2279/02/S4 Preliminary Examinations (Core Geog Paper 2)

MARKING GUIDE

1 Cluster 1: Geography in Everyday Life

(a) With reference to Fig. 1.1, suggest how the wall design initiative could affect the residents' sense of place within their neighbourhood. [3]

Award 1 mark for each suggested reason on how the wall design initiative could affect the residents' sense of place within their neighbourhood, to a maximum of 3 marks.
Award a maximum of 1 additional mark for further development of each reason, where applicable.

Possible responses include:

- Fig. 1.1 shows the wall design likely to reflect the different ethnic backgrounds of Singapore from the perspective of the residents. [1 mark]
    - By visually representing the community's sketches into the wall design, it fosters a sense of pride and belonging among residents. [1 additional mark]
- They serve as a visual narrative of the community's project, allowing residents to reminisce the times they spent together working on it. [1 mark]
- The creation of the wall design itself often involves the active participation of the local residents. [1 mark]
    - This collaborative effort strengthens social bonds and promotes a sense of ownership and engagement in the neighbourhood’s development. [1 additional mark]
- The wall design adds an aesthetic and visually pleasing element to the neighbourhood. [1 mark]
    - This can transform previously dull or neglected spaces into attractive ones, making residents feel more positively about their surroundings. [1 additional mark]

AO2

(b) Describe how urban neighbourhoods can achieve environmental sustainability. [4]

Award 1 mark for each description of how urban neighbourhoods can achieve environmental sustainability.
Award a maximum of 1 additional mark for further development of the description, where applicable.

Possible responses include:

Ample protection for nature

- When there is ample protection for nature, wildlife can thrive in our urban spaces and human-wildlife coexistence can be fostered. [1 mark]
- Concerted efforts should be made to protect existing native species, habitats and ecosystems, and to re-establish species than once exited. [1 mark]

Having facilities that support waste minimisation and recycling

- Conveniently located recycling facilities around the estates can encourage residents to recycle. [1 mark]
- Having a high enough population density in a neighbourhood ensures adequate waste can be collected and recycled in an economically viable manner. [1 mark]
- Waste recycling can be encouraged through neighbourhood-scale recycling activities organised by either residents or the town council. [1 mark]

Energy and water-efficient design approaches for buildings and landscapes.

- Building and landscaping in urban neighbourhoods may be designed to be energy and water efficient to minimise the use of resources [1 mark]
- Smart technology and eco-friendly features can be installed. [1 mark]

AO1

(c) Study Fig. 1.2, which shows the reported road casualties by road user type in Great Britain in 2019 and 2022.

Reported road casualties by road user type in Great Britain in 2019 and 2020

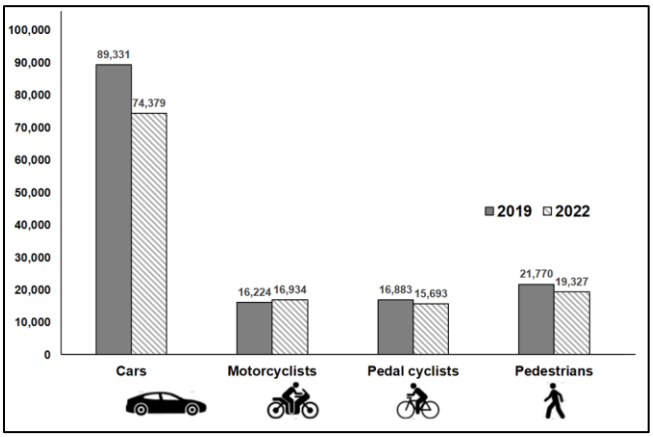


Fig. 1.2

(i) Compare the number of road casualties by road user type in Great Britain between 2019 and 2022. [3]

Award 1 mark for each comparison of the number of road casualties by road user type in Great Britain between 2019 and 2022.
Award a maximum of 1 additional mark for further development of each comparison, where applicable.

