P1 - Ans

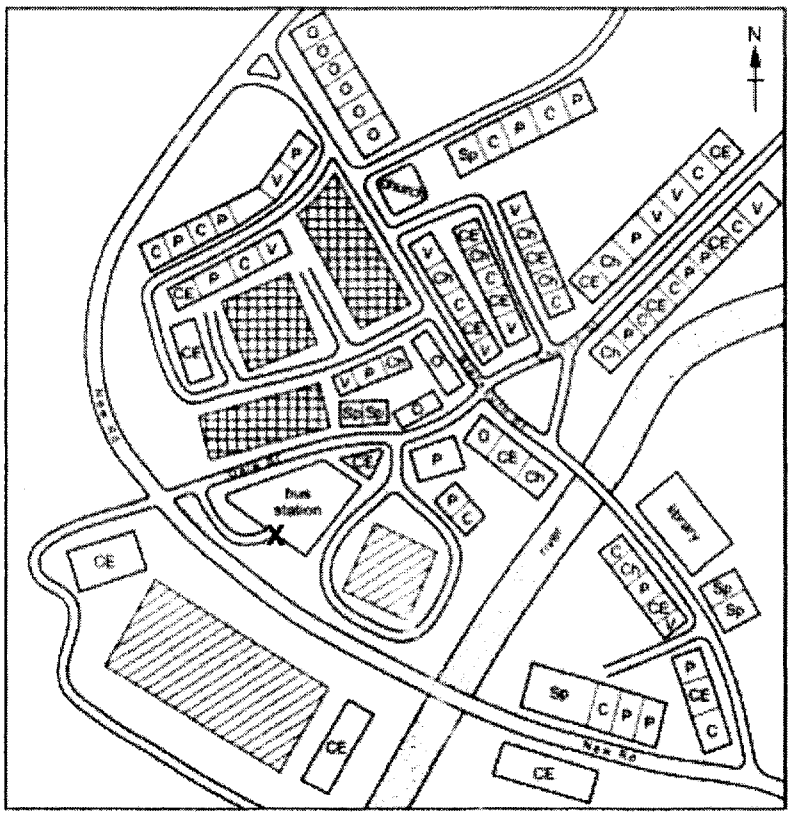
1 Cluster 1: Geography in Everyday Life

A group of students in the United Kingdom wanted to investigate causes of air pollution in their city area and residents' opinions on strategies taken to reduce it. They went to the city area on a weekday and used a closed-ended questionnaire survey to collect the views of the residents.

They divided themselves into two groups, with one group interviewing the first 50 residents who are less than 50 years old and the other group interviewing the first 50 residents who are above 50 years old. Each group of students interviewed 50 residents.

They conducted their questionnaire at the location labelled X shown in Fig.1.1. A copy of their questionnaire is in Fig. 1.2 (Insert).

Land use map of the city area in the United Kingdom



Key:

Household goods store	
Supermarket	
Convenience goods store	C
Specialist store non-food (e.g. florist, travel agent)	Sp
Personal services (e.g. hairdresser, nail parlour)	P
Charity shop	Ch
Cafe	CE
Offices	O
Vacant shop space	V

Fig. 1.1

(a) Explain the advantages and a safety concern of conducting their questionnaire at location X. [3]

- One advantage would be a **high footfall /pedestrian traffic** at location X as it leads to the bus station so students would be able to get respondents more easily.
- They would also be able to **seek shelter** at the bus station if it rains.
- It may not be very safe for the students as they are **standing at a small road** at the entrance / exit to the bus station and **accidents may happen**.

(b) The students collected information on the types of air pollution and their origin. They represented the information in a comparative bar graph.

Table 1.1 shows the information collected by the students and Fig. 1.3 shows their partially completed graph.

Table 1.1

Types of air pollution and their origin

origin of air pollution (%) / types of air pollution	transportation	fuel burning	industrial processes	construction and agriculture
carbon monoxide	85	5	10	0
dust and airborne particles	1	2	2	95
nitrogen oxides	49	47	4	0
sulfur oxides	3	85	10	2
others	35	3	62	0

(i) Use the information in Table 1.1 to complete the bar graph in Fig.1.3 for transportation and industrial processes. [2]

Answer:

