

Name: _____ ()

Class: _____



**MONTFORT SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2024**

Secondary 4 G3

HUMANITIES

2260/02

Paper 2 Geography

21 Aug 2024

(Wed)

08.30 am

1 hour 45 minutes

Candidates answer on the Question Paper

Additional materials: Insert

READ THESE INSTRUCTIONS FIRST

Write your name, class and register number in the spaces provided on the cover page, and on all the work that you hand in.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Write all your answers on the spaces provided.

Do not use staples, paper clips, glue or correction fluid.

Answer **three** questions in total:

Section A

Answer Question 1 **and** Question 2.

Section B

Answer **either** Question 3 **or** Question 4.

This Insert contains additional resources referred to in the questions.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **21** printed pages and **1** blank page.

Setter: Mr Mansoor

Section A

[Turn over

Answer Question 1 **and** Question 2.

1 Cluster 1: Geography in Everyday Life

- (a) Study Fig. 1.1, which shows the interaction between the chairperson of Woodlands Botanical Garden and Republic Polytechnic students on a mini gardening project.

Urban gardening project



Fig. 1.1

With reference to Fig. 1.1, explain how the initiative promotes environmental stewardship among urban residents.

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-[3]
- (b) Study Fig. 1.2 (Insert), which shows a distinctive town identity map of Woodlands, Singapore illustrating the features at various spatial scales.

Using Fig. 1.2, compare the differences in amenities and services found at the various spatial scales in Woodlands, Singapore.

-[3]
- (c) Study Fig. 1.3, which shows a photograph of the Sungei Khatib Bongsu, Singapore mangrove river trail.

Mangrove river trail



Fig. 1.3

With reference to Fig. 1.3, describe how the mangrove river trail may provide cultural and regulating ecosystem services for the urban community in Singapore. **Turn over**

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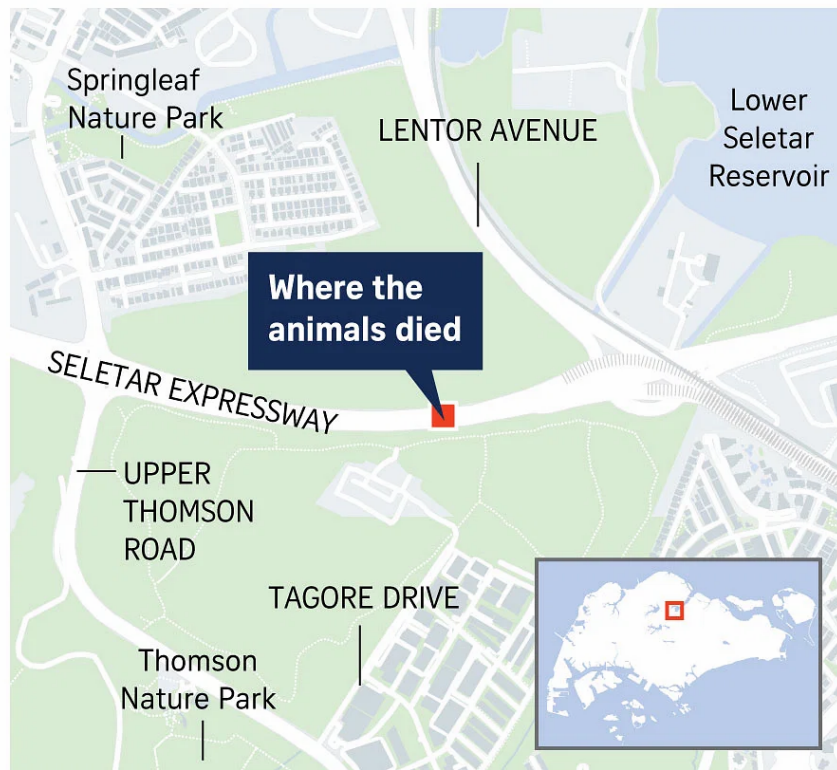
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- (d) Study Fig. 1.4, which shows a map of the Thomson area in Singapore and the location of the Raffles' banded langurs roadkill sighting.

Roadkill sighting in Thomson

**Fig. 1.4**

With reference to Fig. 1.4, explain how the development around Thomson area brings disadvantages to both people and wildlife living in the neighbourhood.

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- (e) A group of students wanted to investigate if the roads in Neighbourhood A are safe for pedestrians to use. They collected data on the number of motor vehicles that do not adhere to traffic rules. They conducted their investigation at two traffic areas within the neighbourhood, as shown in Fig. 1.5 and Fig. 1.6 (Insert). They stationed themselves and counted the number of vehicles that did not adhere to traffic regulations, such as speeding and running red lights. The group collated their data shown in Table 1.1.

