



NAN HUA HIGH SCHOOL
Preliminary Examination

CANDIDATE
NAME

--

CENTRE
NUMBER

S	2	3	8	6
---	---	---	---	---

CLASS

--	--	--

INDEX
NUMBER

--	--

GEOGRAPHY

2279/02

Paper 2

28 August 2026

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional materials: Insert

Answer Scheme

This document consists of **11** printed pages and **1** blank page.

[Turn over

1 Cluster 1: Geography in Everyday Life

- (a)
AO 1 Study Fig. 1.1 (Insert), which shows a media representation of Yishun Housing Estate.
With reference to Fig.1.1, explain how media representations can affect an individual's sense of place. [4]

Award 1 mark for each explanation of how media representation can affect sense of place.

- Different emotions expressed in the media might enhance or contradict our sense of place.
- Our sense of place shapes our identity, hence, an individual will respond well to representation that agree with how he/she feels about places in the neighbourhood.
- From Fig. 1.1, the portrayal of Yishun as weird or wow and to be investigated could add new layers of meanings to Yishun and through the information revealed, it could enhance a resident's sense of place.
- An individual could also respond defensively to media content that challenges our sense of place, causing us to dismiss these media content, perceiving them as distortions or untruths.

- (b)
AO 2 Study Fig. 1.2 (Insert), which shows 2025 Master Plan for Singapore to sustain a thriving economy.

Using Fig. 1.2, explain how long-term planning helps to create connections and synergies across neighbourhoods and towns for economic sustainability. [4]

Award 1 mark for each explanation of how long-term planning creates connections / synergies.

Award a maximum of 2 marks with no use of Fig. 1.2

- The different regional centres such as Tampines Regional Centre, Our Downtown, Woodlands Regional Centre, and Jurong Lake District help to decentralise the economic activities. This prevents overcrowding and creates synergy with the nearby towns for employment.
- Travel from various locations towards the regional centres is convenient as shown by the many different transport lines. This shows that the trains have created connectivity that can allow workers from anywhere in the country to easily travel to their workplaces.
- The different regional centres are also located together with integrated transport hubs or near to integrated transport hubs which can allow workers to travel easily to their places of employment. The integrated transport hubs can allow for easy change in mode of transport. For example, Jurong Lake District has an integrated transport hub together with its regional centre.
- From Fig. 1.2, there are different centres that tap on possible linkages to the surrounding areas to create connections for work. For example, Woodlands regional centre taps on the link to Malaysia via the JB SG RTS / Woodlands

checkpoint. This can enable workers to connect easily between Singapore and Malaysia for work.

- (c) Study Table 1 below, which shows the causes of residential fires in Singapore
AO2 from 2022 to 2025.

Causes of residential fires from 2022 to 2025

Cause of residential fires	2022	2023	2024	2025
Unattended cooking	367	384	335	318
Electrical origin	240	276	299	304
Fires involving Active Mobility Devices (AMDs)	58	76	67	49
Total residential fires	911	1,005	968	1,051

Table 1

Using Table 1, compare the trend of **causes of residential fires** from 2022 to 2025. [3]

Award 1 mark for each comparison of causes of fires with data.

As question is on causes of residential fires, comparison of total is not accepted.

- Unattended cooking as a cause has decreased over the years from 367 cases to 318 cases which is similar to fires involving AMDs which has also fallen from 58 cases to 49 cases.
- Both unattended cooking and fires involving AMDs had cases increasing from 2022 to 2023 first before falling in 2024 and 2025.
- Compared to the other two causes, fires caused by electrical origin has increased over the years. It has increased steadily from 240 cases to 304 cases.

- (d) Explain how supporting ecosystem services support the functions of all other ecosystem services. [4]

AO1 **Award 1 mark for each explanation of how supporting ecosystem service support the functions of all other ecosystem services.**

- Supporting ecosystem services refer to services that are necessary for the functioning of all other ecosystem services, including soil formation, pollination and photosynthesis. Soil formation is when micro-organisms and physical processes decompose organic matter and break them down into smaller particles. Soil is essential for the health of all terrestrial ecosystems as it provides a habitat for billions of organisms, contributes to biodiversity, and

acts as a water filter. [provisioning ecosystem service, regulating ecosystem services]

- Soil formation ensures that human activities such as agriculture can take place which can produce food for humans. [provisioning ecosystem services]
- Animals like wild bees can play a significant role in crop pollination which ensures that crops are able to reproduce to provide food for animals and humans. [provisioning ecosystem services]
- During photosynthesis, plants absorb carbon dioxide and release oxygen, which maintains the oxygen content of the Earth's atmosphere. This ensures that all other ecosystem services can function. [provisioning ecosystem services, regulating ecosystem services]

[Total: 15]

2. Cluster 4: Tectonics

- (a) Study Fig. 2.1 (Insert), which shows a divergent plate boundary.
Using Fig. 2.1, explain the formation of landforms at this divergent plate boundary. [3]

AO1

Award 1 mark for each explanation of the formation of landforms.