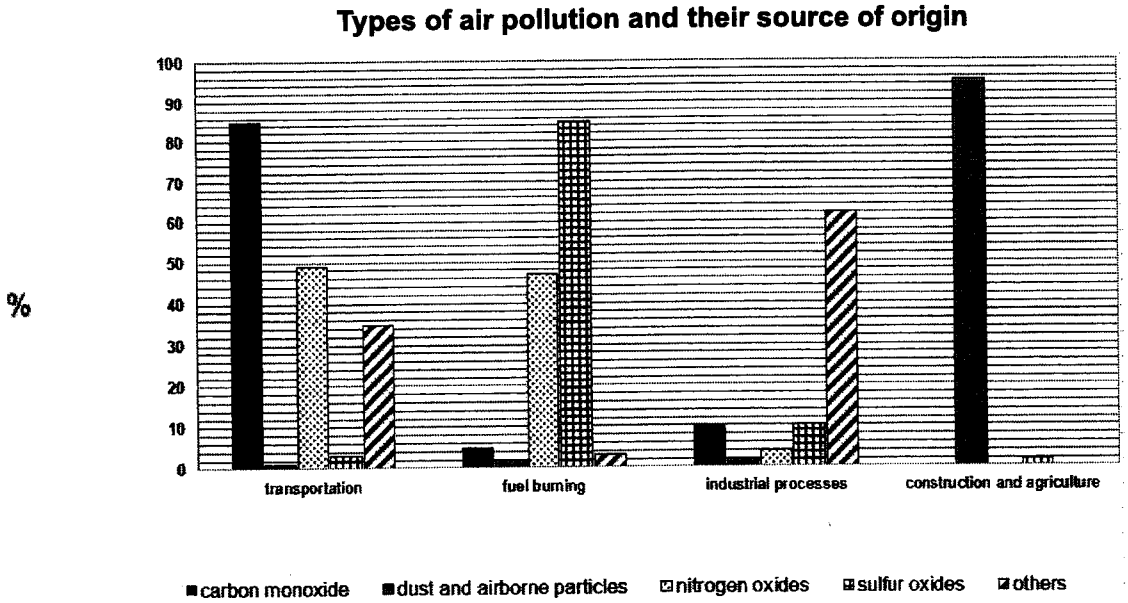


Fig. 1.3

(ii) Describe **one other** graphical method the students could use to present the data in Table 1.1.[2]

- They could plot a series of **pie charts**, one for each origin of air pollutant.

- Each **segment** will show the **percentage** for each origin of air pollutant.

(c) The students created a list of strategies to reduce air pollution and classified them as nature-based or policy-based. They wanted to test the hypothesis: *'People are more supportive of nature-based strategies compared to policy-based strategies to reduce air pollution'.*

When conducting the questionnaire, the students decided to show respondents photographs of how other cities have adopted these strategies to reduce pollution, as seen in Figs. 1.4A (Insert) and 1.4B (Insert).

Table 1.2 shows the results of the close-ended questionnaire survey conducted on respondents' opinion of strategies to reduce air pollution in their city.

Table 1.2

Respondents' opinion of strategies to reduce air pollution in their city

		<50 years old		**> 50 years old**	
strategies to reduce air pollution	**classification**	**support the strategy**	**do not support the strategy**	**support the strategy**	**do not support the strategy**
plant more trees	nature-based	41	9	32	18
promote green walls and green roofs	nature-based	30	20	29	21
create more green spaces and parks	nature-based	35	15	39	11
build extensive network of cycling lanes	policy-based	23	27	12	38
provide subsidies for electric cars	policy-based	39	11	42	8
introduce car free days on weekends	policy-based	21	29	9	41

(i) To what extent does the data in Table 1.2 support the students' hypothesis? [4]

- The data supports the students' hypothesis to a **large extent.**
- From Table 1.2, nature-based strategies garnered a **higher** level of support, with a total of **206** responses compared to policy-based strategies which had a lower level support at a total of **146** responses.
- A **larger** number of **74 people** are also supportive of nature-based strategies like 'create more green spaces and parks' compared to a **smaller** number of **35 people** who are supportive of policy-based strategies such as 'build extensive network of cycling lanes'. OR A **larger** number of **73** people are supportive of nature-based strategies like 'plant more trees' compared to a **smaller** number of **30 people** who are supportive of policy-based strategies such as 'introduce car free days on weekends'.

- However, there is an exception. A **large** number of **81 people are supportive of policy -based strategies** which is to 'provide subsidies of electric cars'. This is higher than any other nature-based strategies.

(ii) With reference to Table 1.2, explain some factors which could have influenced how supportive respondents are of the various strategies.
[3]

- One factor is **age**. Older people are mostly not in favour of strategies that could be physically more demanding such as cycling.
- Another factor could be concerns about **cost**. The approach of 'provide subsidies for electric cars' received strong support because it lowers the cost of purchasing a car.
- Another factor could be **lack of convenience**. Many people were not supportive of 'car-free days on weekends' because it would require them to walk, take public transport, or cycle which could be troublesome and time-consuming.

(d) Evaluate the data collection methods used by the students. [6]

For:

- Their sample size of **100 people** is large enough to **conduct a reasonable analysis of data.**
- The use of a **close ended questionnaire** with **pre-defined responses** makes it **easy for respondents to complete the survey**.
- Collecting quantitative data makes it **easier** for students to **analyse data** to better **draw conclusions / see patterns.**
- Students included a **wide range** of nature-based and policy-based **strategies** and classified them, which could help **gain a better understanding** of residents' opinions on strategies to reduce air pollution in their city area.

Against:

- Showing respondents photographs of how other cities implemented these strategies could possibly **sway / influence their decision to be supportive** of the strategy. This could have led to higher scores for 'plant more trees'.
- The use of quota sampling / convenience sampling to select respondents introduces **bias** and **may not accurately represent the views of various groups within society,** such as those of different genders and ethnicities.
- Students **could have interviewed the same person more than once** at the busy bus station.
- As students conducted their survey at the entrance / exit of a bus station, most of their respondents would be people who are **taking public buses,** and it **may not represent the views of others** who take private transport or use other forms of public transport such as train / rail.

(accept any 6 valid points with at least one point on each side)

[Total: 20]

2 Cluster 2: Tourism

(a) Study Fig. 2.1, which shows tourist arrivals to Thailand from 2015 to 2023.