[Turn over]

Table 1.1

Primary data on road safety

Data from Traffic Area 1

	Monday		Saturday	
	11 am – 12 pm	5 pm – 6pm	11 am – 12 pm	5 pm – 6pm
No. of vehicles failing to slow down	10	25	20	45
No. of vehicles beating red light	3	5	5	8

Data from Traffic Area 2

	Tuesday		Friday	
	11 am – 12 pm	5 pm – 6pm	11 am – 12 pm	5 pm – 6pm
No. of vehicles failing to slow down	12	30	24	40
No. of vehicles beating red light	5	8	9	12

With reference to Fig. 1.5, 1.6 (Insert) and Table 1.1, evaluate the validity of the student's findings regarding the road safety of Neighbourhood A.

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[Total: 14]

2 Cluster 2: Tourism

- (a)** Study Fig. 2.1 (Insert), which shows the basic information of the various transport systems surrounding Kansai International Airport, Japan.

Based on Fig. 2.1, explain how the developments in Japan have enhanced its appeal as a tourist destination.

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- (b)** Explain the positive impact that tourism can bring in protecting the natural environment of tourist destinations.

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- (c) Study Fig. 2.2, which shows the number of tourists arriving in Havana, Cuba each year and the income from these tourists.

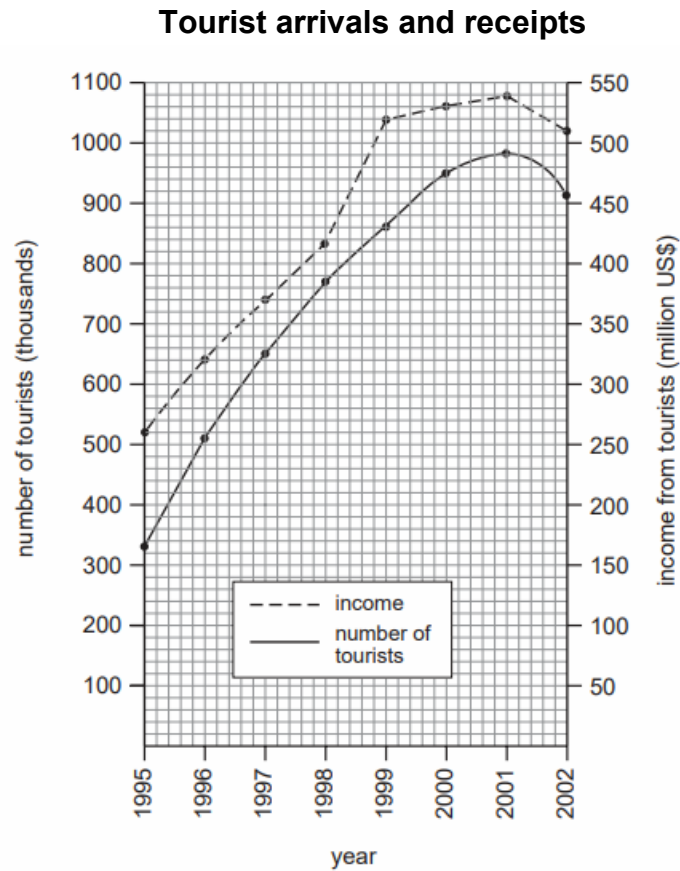


Fig. 2.2

Using Fig. 2.2, compare the changes in numbers of tourists and incomes from tourists in Havana, Cuba between 1995 and 2002.

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- (d)** Study Fig. 2.3 (Insert), which shows a photograph of Nakamise-dori shopping district depicting the popularity of one of Japan's oldest shopping streets among tourists and locals.

Based on Fig. 2.3, explain how the popularity of Nakamise-dori can impact the social dynamics between locals and tourists.

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- (e)** Study Fig. 2.4, which shows information about Majorca, one of the popular tourist destinations in Spain.