- The Nubian Plate pulls apart from the Somalian Plate / Two continental plates move apart.
- Rocks eventually fracture to form parallel faults. The rocks between these faults collapse to form **a deep rift valley with steep sides**, known as East African Rift Valley.
- As the plates move apart, the decrease in overlying pressure causes parts of the underlying mantle to melt, forming magma. Magma rises through weak areas in the crust to the Earth's surface, forming **volcanoes**.

- (b) Study Table 2, which shows information of three volcanoes and their eruptions.

AO2

Information about three volcanoes and their eruptions

Name of Volcano & Year of Eruption	VEI	Fatalities	Estimated Economic Damage	Exposure to Human Settlements	Presence of Lahars	Distribution of Tephra
Nevado del Ruiz (1985) Colombia	3	25,000	US\$1 billion	Very high. Armero (a town) was in the path of lahars.	Huge volumes of lahars from melted summit glaciers	Moderate ashfall mainly near the volcano.
Eyjafjallajökull (2010) Iceland	4	0	US\$5 billion globally (mainly aviation losses)	Low. Major exposure to international aviation.	Small local lahars from glacial meltwater.	Fine ash dispersed across northern Europe, disrupting air travel.
Merapi (2010) Indonesia	4	353	US\$600 million	Very high. Villages located on fertile volcanic slopes.	Frequent lahars during rainy season after eruption.	Ashfall affected much of Central Java.

Table 2

Using Table 2, explain why volcanic eruptions with similar Volcanic Explosive Index (VEI) could result in different amounts of damages. [3]

Award 1 mark for each explanation on volcanic eruptions with similar VEI and different amounts of damage.

- The amount of damage depended on exposure to human settlements. For instance, Nevado del Ruiz had high exposure to human settlements where Armero was in the path of lahars. The presence of human settlement / amount of human settlement probably led to many of them being buried and being killed. Whereas Eyjafjallajökull may have a higher VEI but due to low exposure to human settlement, not many would be affected.
- Similarly the difference in damage could also be due to the distribution of tephra. For instance Merapi had ashfall mainly affecting Central Java, its own locality whereas Eyjafjallajökull had fine ash being distributed across Europe, affecting air travel leading to high costs. This is because the fine ash from Eyjafjallajökull had the potential to damage aeroplanes hence many airlines had to ground their air craft, losing a lot of money.
- The difference in damages could also be seen in the local damages by Merapi and Nevado del Ruiz while Eyjafjallajökull had caused damages that were global / regional.
- The difference is also due to the presence of lahars. Compared to Merapi and Nevado del Ruiz, Eyjafjallajökull had lower amounts of lahars which likely reduced the damages to infrastructure and properties.

(c) Study Fig. 2.2 (Insert), which shows the before and after eruption photographs of Mount Merapi, Indonesia.

AO2

Using Fig. 2.2, describe the changes in the volcano after the eruption. [3]

Award 1 mark for each description of the changes in the volcano after the eruption.

- The crater has widened after the eruption.
- The height of the volcano is shorter.
- The peak of the volcano is more jagged than before.

(d) Evaluate the effectiveness of disaster management strategies in managing the impacts of a tectonic hazard. [6]

AO

3

Award 1 mark for each evaluation of disaster management strategies.

Award 1 additional mark if example was given for the point.

Effective

- People need to be moved quickly away from areas at risk of hazards so as to reduce loss of lives. In an earthquake, buildings and infrastructure may collapse and people

need to evacuate quickly from buildings to open areas, to avoid getting trapped under collapsed buildings.

- Moreover, strong aftershocks can occur soon after an earthquake, and buildings which are weakened by the initial shaking may collapse, hence timely evacuation is effective in preventing more loss of lives.
- Earthquakes may also trigger tsunamis and people near coastal areas have to evacuate to higher ground. [1 mark] For example, in the 2011 Tohoku earthquake which triggered a tsunami, many students in Kamaishi city survived after escaping to higher grounds. [1 additional mark]
- Earthquakes may disrupt water and food supply and also destroy houses; hence it is effective in providing basic services to help people continue with their daily lives.
- Providing clean water will prevent dehydration or people from consuming contaminated water and contracting water-borne diseases. [1 mark] For example, during the 2010 Haiti earthquake, the International Committee of Red Cross provided water supply by trucking water to the people. [1 additional mark]
- Providing food for affected communities helps to reduce loss of lives through hunger or starvation.
- As healthcare facilities may be damaged by earthquakes, providing access to medicine, doctors and hospitals can prevent the spread of diseases and save the lives of the injured.
- As earthquakes may result in great emotional distress due to severe injuries, the loss of loved ones, homelessness and loss of livelihoods, many survivors will need counselling and hence providing psychological services will help survivors cope with psychological trauma, which can last a long time after the disaster.