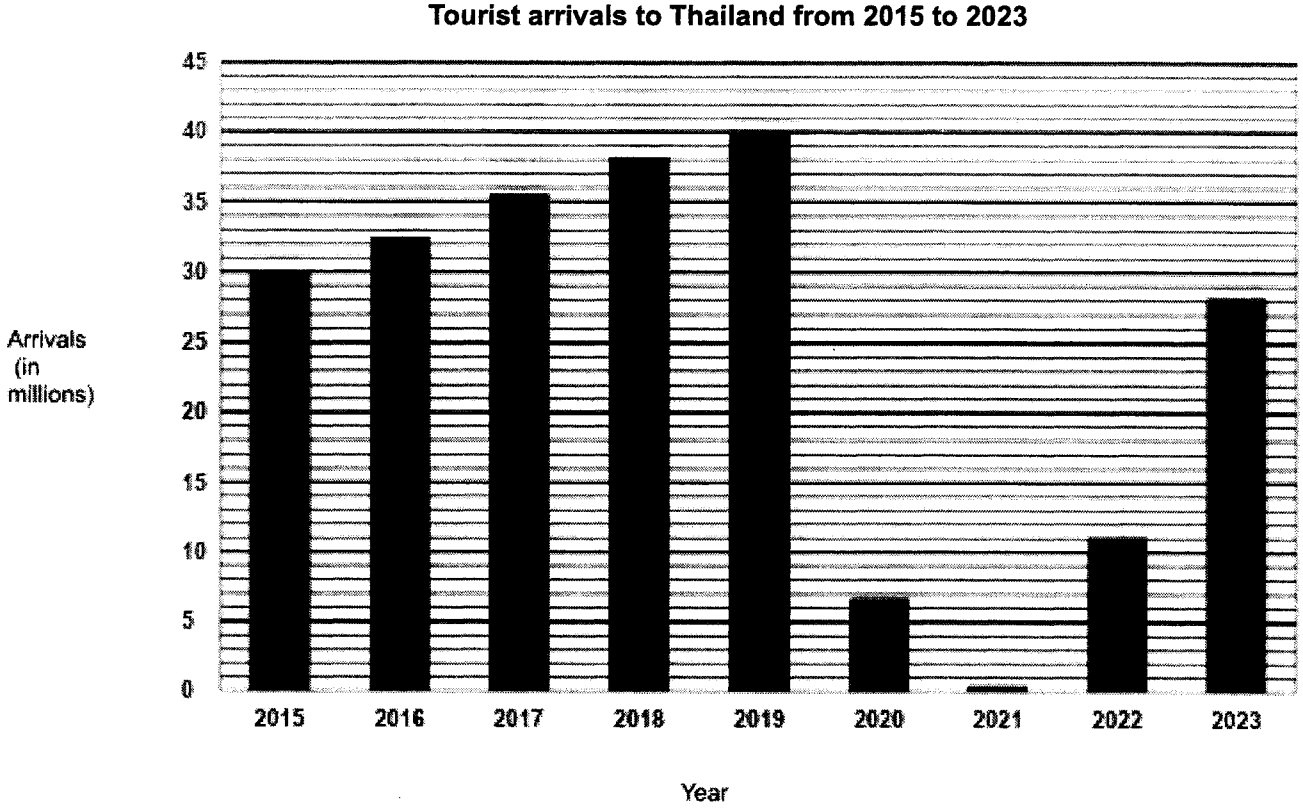


Fig. 2.1

Using Fig. 2.1, describe the trends in tourist arrivals to Thailand from 2015 to 2023. [4]

- Overall, there is a decrease in tourist arrivals to Thailand from 30 million in 2015 to 28 million in 2023, **a decrease of 2 million tourist arrivals.**
- From 2015 to 2019, tourist arrivals increased gradually. From 2015, tourist arrivals increased from 30 million to 39.8 million in 2019, **an increase of 9.8 million.**
- However, from 2019 to 2021 there was a steep decrease in tourist arrivals. Tourist arrivals decreased from 39.8 million in 2019 to 0.4 million in 2021, **a decrease of 39.4 million.**
- From 2021 to 2023, tourist arrivals increased sharply from 0.4 million to 28 million in 2023, **an increase of 27.6 million.**

(b) Study Fig. 2.2A (Insert), which shows the location of hotels in Saint Lucia, a country in the Caribbean, and Fig.

Fig. 2.2A for Question 1
Location of hotels in Saint Lucia

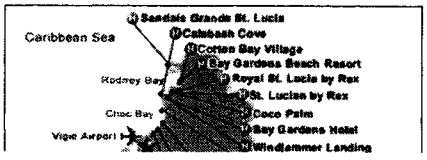
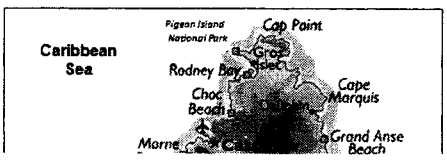


Fig. 2.2B for Question 1
Other information about Saint Lucia



2.2B (Insert), which shows other information about Saint Lucia.

(i) Using Fig. 2.2A, describe the location of hotels in Saint Lucia. [2]

- Most hotels are located at the **north / northwestern coast** of Saint Lucia such as **Bay Gardens Beach Resort.**
- Some are also located at the **southwestern coast** such as the **Anse Chastanet hotel.**

(ii) Using Figs. 2.2A and 2.2B, account for the location of hotels in Saint Lucia. [3]

- Most resorts are found at the **North / northwest** coast of Saint Lucia as it is **near the Vigie Airport** which makes it **accessible** to tourists.
- There are also many **beaches / bays** at the northwestern coast which allow tourists to **engage in beach activities / diving / snorkelling.**
- It is also near the **Pigeon Island National Park in the North** which would appeal to tourists who are keen on **nature walks / hiking / bird watching.**

(c) Describe how online media has influenced the rise of niche travel. [2]

- Online media has helped to **market** the **services of specialist tour operators** who provide tourism experiences for niche travel.