Tourist sites in Majorca, Spain

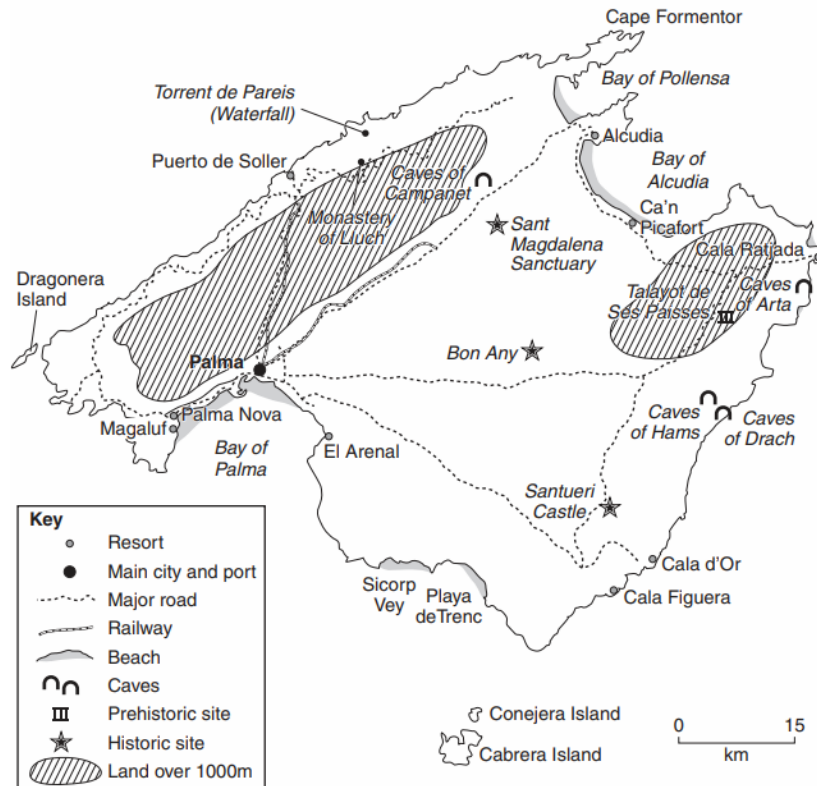


Fig. 2.4

Based on Fig. 2.4, describe the various tourism experiences that tourists can have in Majorca, Spain.

can have
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- (f) Assess the effectiveness of the community-based tourism approach in achieving sustainable tourism development for local communities.

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[Total: 18]

Section B

Answer **either** Question 3 **or** Question 4.

3 Cluster 3: Climate

- (a) Study Fig. 3.1 and 3.2, which shows the locational contexts of Packwood and Yakima in Washington, USA, and their annual precipitation distributions.

Satellite Map of Packwood and Yakima

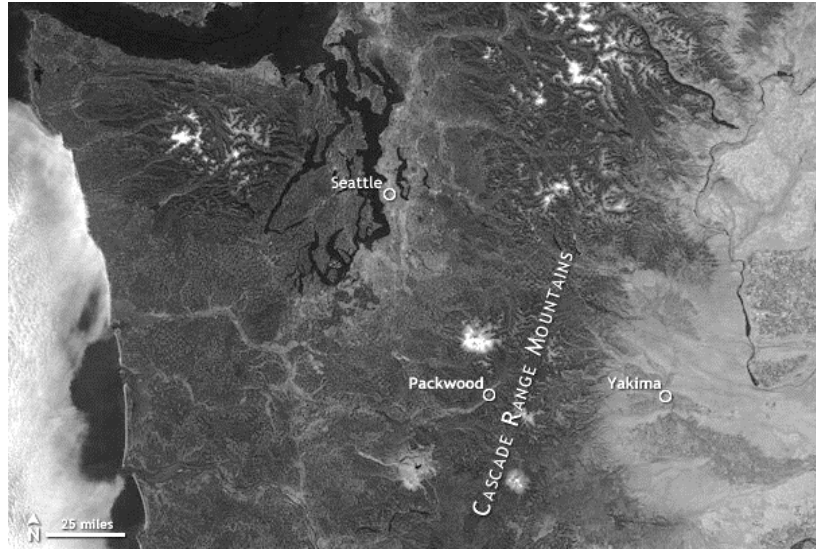


Fig. 3.1

Average monthly precipitation

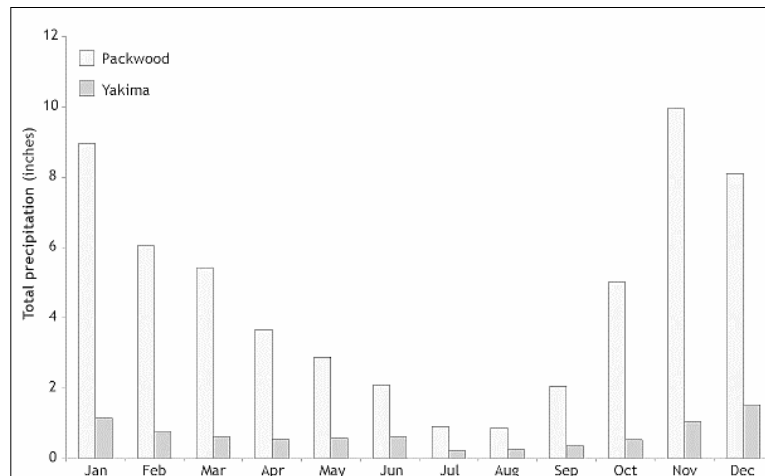


Fig. 3.2

- (i) Based on the locational landmarks shown in Fig. 3.1 and the rainfall distributions in Fig. 3.2, identify the locations of the windward and leeward sides of Cascade Range Mountains.