Possible responses include:

- All showed a decrease except for motorcyclist. [1 mark]
- Highest decrease: cars [1 mark]
    - by 14,952. [1 additional mark]
- Lowest decrease: pedal cyclist [1 mark]
    - by 1190. [1 additional mark]
- Cars remained highest from 2019 to 2022. [1 mark]
- Lowest in 2019 was motorcyclist but lowest in 2022 is pedal cyclist. [1 mark]

AO2

(ii) Describe one health impact on people caused by traffic hazards. [1]

Award 1 mark for a description on health impact on people caused by traffic accident.

- People may suffer serious injuries when involved in a traffic accident. [1 mark]
    - Which may lead to disabilities or loss of lives.

AO1

(d) Study Fig. 1.3 (Insert), which shows the benefits provided by the coral reef ecosystem.

With reference to Fig. 1.3, suggest how coral reefs may provide ecosystem services for a community. [4]

Award 1 mark for each suggestion on how coral reefs may provide ecosystem services for a community. Award 1 additional mark for further development of each suggestion, where applicable.

Possible responses include:

Provisioning:

- Coral reefs are rich in biodiversity, serving as habitats for numerous marine species that local communities rely on for food. [1 mark]
    - The fish and other marine resources harvested from reefs are vital for both subsistence and commercial fishing. [1 additional mark]
- Beyond food, coral reefs provide materials like limestone and sand, which are used in construction and land reclamation projects. [1 mark]
    - The calcium carbonate structures of corals are also used in traditional medicines and dietary supplements. [1 additional mark]

Cultural:

- Coral reefs attract tourists by providing aesthetic enjoyment and recreational opportunities. [1 mark]
    - for example, activities like snorkelling and diving [1 additional mark]

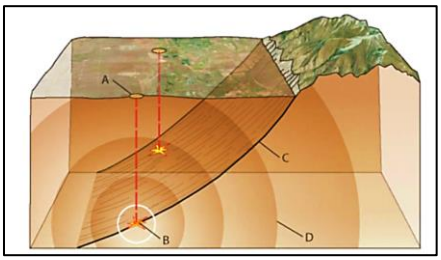
Regulating:

- Coral reefs act as natural barriers, absorbing wave energy and reducing the impact of storms and rough seas on shorelines. [1 mark]
    - This helps prevent coastal erosion and protects infrastructure, properties, and habitats. [1 additional mark]
    - By breaking the force of waves, coral reefs help to maintain the stability of coastal sediments, reducing erosion and the loss of land. [1 additional mark]

AO2

2 Cluster 4: Tectonics

(a) Study Fig. 2.1, which shows a section of the earth's crust.



Using Fig. 2.1, identify the letter (A, B, C or D) which represents the focus of the earthquake. [1]

Award 1 mark for identification of the letter which represents the focus of the earthquake.

- B [1 mark].

AO1

(b) Study Fig. 2.2A (Insert), which shows the distribution of shallow (0-60km), intermediate-depth (60-300km) and deep-focus (300-700km) earthquakes around the world that are above 5.5 magnitude in 2023, and Fig. 2.2B (Insert) which shows the total number of earthquakes in each depth category.

Using Fig. 2.2A and Fig.2.2B, describe the frequency and pattern of earthquakes around the world. [4]

Award 1 mark for each description of the pattern of earthquakes around the world, to a maximum of 3 marks.
Award a maximum of 1 mark for further development of each description, where applicable.
Award a maximum of 3 marks if for description of either frequency or pattern of earthquakes around the world.

Possible responses include:

- Generally, shallow earthquakes (0-60km) have the highest frequency of 2743/ deep- focus earthquakes (300-700km) have the lowest frequency of 281 [1 mark].
- Most earthquakes occur along plate boundaries [1 mark].
- Deep-focus earthquakes are found along the Pacific Ring of Fire [1 mark].
    - With high concentrations between Pacific and Philippine Plates/ Pacific and North American Plates where Japan lies [1 additional mark].
- However, there are earthquakes far away from plate boundaries, such as in the middle of the Pacific Plate/ in the middle of Australia [1 mark].