- Online media also creates interest in niche travel by **raising awareness of specific destinations** that mass-market tour operators typically do not offer, and which are less commonly chosen compared to standard package holidays.

(d) Describe how tourism can result in positive environmental impacts. [4]

- **Degraded** aquatic and terrestrial ecosystems can be **restored,** and this can be done by stopping or **reversing** degradation.
- Tourism revenue can be used to **fund the protection** of aquatic and terrestrial ecosystems, protecting biodiversity.
- With the rise of tourism, local authorities in tourist destinations may **establish protected areas or National Parks** where development is restricted in other to ensure that habitats are undisturbed.
- In addition, **environmental education programmes** can be set up for tourists to encourage them to care for these ecosystems.

[Total: 15]

3 Cluster 3: Climate

(a) Explain why corals and mangroves are important coastal ecosystems. [3]

- Mangroves are important as they **absorb and store greenhouse gases** in their soil up to four times as much as forests. They function as carbon sinks and help reduce carbon dioxide levels in the atmosphere, thus mitigating global warming.
- Mangroves **filter pollutants in rivers** and prevent them from reaching the oceans and harming corals and aquatic life.
- Corals are **home to millions of aquatic species like fish and seahorses**. When corals die, these species lose their food source and habitat. Their populations may decline, affecting other species that depend on them. Thus, the entire ecosystem is affected.
- Mangroves and corals offer **protection against coastal floods** by acting as natural barriers. They break the force of incoming waves and reduce their energy before they reach the shore.

(accept any 3 valid points)

(b) Study Fig.3.1A (Insert), which shows the population density of the Netherlands and Fig. 3.1B (Insert), which shows a simplified relief map of the Netherlands.

Population density of the Netherlands

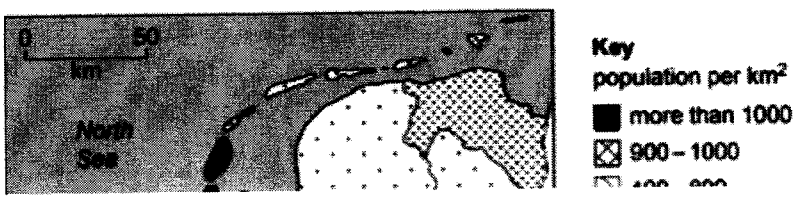


Fig.3.1A

Simplified relief map of the Netherlands

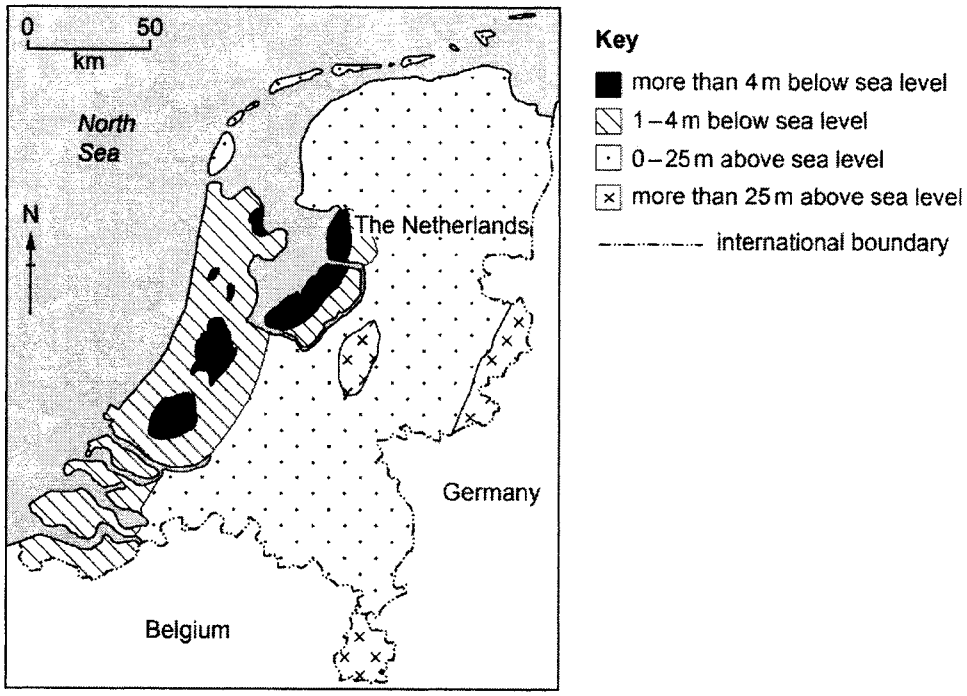


Fig.3.1B

Using Figs. 3.1A and 3.1B, explain why the Netherlands faces severe threat from climate change.[3]

- The Netherlands faces severe threat of climate change as it has a **very long coastline** (about 350km), facing the North Sea, which makes it vulnerable to flooding / sea level rise.

- About one-third of The Netherlands is also **low-lying** at more than **4m below sea level and 1-4m below sea level**. These areas face the threat of being **submerged** when sea levels rise.
- **Population density** is the **highest** at more than **1000 people per km^2 in areas along the coast**. People living at these coastal areas are more likely to be exposed to hazards such as storm surges and sea level rise. This can lead to **flooding**, resulting in extensive damage to property and infrastructure, as well as loss of lives.

(c) 'Structural adaptation strategies are more effective than social adaptation strategies in building community resilience to climate change.'