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- (ii) With reference to Fig. 3.1 and Fig. 3.2, explain the reasons for the differences in vegetation density between Packwood and Yakima.

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- (b) Study Fig. 3.3 (Insert), which shows the global air temperature change between 1990 and 1992.

With reference to Fig. 3.3, account for the reasons influencing global temperature changes between 1990 and 1992.

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- (c) 'Governments should prioritise renewable energy adoption as the most viable solution to mitigate climate change.'

To what extent do you agree with this statement? Explain your answer.

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[Total: 18]

4 Cluster 4: Tectonic

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- (a) Study Fig. 4.1 (Insert), a map showing tectonic plate boundaries and the direction of plate movement.

Using Fig. 4.1, describe the rate of plate movement in different parts of the world.

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- (b) Study Fig. 4.2, showing selected earthquakes that have occurred since 2000.

Selected earthquakes that have occurred since 2000

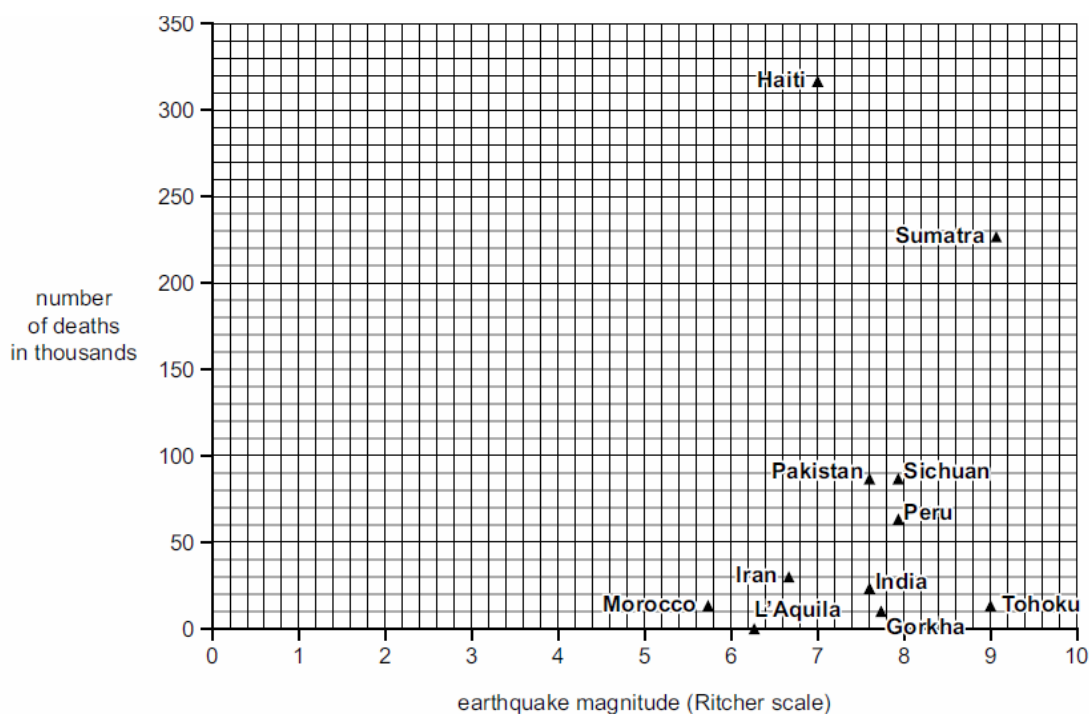


Fig. 4.2

- (i) Using Fig. 4.2, describe the relationship between the earthquake magnitude and the number of deaths.

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- (ii) With reference to Fig. 4.2, outline **two** reasons why the number of deaths for earthquakes with similar magnitudes could vary.

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- (c) 'Some strategies for building community resilience to the threat of earthquakes are more effective than others.'

To what extent do you agree with this statement? Explain your answer.

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[Total: 18]

Copyright Acknowledgements:

Question 1 (a)	Fig. 1.1	https://www.mccy.gov.sg/KAYA/Community/Sowed-with-Love-Woodlands-Botanical-Garden-brings-joy-to-diverse-communities
Question 1 (c)	Fig. 1.3	https://kayakasia.org/trips/sungei_khatib_bongsu_trail/
Question 1 (d)	Fig. 1.4	https://stomp.straitstimes.com/singapore-seen/2-raffles-banded-langurs-end-up-as-roadkill-on-sle-population-here-dwindles-to-73
Question 2 (b)	Fig. 2.2	CIE Paper O level 2217/2008
Question 2 (e)	Fig. 2.4	CIE Paper O level 2217/2011
Question 3 (a)	Fig. 3.1 and 3.2	https://www.climate.gov/news-features/blogs/beyond-data/highs-and-lows-climate
Question 4 (b)	Fig. 4.2	EM-DAT, CRED / UCLouvain, Brussels, Belgium – www.emdat.be

Additional pages**[Turn over**

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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Additional pages

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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Name: _____ ()

Class: _____



**MONTFORT SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2024**

Secondary 4 G3

HUMANITIES

2260/02

Paper 2 Geography

21 Aug 2024 (Wed)

08.30 am

1 hour 45 minutes

INSERT

READ THESE INSTRUCTIONS FIRST

This Insert contains additional resources referred to in the questions.