Ineffective

- However, the lack of domestic resources, including technological and financial resources, may inhibit a country's effective response and recovery efforts in managing the effects of an earthquake. This may result in delays and result in more lives being lost. [1 mark] For example, during the 2010 Haiti's earthquake, the lack of resources hampered the disaster management efforts. There was a critical shortage of ambulances to transport the injured, and heavy machinery to remove the rubble from collapsed buildings. This results in the rescue team spending many hours removing tons of rubble manually with hammers or rods to pull the trapped people under collapsed buildings. [1 additional mark]
- There could also be challenges in engaging relevant stakeholders to collaborate and integrate disaster management strategies. There could be disagreements from other stakeholders or stakeholders may underestimate or unaware of disaster risks and the need for certain disaster management strategies.
- Local communities might be reluctant to purchase insurance for tectonic disaster risks or retrofit their buildings to ensure they are hazard resistant due to high cost involved and private insurance might not be willing to offer such insurance policies because of the high financial commitment required. [1 mark] For example, in the Philippines, only 10-20% of buildings are insured against earthquakes due to high insurance costs for buildings owners. [1 additional mark]

3. Cluster 5: Singapore

- (a) Describe how Singapore uses technology to mitigate tectonic hazards in the region. [4]

Award 1 mark for each point about the use of technology to mitigate tectonic hazards in the region.

**AO
1**

- The National Environment Agency (NEA) uses a network of seven seismograph stations, which provides continuous data on ground motions in different parts of Singapore. This allows scientists to monitor impending earthquakes or volcanic eruptions.
- It has also developed a tsunami early warning system that uses the seismic data collected by its seismograph stations.
- Globally, the monitoring of tectonic movements also extends through to the Indian Ocean Tsunami Warning and Mitigation System, which facilitates the exchange of seismic information among countries in the region.
- The up-to-date information collected and exchanged is made available on the internet using web-based tools and platforms.
- Complementing efforts by government agencies, the Earth Observatory of Singapore (EOS), a research institute at Nanyang Technological University, uses an infrasound monitoring system that detects very low-frequency sound waves to monitor volcanic eruptions in the region, enabling quick assessment of the explosivity and potential of volcanic ash affecting air traffic around Singapore.

- (b) Study Fig. 3.1 (Insert) which shows information on how volcanoes could affect Singapore.

With reference to Fig. 3.1 (Insert), explain how volcanic eruptions could affect Singapore. [3]

Award 1 mark for each explanation of how volcanic eruptions could affect Singapore.

**AO
2**

- From Fig. 3.1, the low relief of the country could make it susceptible to coastal flooding if a volcanic eruption takes place and causes a tsunami or sea level rise.
- When a volcano erupts, the ash could cross borders and ash clouds could affect people's health. It could cause direct health problems such as eye irritation and induce acute respiratory symptoms such as cough and runny nose.
- The volcanic ash can also disrupt our economy with the aviation industry being affected. With more volcanic ash in the air, visibility is reduced for pilots resulting in the grounding of many planes. This affects daily operations, activities and generation of income.
- Volcanic ash could also enter the engines of aircraft, melt and re-solidify within the engines, compromising the performance capabilities of aircraft. This may make flying dangerous and flights could be cancelled as a result.

(c)
AO
2

Study Fig. 3.2 (Insert), which shows Southeast Asian countries with the most international arrivals in 2024. Singapore is ranked 4th with 16.5 million tourists.

With reference to Fig. 3.2, explain how a growing region can impact Singapore's tourism development both positively and negatively. [4]

Award 1 mark for each explanation of how Singapore's tourism development can be impacted. Award 1 additional mark for example.

Positively

- Tourism in Singapore will benefit from the region's investment in tourism. It complements Singapore's pursuit of regional tourism to visit Singapore as part of their travel to different locations in Asia. [1 mark] For example, the formation of the Indonesia-Malaysia-Singapore growth triangle in the 1990s facilitates the collective promotion of tourism in Indonesia's Riau Islands, Malaysia's Johor state and Singapore. [1 additional mark]
- Singapore will also benefit from the growing region as it is a major aviation hub that can provide necessary transport infrastructure for tourists who may want to travel to the region. Tourists who transit in Singapore may decide to spend a few days in the country and contribute to tourism spending.