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

Structural adaption strategies include **seawalls**, where a wall is constructed along the coast to prevent the sea from advancing onto the land. It protects people, properties and environments from coastal floods. For example, seawalls are constructed at East Coast Park in Singapore to protect the coastline from sea level rise. **Polders** can also be constructed at coastal areas. Low-lying land in the polder is surrounded and protected by barriers known as dykes. Excess water is then pumped out from the polder and this method protects people, properties and environments from sea level rise and coastal floods. For example, polders have been constructed in The Netherlands to protect communities from river and sea flooding. **Water storage tanks** can be built to store excess rainwater during periods of excessive rainfall to slow the water from rushing into canals and drains. This prevents flooding in the canals and drains. For example, the Stamford Detention Tank built in Singapore allows excess water to flow into the detention tank and be stored there temporarily. When sensors detect that water levels in drains have fallen, water in the detention tank will be released back into the drains.

Social adaptation strategies include **raising awareness and educating communities** on how to respond to impacts of climate change. These allow communities to be aware of the warning signs of possible climatic hazards and take appropriate steps to protect themselves and increase community resilience. **For example, in Nepal, to cope with prolonged drought, communities are taught that they can plant more drought-resistant crops such as apples**. In Singapore, the public is educated on what to do when a flash flood occurs, or how to prevent heat stress injuries during warm weather. For instance, during periods of hot weather, people are advised to **keep hydrated** and watch for early signs of heat stress. This reduces injuries and economic losses.

I agree with the statement to a **small extent** as while it is true that structural approaches are effective in offering immediate protection of the low-lying areas from coastal floods, **climate change can result in other risks other than just coastal flooding.** These risks include **droughts** which will result in famine, higher incidence of insect-borne diseases and **heat waves**. **Structural approaches will not be able to protect communities from such risks**. Social approaches can raise public awareness of what people can do in the event of hazards, such as heat waves, which can be caused by climate change. **The effectiveness of strategies also varies depending on the specific context and conditions of each location**. Hence, a **combination of both approaches will be crucial** to build community resilience to climate change.

Level	Marks	Generic Level Descriptors for 9-Mark AO3 Questions
3	7 - 9	Develops arguments that supports 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

[Total: 15]

P2 - Ans

1 Cluster 1: Geography in Everyday Life

(a) Study Fig. 1.1 (Insert), which shows an initiative by residents to set up a community library at the void deck of a block of flats in their neighbourhood.

Using Fig. 1.1, describe how the presence of the community library could affect the sense of place of residents in their neighourhood. [2]

- The presence of the **community library with its well-decorated space** is **unique/distinctive,** thus making it easy for residents to remember it. This could help to enhance the residents' sense of place.
- The community library at the void deck of the flats also serves as a **place where residents can gather and interact with one another**, thus forming an attachment to the place and enable them to feel a sense of belonging and place.

(b) Study Fig. 1.2A (Insert), which shows the number of people who were injured in traffic accidents in Singapore from 2014 to 2023 and Fig. 1.2B (Insert), which shows the number of fatalities in traffic accidents in Singapore from 2014 to 2023.

Using Figs. 1.2A and 1.2B, compare the number of people who were injured and the fatalities in traffic accidents in Singapore from 2014 to 2023. [4]

Similarities

- **Overall, both** the **number of people who were injured and fatalities decreased.** The number of **people who were injured** decreased from 10,000 in 2014 to 9,000 in 2023, a **decrease of 1,000** and the **number of fatalities** decreased from 155 to 140, a **decrease of 15.**
- From **2019 to 2020, both** the number of people who were **injured and fatalities** had a **sharp decrease**. The **number of people who were injured** decreased from 9,800 in 2019 to 6,800 in 2020, a **decrease of 3,000** and the **number of fatalities** decreased from 118 in 2019 to 75 in 2020, a **decrease of 43**.
- From **2020 to 2023**, both the **number of people who were injured and number of fatalities increased.** The number of people who were **injured** increased from 6800 to 9000, an **increase of 2200** and the number of **fatalities** increased from 75 to 140, an **increase of 65.**

Difference

- However, from **2014 to 2016**, the **number of people who were injured increased by 1,000,** from 10,000 in 2014 to 11,000 in 2016 but the **number of fatalities** experienced a slight **decrease of 35**, from 155 in 2014 to 120 in 2016.

(c) Describe how fire hazards can negatively impact individuals living in urban neighbourhoods. [3]

- People can sustain **burn injuries** if they are **unable to evacuate in time**. Severe burn injuries may lead to disabilities or deaths.
- **High levels of carbon monoxide and carbon dioxide** may be released and may cause **carbon monoxide poisoning**. This may cause **headache, dizziness, weakness and confusion**, making it more difficult for people to escape a fire.
- Other irritants from a fire, such as **acid gases**, can **permanently damage a person's respiratory system. Smoke inhalation** can cause **breathing difficulties and suffocation**, which may lead to death.
- Fires can also **destroy commercial or residential properties** which leads to **economic losses** as goods, furniture and important documents may be destroyed.
- **Further costs** may also be incurred after the fire is over as **money is required to repair and rebuild** the properties that were damaged by the fire,

(d) Study Fig. 1. 3 (Insert), which shows the Singapore government's plans to rejuvenate Pasir Ris Town under the Remaking Our Heartlands Programme.

Using Fig. 1.3, evaluate the decision to rejuvenate Pasir Ris Town. [6]

For:

- The **Central Greenway**, which is a **pathway for pedestrians and cyclists** results in **increased connectivity across Pasir Ris**. This encourages more people to cycle or walk, thus helping to reduce carbon emissions in the long run.
- The plan to **integrate the bus interchange with the new mixed residential and commercial development** makes it **more convenient for commuters to access shops**, thus helping to **sustain businesses** due to the higher footfall.
- **Improvement of amenities and having more playgrounds in Pasir Ris Park** would attract **more people to visit the park** where they can engage in **recreational activities to relieve stress/improve their mental and physical well-being.**
- The building of the **partly sheltered community space** can be a place where **activities and events** can be held, thus **encouraging interaction and bonding among residents** in the neighborhood.