This document consists of **6** printed pages.

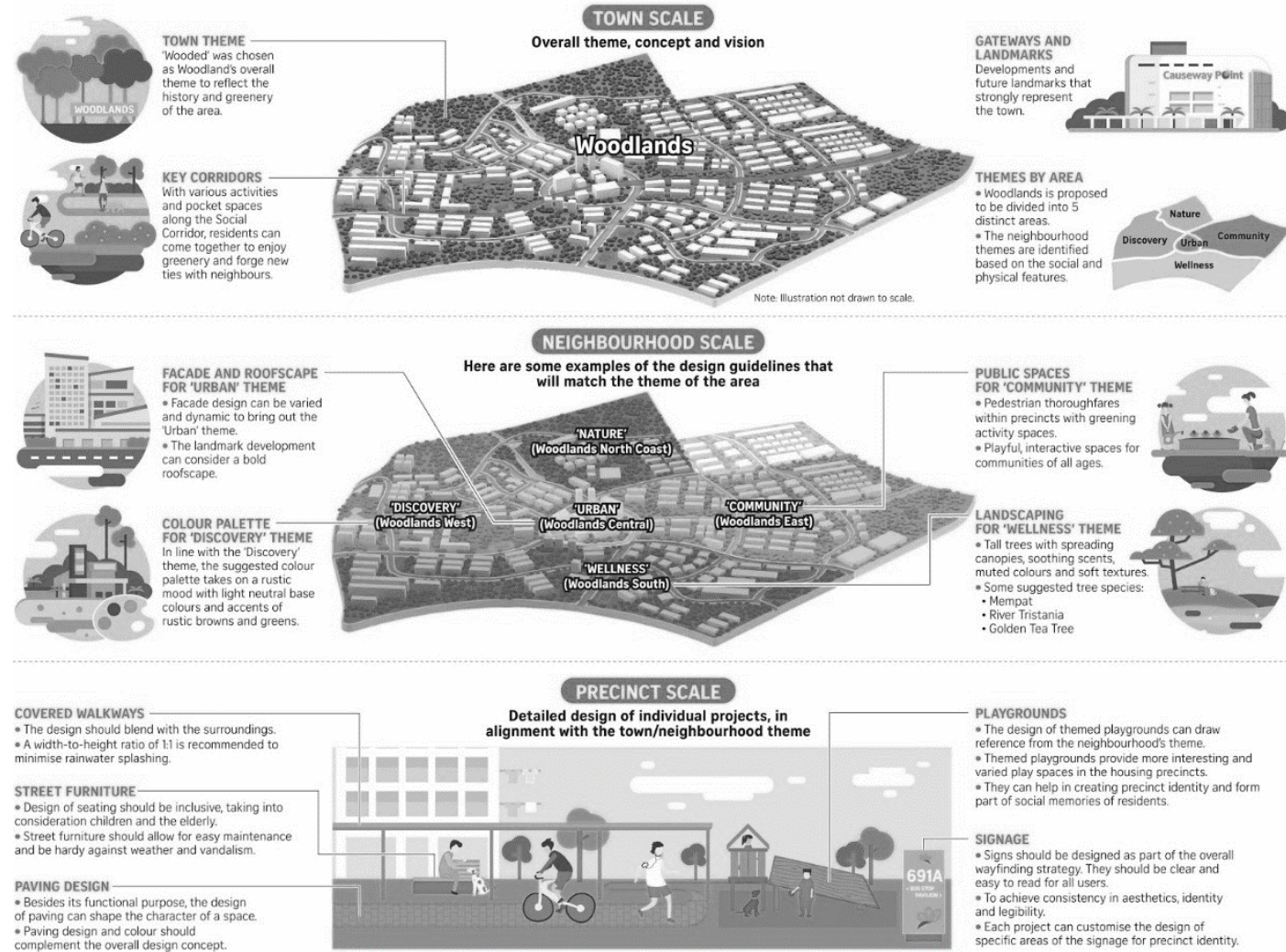
Setter: Mr Mansoor

[Turn over

Fig. 1.2 for Question 1
Spatial scales of Woodlands Town

Distinctive town identities

HDB's new town design guide aims to strengthen individual town identities, sustain a quality living environment and encourage better community bonding. Here are some of the guidelines for Woodlands, the first town to have a design guide.