AO2

(c) Study Fig. 2.3A (Insert) which shows the land use zoning map for areas around Mt. Usu in Japan after its eruption in 2000 and Fig. 2.3B which shows the response measures in the same area.

Response measures after Mt. Usu eruption in 2000

Zone	A	B	X	C
Description	Areas where craters are located or are nearby. Heavily damaged by hot rocks and mudflow.	Neighbouring areas of zone A. Damaged by hot rocks.	Areas not damaged by eruption, but at high risk of mudflow.	Areas that are not included in in the zones A, B and X.
Development plan	All types of structures are prohibited.	All types of structures are prohibited.	All types of structures are prohibited. Existing structures to be moved to an appropriate zone.	Residential structures to be moved to safer areas. Limited development.
Land use	Disaster prevention facilities, green space, nature park.	Disaster prevention facilities.	Open space, park.	Agriculture, and low-density industrial buildings

Fig. 2.3B

Using Fig 2.3A and 2.3B, explain how land use planning can help to reduce people's exposure to tectonic hazards. [4]

Award 1 mark for each explanation of how land use planning can help to reduce people's exposure to tectonic hazards, to a maximum of 4 marks.
Award a maximum of 1 additional mark for further development of each explanation, where applicable.

Possible responses include:

- Land use planning aims to reduce the community's exposure to tectonic hazards by controlling and minimising development in high-risk areas [1 mark].
- This decreases potential loss of lives and damage to properties [1 mark].
- Strict guidelines to control development are implemented using hazards maps [1 mark].
- Hazard maps identify areas at risk and uses data on past earthquake events to suggest levels of risk (high, medium, low) based on the likelihood of the disaster occurring/ indicate the likely extent of disasters [1 mark].
    - Zones A, B and X are high risk zones therefore, only low value uses are allowed such as open space or nature parks [1 additional mark].
    - Zone C are lower risk zones where medium/higher value use such as agriculture and low-density industrial buildings are allowed [1 additional mark].
    - However, Zone C is still relatively near to Mt. Usu, as such, residential structures are not allowed to reduce potential loss of lives [1 additional mark].

AO2

(d) Study Fig. 2.4A (Insert), which shows the locations of Istanbul and Ankara, two cities in Türkiye, and Fig. 2.4B, which provides information on the two cities.

Information on Istanbul and Ankara

City of Türkiye	Population Density (per sq km)	% of earthquake resistant buildings in the city	Risk of soil liquefaction
Ankara	237	45%	Low
Istanbul	3013	30%	High

Fig. 2.4B

With reference to Figs. 2.4A and 2.4B, compare the factors influencing earthquake disaster risks in Ankara and Istanbul. [6]

Award 1 mark for each comparison of the factors influencing earthquake disaster risks in Ankara and Istanbul, to a maximum of 6 marks.
Award a maximum of 1 mark for further development of each comparison, where applicable.

Possible responses include:

Vulnerable conditions:

- Istanbul is more vulnerable to earthquakes than Ankara as there is a higher percentage of buildings that are not earthquake resistant (70% vs 55%)
    - The poorer the quality of buildings, the more vulnerable the buildings are to collapse, leading to more trapped people, injuries and loss of lives.
- Istanbul also has a higher risk of soil liquefaction which makes buildings more vulnerable to collapse as they may sink into the liquefied soil and tip over.
    - When the soil is saturated and loose, shaking may result in liquefaction.

Exposure to earthquakes:

- Istanbul has a higher exposure to earthquakes as the population density is higher (3013 per sq km vs 237 per sq km).
    - When large numbers of people are located within buildings, more people will be trapped when the buildings collapse, causing more injuries and loss of lives.
- Istanbul is within 20km north of the North Anatolian Fault whereas Ankara is at least 100km south of the Fault.
    - Seismic waves during earthquakes reaching Istanbul will be stronger, causing more violent shaking.