Against:

- The **clearance of land for new housing development near Pasir Ris Park** could lead to the **destruction of existing habitats** as **vegetation in the area is cleared** to make way for new flats. This could lead to a subsequent loss of biodiversity in the area.
- The process of **clearing the land and construction of housing** often results in **noise pollution from the use of machinery**, which could cause **disturbance to wildlife**.
- In addition, **harmful chemicals** could also **leak into the ground or nearby waterways**, thus resulting in **land and water pollution.**
- Site clearance could also lead to **soil erosion,** thus causing soil to be washed into waterways, resulting in **poor water quality**. OR loss of nutrient-rich topsoil, thus lowering the fertility of the soil.

Award 1m per valid point, with at least one point on 'for' and 'against'.

[Total: 15]

2 Cluster 4: Tectonics

(a) Study Fig. 2.1 (Insert), which shows the location of the San Andreas Fault.

With reference to Fig. 2.1, explain how earthquakes occur along the San Andreas Fault. [3]

- When the **Pacific Plate slides past the North American Plate,**
- **friction** causes the **rock masses** on **either side** of the San Andreas Fault to get **locked** and **stress builds up.**
- When the **stress exceeds the strength of the fault/rock**, the **rocks snap**/suddenly move to a new position. The sudden movement causes **seismic waves** to be released, resulting in an earthquake.

(b) Study Fig. 2.2 (Insert), which shows a map of the lava flow from the 2021 eruption of the Cumbre Vieja volcano on La Palma in the Canary Islands.

Using Fig. 2.2, describe the extent of the lava flow from the Cumbre Vieja volcano. [3]

- Lava from the volcano has flowed down the **western side**/flank **of the volcano**.
- Lava flow reaches the **coast** and flowed **into the Atlantic Ocean.**
- Lava has flowed **over some towns**, e.g. Todoque, Los Campitos, La Laguna (give at least 1 example).
- Lava has also flowed over a **long distance** of about 5.75km to reach the coast. [Accept measurements ranging from 11.5cm to 12.5cm]

(c) 'Strategies to build community resilience play a more important role in helping to mitigate the impacts of tectonic hazards than disaster management strategies.'

To what extent do you agree? Explain your answer.

A strategy to build community resilience is through **reducing vulnerability through hazard -resistant building designs.** Earthquake-resistant building designs that can withstand ground shaking include using shock absorbers or dampers in buildings to absorb vibrations. Buildings can be reinforced using diagonal cross braces to retain building shape during earthquake events. These prevent buildings from swaying too much, reducing the vulnerability of buildings to collapse. **People are less likely to get trapped in collapsed budlings, reducing loss of lives. For example, Taipei 101** is a skyscraper built in an earthquake-prone zone. It has a **weighted damper near the top of the building.** This reduces the sway of the building during an earthquake and therefore the threat of it collapsing. Another strategy is to **increase preparedness for response and recovery among people.** This helps people be prepared for disasters by knowing what to do in the event of a tectonic hazard so that the community can avoid the dangers associated with the hazards. One strategy is to raise public awareness of hazards through **education.** It provides people with knowledge of the hazards and how to respond to them. People can also be trained in first aid which enables them to administer basic medical care to the injured and keep them mobile so that they can evacuate if needed. Emergency evacuation drills can also be conducted, and this enables people to be familiar with evacuation procedures and routes, thus they can evacuate quickly with less panic/chaos. **For example, during the 2011 Tohoku, Japan earthquake, nearly all of the 3000 students of Kamaishi city survived the earthquake and tsunami. Schools in the Kamaishi city have disaster prevention education programmes, including evacuation drills.** Students were able to respond quickly and evacuate to higher ground away from the tsunami. Increasing preparedness also includes developing plans to ensure that people are able to get back to their lives as soon as possible. These include having plans for makeshift shelters and provision of medical care, food and water.

Disaster management strategies aim to **saves lives, minimise health impacts, ensure public safety and meet the immediate needs of those affected** by the disaster. One such strategy is **search and rescue** which involves **finding and saving survivors trapped in buildings or disaster zones**. These are important and immediate life-saving responses to a disaster. Having **skilled rescuers and specialised equipment** such as **heat sensors and listening devices** can **reduce time needed to locate and evacuate survivors.** For example, in the **2020 Aegean Sea, Turkey earthquake**, more than 8,000 search, rescue and first aid teams were deployed and over 106 people were rescued. Another strategy is **timely evacuation** which involves **moving people away from areas at risk of hazards as quickly** as possible to **safer locations** to **reduce the loss of lives** due to earthquakes. People need to be **evacuated quickly from buildings to open spaces** to avoid getting trapped under collapsed buildings. Powerful aftershocks can occur soon after an earthquake, causing buildings and infrastructure that have already been weakened from the initial shaking to collapse and trap people who are inside. As basic services may be disrupted, people need to be evacuated to **temporary shelters where food, water and medical supplies are provided.** In the event of a possible **tsunami threat**, people need to be **evacuated to higher ground, away from coastal areas.** For example, during the **2011 Tohoku, Japan earthquake** nearly all 3,000 **students in Kamaishi city** survived as the students were **evacuated to higher grounds immediately after the earthquake struck**, saving them from the tsunami caused by the earthquake. As lahars, pyroclastic flows, lava flows and tephra can cause loss of lives, people need to be evacuated away from the danger zone around the volcano. In addition, there is also a need for the provision of basic social and psychological services to affected communities. Ground shaking during earthquakes can rupture water pipes, cutting off or contaminating water supplies. Volcanic ash can also pollute water sources such as rivers. **Providing clean water can prevent dehydration or water-borne diseases which may occur when affected communities drink from contaminated water sources.** For example, during the **2010 Haiti earthquake**, water supply was disrupted in the capital city, Port-au-Prince. The **International Committee of the Red Cross provided water supply for 12,000 people by trucking water into Port-au-Prince daily.** After disasters, there may be **food shortages**, or people may not have access to food due to shop closures and damage to crops. Available food