SOURCE: HDB STRAITS TIMES GRAPHICS; LEE YU HUI, CHING CHOOON HIONG

Fig. 1.5 for Question 1

Traffic area 1



Fig. 1.6 for Question 1

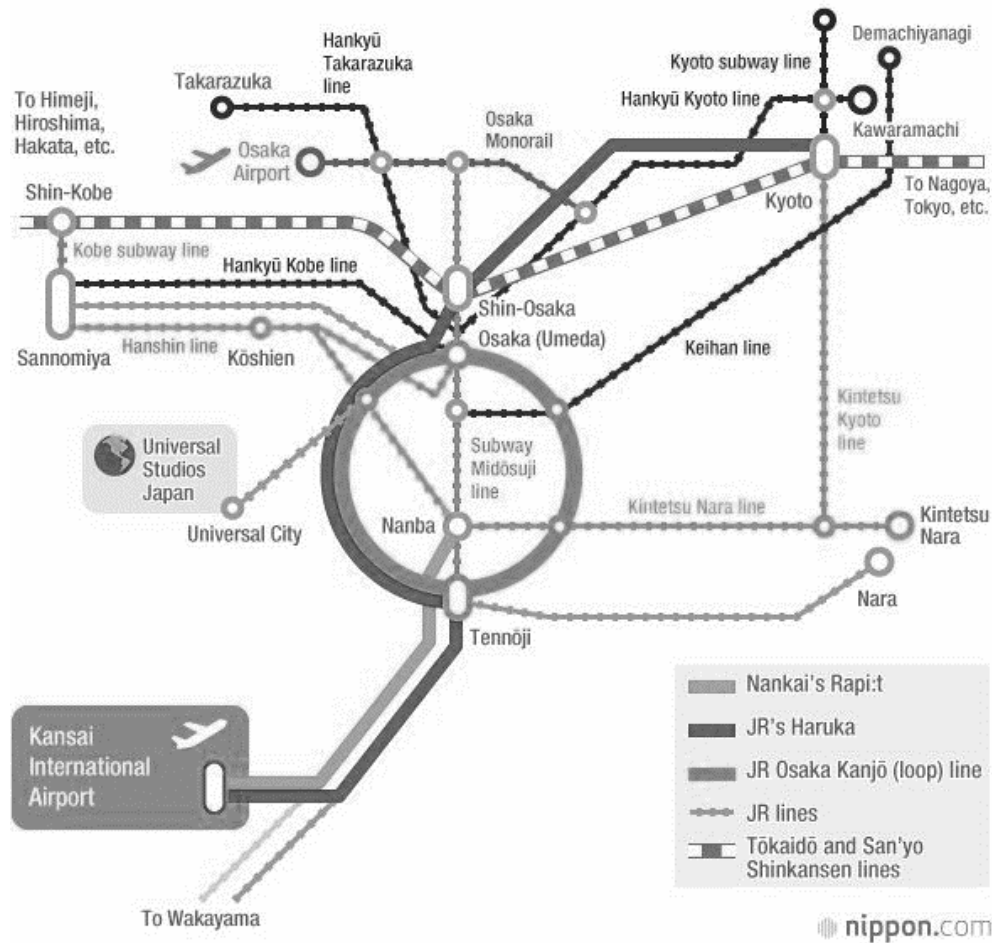
Traffic area 2



[Turn over

Fig. 2.1 for Question 2

Transport options from Kansai International Airport



JR: Japan Railway