AO3

3 Cluster 5: Singapore

(a) Explain how climate change can lead to water insecurity in Singapore. [2]

Award 1 mark for each explanation on how climate change can lead to water insecurity in Singapore.
Award 1 additional mark for further development of each explanation, where applicable.

- Due to Singapore's lack of natural water sources, extended period of droughts across the world can affect the reliability of Singapore's water supply. [1 mark]
    - Imported water from Johor, Malaysia, supplies more than half of Singapore's water needs. [1 additional mark]
    - In June 2016 and September 2019, water levels at Johor's Linggiu Reservoir dropped by 33% and 50% respectively because of climate change, affecting water supply to Singapore. [1 additional mark]

AO1

(b) Study Fig. 3.1 (Insert), which shows the citizen population by broad age bands.

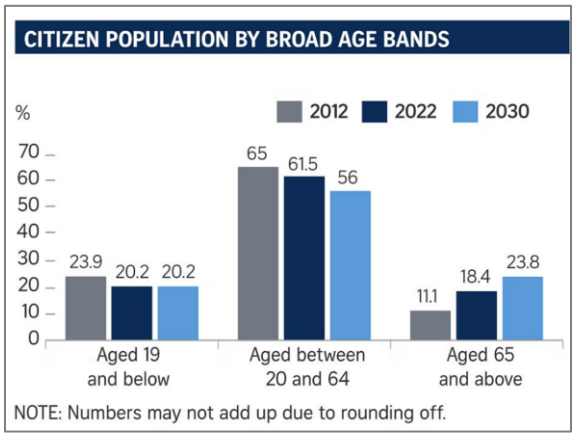


Fig. 3.1

(i) Using Fig. 3.1, describe the changes in the citizen population across broad age bands from 2012 to the 2030 projection. [3]

Award 1 mark for each description of the citizen population by broad age bands from 2012 to the projection in 2030. Award 1 maximum of 1 additional mark for further elaboration of each description, where applicable.

Possible responses include:

- From 2012 to 2030, there was a decrease in population for all age bands except for aged 65 and above. [1 mark]
- Higher decrease for aged 19 and below [1 mark] OR lower decrease for aged between 20 and 64 [1 mark]
    - decreased by 3.7%, [1 additional mark] OR decreased by 9%. [1 additional mark]
- However, aged 65 and above increased by 12.7% [1 mark]

AO2

(ii) With reference to Fig. 3.1, explain how a change in the demographics of Singapore could affect its vulnerability. [3]

Award 1 mark for each explanation on how a change in the demographics of Singapore could affect its vulnerability. Award an additional mark for further development of the explanation, where applicable.

Possible responses include:

<u>Ageing population</u>

- With increasing life expectancy and low fertility rates, the median age of Singapore's citizen population rose from 29.6 years in 1990 to 42.6 years in 2022. [1 mark]
    - This makes Singapore vulnerable as more resources must be allocated to care for the aged. [1 additional mark]

<u>Labour shortages</u>

- Due to our small population and an ageing population, Singapore in unable to fully meet the demands of our growing economy, particularly in sectors such as healthcare and technology. [1 mark]
    - This makes us vulnerable to labour shortages when there is a lack of foreign workers. [1 additional mark]
    - With a lack of workers, companies cannot fill job openings and this makes our economy less competitive. [1 additional mark]

<u>Economic slowdown</u>

- With a ageing population and a reliance on foreign workers, economic slowdowns can result in a long recovery time as: [1 mark]
    - Fewer resources are available to aid in economic recovery as resources are needed to care for the aged. [1 additional mark]
    - Lack of local workers to aid in the recovery - Companies and investors may lose interest in Singapore as it is unable to provide a sufficient labour after an economic slowdown. [1 additional mark]
    - Many foreign workers which Singapore is reliant on would have left Singapore when they lost their jobs during the crisis. [1 additional mark]

AO2

(c) Study Fig. 3.2, which shows three ways Singapore adapts to food security issues.