may also not be safe for consumption. **Providing food can prevent hunger and starvation**. As **healthcare services may be disrupted** due to damage to hospitals, providing **access to medicine, doctors and hospitals can prevent the spread of diseases and save the lives of the injured**. In addition, experiencing a disaster can result in great emotional distress due to severe injuries, the loss of family members and friends, homelessness or the loss of livelihoods. Many **survivors will need counselling from mental health experts** to come to terms with the disaster and rebuild their lives for the future. Providing **psychological services** helps survivors **cope with the psychological trauma**, which can **last for a long time after the disaster.**

In conclusion, **I agree to a large extent.** Strategies that help to strengthen community resilience can help to reduce the extent of damage and death toll **before an earthquake occurs**. Hazard resistant buildings can **significantly reduce the death toll if the building does not collapse**. For example the Taipei 101 Building did not collapse when an earthquake on 6.8 struck the area on 18 September 2021. The weighted damper helped to prevent excessive swaying of the building, and it stood firm. As a result, there were no deaths associated with collapsed buildings in this earthquake. When death toll and injuries are low disaster management strategies can be more effective and more successful in mitigating the effects of the tectonic hazard as there is **lesser need for large-scale emergency rescue and relief efforts** which can be **overwhelming**, particularly when there is a **lack of manpower**. Existing resources and manpower can then be channeled to areas where it is most needed.

OR

In conclusion, **I agree to a small extent**. Strategies to build community resilience help by reducing the potential loss of lives and property damage. However, it is common for **less developed countries** to lack the ability, and the technological and financial resources to organise itself, which often result in extensive damage and high death toll. In such situations, **disaster management strategies are then more important to mitigate the impacts** by helping to address the immediate needs which are crucial to save lives, reduce health impacts and ensure the swift delivery of emergency aid to help the community recover. Given that countries have differing levels of resources, for many LDCs this may be a more effective approach because other options are not really feasible due to the lack of planning, foresight, financial resources and low literacy rates among the people.

Level	Marks	Generic Level Descriptors for 9-Mark AO3 Questions

3	**7 - 9**	Develops arguments that supports 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

[Total: 15]

3 Cluster 5: Singapore

(a) Study Fig. 3.1 (Insert), which shows the median age of marriage for women in Singapore and the fertility rate from 1990 to 2024. Fertility rate refers to the average number of children a woman is expected to have during her lifetime.

Using Fig. 3.1, describe how the median age of marriage for women in Singapore affects fertility rate. [3]

- In general, when **median age of marriage of women in Singapore** is **high**, the **fertility rate is low.**
- For example, when median age of marriage of women is **higher**, **at 29.8 years old**, fertility rate is **low, at 0.95**. Conversely, when median age of women is **lower, at 25.6 years old**, the fertility rate is **high, at 1.83**.
- However, there is an anomaly where median age of marriage is **higher**, at **30.5 years old compared to 28.5 years old**, but the fertility rate for **both is similar**, at **1.3.**

(b) Study Fig. 3.2 (Insert), which shows strategies to strengthen Singapore's food security.

With reference to Fig. 3.2, explain how the strategies shown can help Singapore to strengthen its food security. [3]

- Singapore diversifies the sources of food imports. By **importing food from different countries**, Singapore **reduces its dependence on any single supply source**, thus enabling it to **buffer for any potential disruption** of food imports from the affected country.
- Singapore also **encourages and supports local production of food** which serves as a **critical supply source** when there are disruptions in regional and global food supplies.
- Singapore also **supports local companies** to **expand and grow produce overseas** so that their **produce can be imported back home**. This can help Singapore overcome land, water, energy and manpower constraints.

(c) Study Fig. 3.3A (Insert), which shows dengue fever cases reported across Singapore in 2020 and Fig. 3.3B (Insert), which shows the location of Housing Development Board (HDB) Towns in Singapore.

Using Fig. 3.3A and 3.3B, describe the distribution of dengue fever cases in Singapore. [2]

- Dengue fever cases are found **predominantly found** in the **northeast and east** of Singapore, for example in **Punggol and Sengkang** in the **Northeast** and **Marine Parade, Bedok and Geylang** in the **east.**
- **Smaller clusters** of dengue fever cases are in the **north and west** of Singapore. For example, **Woodlands and Yishun** in the **north** and **Jurong West, Bukit Panjang and Bukit Batok** in the **west.**

(d) Study Fig. 3.4A (Insert), which shows reclaimed areas and possible future reclamation areas in Singapore and Fig. 3.4B (Insert), which shows the relief map of Singapore.