Shinkansen: Japan's high speed trains

Rapi:t: limited-express train

Haruka: Airport rail link

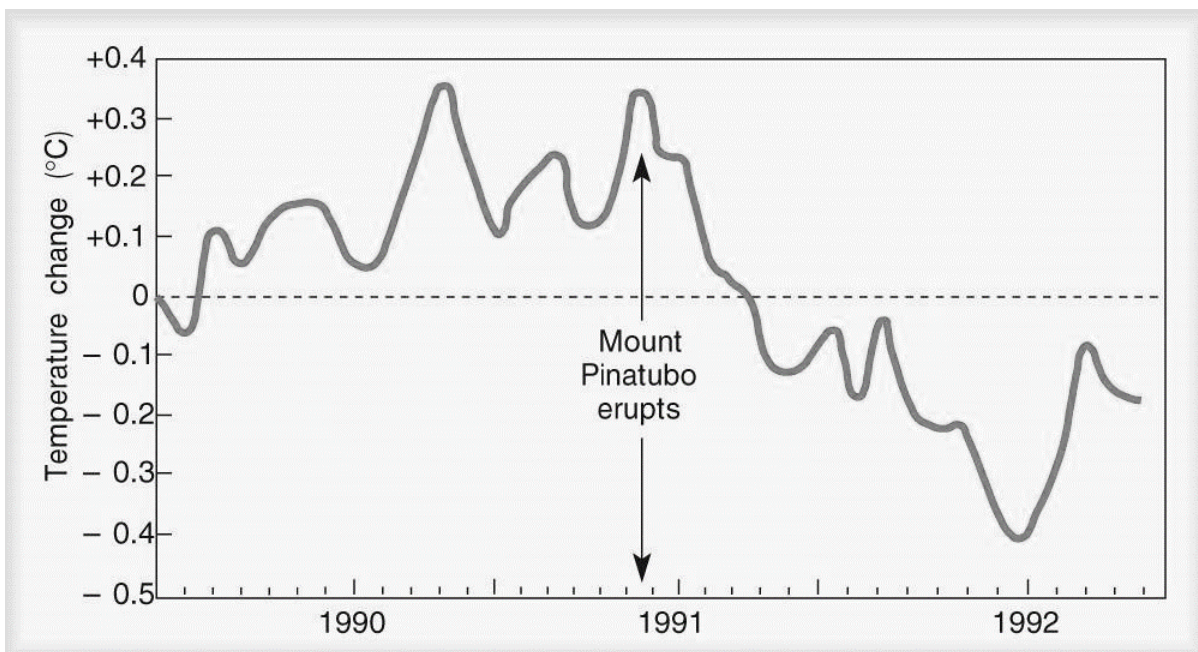
Fig. 2.3 for Question 2

Nakamise-dori shopping district



Fig. 3.3 for Question 3

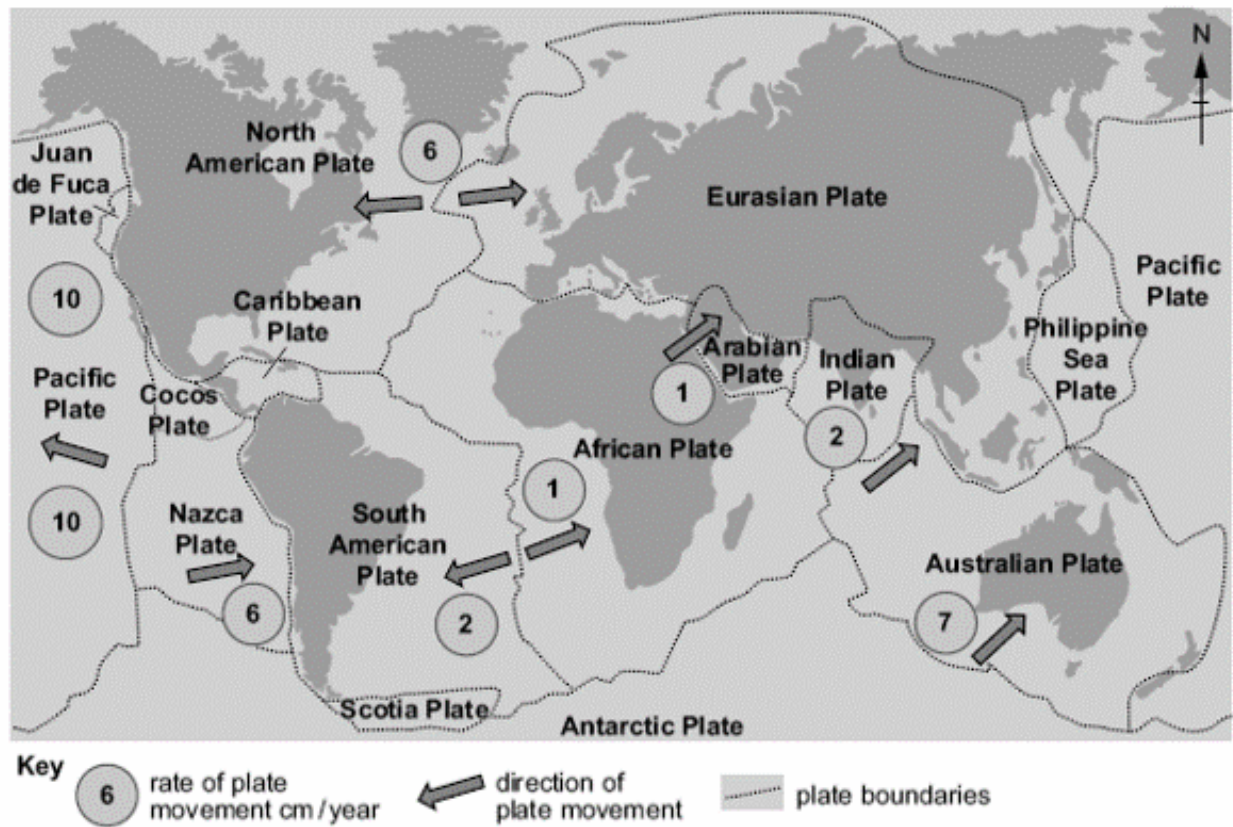
Changes in global temperature from 1990 to 1992