Negatively

- However, other countries in Southeast Asia are price-competitive. Hence, many tourists from nearby countries such as China, Indonesia, India, Malaysia, and Australia, are sought after by these countries as well. This gives rise to regional competition where Singapore needs to respond in order to thrive. [1 mark] For example, in Fig 3.2, Thailand, Malaysia and Vietnam are the top three in terms of numbers of international tourists with Thailand having 35.5 millions of tourists when Singapore only has 16.5 millions of tourists.
- A growing region could also affect Singapore's prospects in tourism development as other countries may have more attractions (eg forests, caves) that Singapore does not have. The competition in such attractions could cause Singapore to lose its attractiveness to the tourists.

(d) "Dynamic urban governance is more important than building resilience in Singapore's approach to sustainable development."

How far do you agree with this statement? Explain your answer. [9]

I agree with the statement to a small extent. Both approaches are important as dynamic urban governance refers to the government's actions while building resilience involves the citizens.

As part of dynamic urban governance, Singapore adopts a comprehensive approach to coordinate policy planning and implementation, which involves different stakeholders. Political leadership **sets clear direction** for different government agencies. **For example, the Singapore Green Plan (SGP) 2030 is jointly led by 5 government agencies.** Doing so reaps synergies as people and resources from these agencies combine to achieve a common goal. Another example is 'Our Singapore Conversation' which invites people to share their hopes for the future. Key issues such as job security, healthcare and housing are discussed. The feedback gathered **enables government agencies to implement policies** that improve people's lives.

Singapore adopts detailed, thorough systems and processes from public service and government institutions. For example, the Singapore Public Service has well-thought-out systems and processes based on accountability, transparency and incorruptibility. The Public Service Division leads the way in promoting good governance, running public organisations and meeting citizen's needs. The emphasis on good governance and upholding Public Service values has helped Singapore maintain a high level of trust and confidence in its government, both domestically and internationally.

Building resilience is also crucial to achieving sustainable development in Singapore. It is an on-going process, where resilience efforts are past and present actions, which future actions can continue to build upon to handle current and future challenges. **For example, to address water shortage, Singapore harvested rainwater and continued to search for other sources of water.** With a growing population and expanding economy, Singapore commissioned its first water recycling plant in the 1970s. After many years of research and development, together with advanced membrane technology, Singapore introduced reclaimed water (i.e. NEWater) in 2003. Today, Singapore continues to explore beyond our current sources to secure our future water supply.

Building resilience involves learning to survive, adapt and thrive. It is about emergency preparedness and the ability to recover after crises. Since independence in 1965, Singapore had to manage a variety of issues related to sovereignty, defence and economic growth. Shortly after independence, Singapore established the Ministry of Foreign Affairs and People's Defence Force to secure our borders. We expanded the SAF through conscription of male citizens through National Service in 1967. Without a hinterland or natural resources, Singapore's plan was to rapidly industrialise the economy by attracting foreign investors and focusing on education & training. Today, Singapore is a secure, thriving liveable and sustainable city-state that offers its residents a high quality of life.

I agree with the statement to a small extent. This is because dynamic urban governance is an approach that involves the top leadership in Singapore and requires a team of good leaders. Political leadership with clear policies is important to navigate the country towards sustainable development. However, to achieve sustainable development, leadership requires everyone to be involved. Hence building resilience as a whole country approach is important as well. As a country, there is a need to strengthen resilience capabilities with everyone involved. It is important that people have the fortitude and willpower to overcome challenges with a tenacious and positive mindset. This will enable Singapore as a small city state to survive against all odds in a complex, every changing and unpredictable world. Therefore, both the leadership and people in Singapore must work together to achieve sustainable development in Singapore, making both dynamic urban governance and building resilience equally important.

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 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

BLANK PAGE

Copyright Acknowledgements

Question 1	Figure 1.1	https://www.youtube.com/watch?v=KdDQBDYYms0
Question 1	Figure 1.2	https://www.ur.gov.sg/land-planning/master-plan/master-plan-2025/themes/enabling-sustainable-growth/vibrant-business-and-job-nodes/
Question 2	Figure 2.1	https://www.geologyin.com/2014/07/east-africas-great-rift-valley-complex.html
Question 2	Figure 2.2	https://www.nationalgeographic.com/environment/article/tsunamis
Question 3	Figure 3.1	https://www.straitstimes.com/singapore/with-466-undersea-volcanoes-in-region-singapore-at-risk-if-big-eruption-hits-scientists
Question 3	Figure 3.2	https://www.instagram.com/p/DF62vC7TSIc/