisory was issued 35 minutes after the earthquake, which did not provide sufficient time for residents to evacuate to a safer location. • Residents in more remote areas may have limited access to digital devices or internet connectivity and therefore may not receive the advisory in time [1 mark]. • The advisory may be less effective if there is low public awareness or poor response to the warning, as residents may fail to evacuate in time [1 mark].	3
2ci	Using Table 2.1, describe the relationship between earthquake magnitude and death toll. Award 1 mark for the description of a valid relationship with supporting evidence, to a maximum of 2 marks. Award 1 mark for identifying an anomaly to the relationship. Possible responses include: • There is a general positive relationship between earthquake magnitude and death toll, where stronger earthquakes tend to result in higher death tolls [1 mark].	3

	- For example, when earthquake magnitude increased from 7.7 (Myanmar) to 9.0 (Japan), the death toll increased by about four times [1 additional mark] - However, Haiti is an anomaly. Although it had the lowest earthquake magnitude (7.0), it recorded the highest death toll of 230,000 [1 mark].	
2cii	With reference to Table 2.1, explain why earthquake magnitude does not necessarily determine the level of risk posed by tectonic hazards. Award 1 mark for identifying a factor other than earthquake magnitude that affects tectonic hazard risk, to a maximum of 2 marks. Award 1 additional mark for explaining how each factor influences the risk posed by tectonic hazards, where applicable. Building standards - Countries with high building standards such as Chile are less susceptible to ground shaking where the death toll was the lowest amongst the 5 countries at 525 even though its magnitude was the 2nd strongest [1 mark]. Stronger buildings are less likely to collapse during an earthquake, reducing casualties and damage even if the earthquake is of a high magnitude [1 additional mark]. Other possible factors: - Communities with higher levels of preparedness are better able to respond to earthquakes [1 mark]. Emergency drills and public education enable people to evacuate or protect themselves quickly, reducing injuries and loss of life [1 additional mark].	3
3a	With reference to Fig. 3.1, to what extent is Singapore affected by tectonic hazards in the region? Award 1 mark for each evaluation of the impacts, to a maximum of 3 marks. Award a maximum of 1 additional mark for further development of each evaluation, where applicable. Possible responses include: Affected - Volcanic ash from eruptions in neighbouring countries such as the Philippines and Indonesia can be blown to Singapore, affecting people's health by causing eye irritation and respiratory problems [1 mark] - Volcanic ash can disrupt the aviation industry by reducing visibility and causing flights to be grounded, leading to loss of income [1 mark].	3

	- Volcanic ash can also damage aircraft engines as the ash melts and then resolidifies within the engines, making flying dangerous. This results in flight cancellations and economic losses [1 mark]. Not affected - Singapore is well protected from tsunamis by the Indonesian archipelago which acts as a barrier to the giant waves generated by earthquakes or volcanic eruptions under the sea [1 mark]. - Singapore is located far away from active volcanoes, with the nearest one 430km away from Singapore. Hence Singapore is not affected by the localised hazards such as lava, lahar and pyroclastic flow [1 mark].	
3b	With reference to Fig. 3.2, explain how global disruptions have increased economic vulnerability of Singapore. Award 1 mark for each explanation of how global disruptions increased economic vulnerability, to a maximum of 3 marks. Award a maximum of 1 mark for further development of each evaluation, where applicable. Possible responses include: Short term economic impacts - The geopolitical tensions in Middle East have driven up energy prices as well as shipping and freight costs, which increase operating expenses for firms in Singapore [1 mark]. This makes businesses, especially SMEs, more vulnerable as it reduces their profitability and ability to sustain business operations [1 additional mark]. Long term business sustainability - Businesses are concerned about their long-term viability as geopolitical tensions create uncertainty and weaken business stability in Singapore [1 mark]. Since Singapore is trade-dependent economy, disruptions to global trade flows and supply chains can reduce export demand, increasing economic vulnerability [1 additional mark]. - As Singapore relies heavily on foreign investment, prolonged geopolitical tensions may make Singapore a less attractive location for foreign investors, reducing new investments or causing existing businesses to relocate their operations elsewhere. This could reduce business opportunities and affect Singapore's long-term economic growth [1 additional mark].	3
3ci	Sketch the landscape shown in Fig. 3.3. Annotate the sketch to show two features of sustainable development practised in Singapore. Award 1 mark for a sketch of the two features. Award 1 mark for each annotation showing evidence of sustainable development.	3

	 Multi-storey offices make efficient use of limited land, helping to conserve resources. Solar panels harness clean and renewable solar energy to generate electricity, reducing reliance on fossil fuels and lowering carbon emissions (Environmental sustainability) Multi-storey offices accommodate different businesses and support employment opportunities. Large glass panels and open-spaced pillars allow natural light and airflow, reducing electricity use and saving energy. (Environmental sustainability) Integration of green spaces improves air quality and reduces urban heat, providing a clean and healthy environment (Environmental sustainability) Workers can interact and form meaningful bonds (Social sustainability)	
3cii	Describe one challenge that Singapore might face in its efforts to achieve sustainable development in the future. Award 1 mark for each valid environmental, economic or social challenge that Singapore might face in its efforts to achieve sustainable development in the future, to a maximum of 2 marks. Award a maximum of 1 mark for further development of each evaluation, where applicable. Possible responses include: Environmental considerations • Singapore may face the challenge of limited land due to its densely built-up urban landscape [1 mark]. This may limit the large-scale deployment of alternative energy sources, such as solar farms, making it more difficult to meet future energy needs sustainably. [1 additional mark] • Singapore is vulnerable to regional-scale threats such as transboundary haze. As addressing transboundary haze requires cooperation with neighbouring countries, achieving sustainable development is more challenging because Singapore's sustainability efforts depend partly on actions taken beyond its borders [1 additional mark].	2

	Economic considerations • Singapore may face the challenge of sustaining economic growth while protecting the environment [1 mark] as measures to reduce environmental impacts may increase business costs and affect competitiveness [1 additional mark]. Social considerations • Singapore may face the challenge of ensuring sustained commitment and contribution from stakeholders, including individuals, businesses and the community, in adopting sustainable practices [1 mark]. For example, public feedback and active participation are needed to support sustainability initiatives [1 additional mark]. Political considerations • Singapore may face the challenge of maintaining strong political willpower and effective governance to achieve sustainable development [1 mark]. Balancing competing economic, environmental and social priorities may make it more difficult to implement long-term sustainability policies [1 additional mark].																			
3d	‘Adaptability is the most important factor contributing to Singapore's resilience.’ With reference to Figs. 3.4 and 3.5, how far do you agree with this statement? Explain your answer. Relevant content • Adapting to changing circumstances by putting in place robust infrastructure and strong systems • Surviving by overcoming national crises and managing economic recessions and pandemics effectively • Thriving as a small island city-state focused on building a liveable and sustainable city <table border="1"> <thead> <tr> <th colspan="3">Generic Level Descriptors for 9-mark AO3 Questions</th></tr> <tr> <th>Level</th><th>Marks</th><th>Descriptors</th></tr> </thead> <tbody> <tr> <td>3</td><td>7–9</td><td>Develops 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.</td></tr> <tr> <td>2</td><td>4–6</td><td>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.</td></tr> <tr> <td>1</td><td>1–3</td><td>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.</td></tr> <tr> <td>0</td><td>0</td><td>No creditworthy response.</td></tr> </tbody> </table>	Generic Level Descriptors for 9-mark AO3 Questions			Level	Marks	Descriptors	3	7–9	Develops 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	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.	9
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