(i) Using Fig. 3.4A and Fig. 3.4B, account for the challenges that Singapore could face due to the frequent occurrence of earthquake hazards in the region. [2]

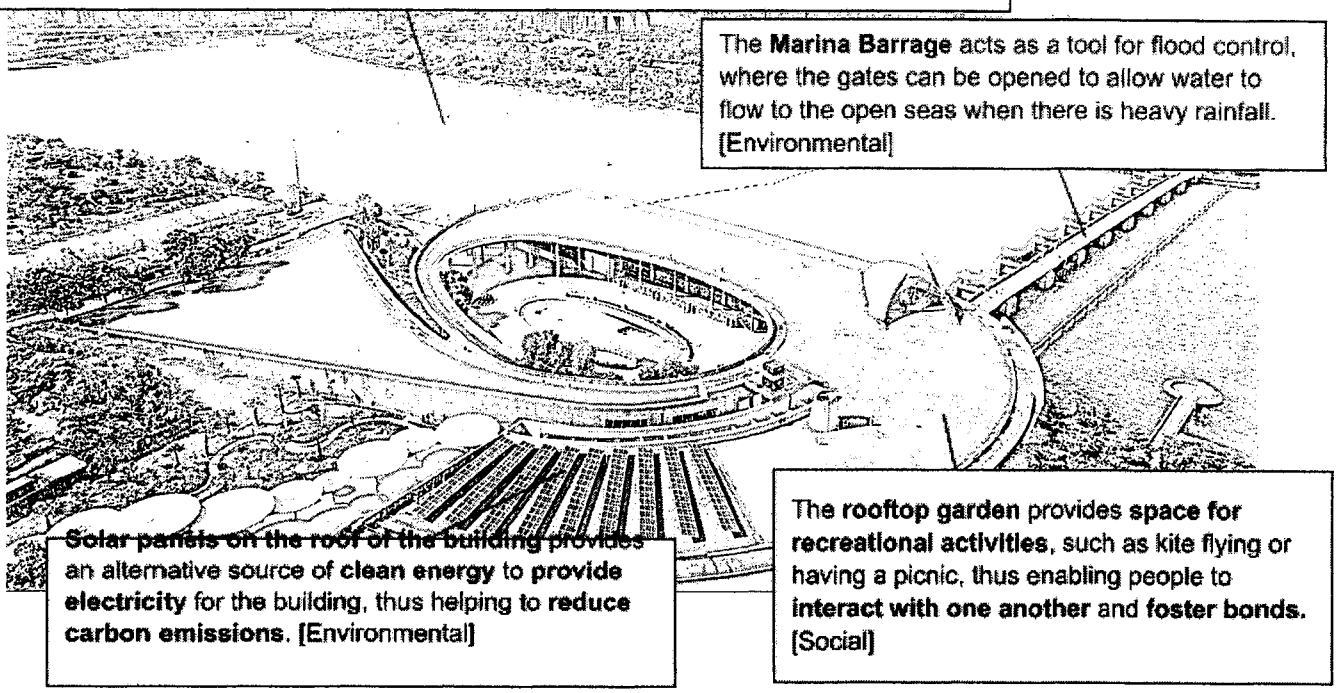
- In the event of mega earthquakes, places built on **reclaimed land**, such as Marine Parade are **more prone to liquefaction** caused by earthquake tremors, which can cause the **destruction of buildings and infrastructure.**
- The **low relief** of the country, where majority of the country at an elevation of 5m and below also renders it **susceptible to coastal flooding**, which can arise from a **tsunami** occurring or sea level rise.

(ii) Describe how national preparedness plans help Singapore to mitigate and adapt to tectonics hazards in the region. [3]

- Singapore Civil Defence Force (SCDF) has implemented national preparedness plans. SCDF **coordinates the actions** taken **by different government agencies** such as the Singapore Police Force and the National Environment Agency (NEA) and conducts **regular exercises** to ensure that government agencies are familiar with their roles and responsibilities.
- SCDF has installed an **island-wide public warning system** of about 300 sirens which can be used to alert people living in specific neighbourhoods about threats they might face during a disaster.
- **During a disaster**, affected communities can also **quickly access shelters, located in buildings and train stations**. Under the law, all new houses and flats must have shelters incorporated into their development.
- SCDF also **educates the public** about our national preparedness plans through **different outreach efforts**.

(e) Study Fig. 3.5 (Insert), which shows an aerial view of the Marina Bay area.

Sketch the Marina Bay area shown in Fig. 3.5. Annotate the sketch to show three features that help Singapore achieve social and environmental sustainability. [4]



1m for accurate sketch showing key features of the Marina Bay area.
Up to 3m for relevant annotations explain how the 3 features identified helps Singapore to achieve environmental and social sustainability.

(f) Study Fig. 3.6 (Insert), which shows measures to strengthen social resilience in Singapore.

With reference to Fig. 3.6, explain measures that Singapore has implemented to strengthen social resilience. [3]

- As shown in Fig. 3.6, providing **opportunities for residents to be involved in creating shared spaces**, such as the River Crab playground in Toa Payoh **brings together people from all walks of life**, thus enhancing residents' sense of belonging. It also helps to **foster relationships** that help to strengthen Singapore's social cohesion.
- The **government regularly engages the community to offer input to its plans**, creating a **greater sense of ownership** among people. This creates an **inclusive society** with **strong social support** from different groups of people in Singapore.
- Singaporeans are also encouraged to go beyond achieving basic academic qualifications and **continually pick up new skills throughout their lives**. For example, the SkillsFuture Work-Study Programme helps Singaporeans pick up skills and gain work experience.
- Singapore also strengthens social resilience through **mobilising communities to participate in preparedness measures for emergencies**, thus helping to build a strong, secure and cohesive nation.

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