With reference to Fig. 3.2, explain how Singapore addresses food security issues. [3]

Award 1 mark for each explanation on how Singapore addresses food security issues. Award 1 additional mark for further development of each reason, where applicable.

Possible responses include:

Importing food

- Importing food from many different countries reduces our dependence on any single supply source. [1 mark]
    - Although more than 90% of Singapore's food is imported, the government ensures food security by diversifying its import sources. [1 additional mark]
    - Singapore currently imports food from over 170 countries and regions. [1 additional mark]

Growing local

- When there are disruptions in regional and global food supplies, local produce can serve as a critical supply source. [1 mark]
    - When operations at the Jurong Fishery Port were halted for 2 weeks for deep cleaning following a COVID-19 clusters, local fisheries such as Eco-Ark and The Fish Farmer raised their production to meet the demand. [1 additional mark]

Growing overseas

- Singapore supports local companies to expand and grow produce overseas so that their produce can be imported back home. [1 mark]
- Growing produce overseas can help Singapore overcome land, water, energy and manpower constraints. [1 mark]
    - Some local farms that have ventured overseas include Barramundi Asia in Australia, and Sky Greens in Thailand and China. [1 additional mark]

AO1

(d) Study Fig. 3.3, which outlines the 5 Pillars of the Singapore Green Plan 2030, and Fig. 3.4, an extract from the Economic Development Board (EDB) on Singapore's position as Asia's technology capital.

The 5 Pillars of Singapore Green Plan 2023

Fig. 3.3

Extract from EDB on Singapore's position as Asia's technology capital.

WHERE SINGAPORE STANDS — AND WHERE IT SOARS

Berlin. Stockholm. San Francisco. These cities are widely regarded as among the hottest places in the world to launch a new business. But on the 2017 list of Best Cities for Startups compiled by Berlin-based research firm Nestpick, Singapore beat them all (as well as 80 other contenders, including Seoul, Shanghai and Beijing).

The factors that make Singapore so appealing to startups make it equally attractive to enterprise leaders looking to establish an Asian base of operations for their companies: A sophisticated information technology (IT) infrastructure and pro-business ecosystem geared toward fostering innovation. A rich, readily available pool of young, highly educated tech talent and advanced software engineers. And, last but not at all least, an invaluable geographical proximity to the region's thriving tech markets.

Fig. 3.4

‘Ensuring a competitive economy is the main goal of Singapore's sustainable development plans.’

With reference to Figs. 3.3 and 3.4, to what extent do you agree with this statement? Explain your answer.

Relevant content

Competitive economy
- Attracts investments
- Provides employment opportunities

A sustainable environment
- Ensures clean and healthy environment
- Provides excellent air and water quality

Ensures a high quality of life for all
- Fostering community spirit
- Facilitating active participation from stakeholders

A possible approach:
To approach this question, start by explaining how sustainable development is crucial to Singapore’s competitive economy, particularly in attracting investment and creating jobs. Then, introduce another key aspect of sustainable development, such as the importance of a sustainable environment, which ensures clean air, water quality, and a healthy living space for citizens. Emphasise that while economic growth is vital, it must be balanced with environmental sustainability to secure long-term benefits for the country. Conclude by evaluating the statement, considering how both factors contribute to Singapore’s overall development.

Sample evaluation:
While a competitive economy is a key objective of Singapore’s sustainable development, it is not the sole focus. Sustainable development also prioritises a healthy environment, which ensures clean air, water quality, and overall public health. Balancing economic growth with environmental sustainability is essential for long-term prosperity and quality of life. Therefore, while the competitive economy is important, it must be integrated with environmental considerations to achieve holistic and sustainable development.

AO3