[Turn over

Fig. 4.1 for Question 4

Tectonic plate boundaries and the rate and direction of plate movement



Copyright Acknowledgements:

Question 1 (b)	Fig. 1.2	https://ifonlaysia.blogspot.com/2016/09/new-tengah-hdb-town-heavy-on-greenery.html
Question 1 (e)	Fig. 1.5	https://www.straitstimes.com/singapore/courts-crime/pedestrians-with-right-of-way-must-still-share-responsibility?utm_campaign=Echobox&utm_medium=Social&utm_source=Facebook&link_time=1458342946#xtor=CS1-10
Question 1 (e)	Fig. 1.6	https://www.straitstimes.com/singapore/transport/complex-braddell-upper-serangoon-bartley-road-junction-to-be-simplified
Question 2 (a)	Fig. 2.1	https://www.nippon.com/en/features/h10012/
Question 2 (d)	Fig. 2.3	https://www.japan.travel/en/spot/1696/
Question 3 (b)	Fig. 3.3	https://apollo.nvu.vsc.edu/classes/met130/notes/chapter16/mtpin_tseries.html
Question 4 (a)	Fig. 4.1	Specimen Paper 2260/02 2022

Name: _____ ()

Class: _____



MONTFORT SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2024

Secondary 4 G3

HUMANITIES

Paper 2 Geography

08.30 am

2260/02

21 Aug 2024 (Wed)

1 hour 45 minutes

ANSWER SCHEME

This document consists of **18** printed pages.

Setter: Mr. Mansoor

Section A

Answer Question 1 and Question 2.

1		AO 1	AO 2
a	With reference to Fig. 1.1, explain how the initiative promotes environmental stewardship among urban residents. Answer: <i>Award 1m for each explanation.</i> • The Garden Project helps residents reconnect with nature, cultivating a greater appreciation for the environment and, consequently, a greater responsibility to care for it. • Such initiatives also promote volunteerism among neighbourhood residents, encouraging them to share knowledge about the importance of ecosystems. This increases the number of people with the skills and understanding necessary to care for the environment. • It also strengthens the sense of community by advocating for environmental stewardship, fostering collective action and shared responsibility for protecting nature. • Additionally, it promotes partnerships between communities, government, and environmental organisations, offering valuable insights, perspectives, resources, and expertise to enhance environmental stewardship efforts. • It also collaborates with schools to integrate nature conservation and preservation into educational curricula, providing hands-on experiences in environmental stewardship and fostering a sense of responsibility towards nature from a young age. <i>Award marks for any plausible explanation relevant to the question.</i>	3	
Strengths:			
Weaknesses:			
Suggestions for Improvements:			

b	Using Fig. 1.2, compare the differences in amenities and services found at the various spatial scales in Woodlands, Singapore. Answer: <i>Award 1m for each comparison.</i> • Precinct public spaces and facilities tend to be more compact and focused, catering specifically to the immediate needs of residents, such as playgrounds. In contrast, a town covers a larger area and offers a broad range of public spaces, including town squares and larger nature parks, to serve a wider community. • At the precinct level, transportation facilities are often smaller and more localised, such as nearby bus stops that facilitate travel within the precinct or to neighbouring areas. In a town, the transportation infrastructure is scaled to accommodate a larger population and may include major transit hubs or terminals that offer multiple modes of transportation, such as trains and buses. • Precincts are typically designed to be highly focused and localised, addressing specific community needs with essential amenities like street furniture and covered walkways. Towns, on the other hand, provide a wider range of functions for a larger community, including facilities like shopping malls and community centres that serve a broader array of needs. <i>Award marks for any plausible comparison relevant to the question.</i>		3
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
c	With reference to Fig. 1.3, describe how the mangrove river trail may provide cultural and regulating ecosystem services for the urban community	2	

	in Singapore. Answer: <i>Award 1m for each description.</i> • The mangrove trail serves as a recreational space where urban residents can engage in activities such as canoeing, kayaking, birdwatching, and photography. • These stress-relieving activities, combined with the tranquil settings of the mangrove, may improve people's physical and mental health. The calming environment can significantly reduce levels of stress and anxiety. • Additionally, the mangrove trail functions as an educational space where individuals can learn about the mangrove ecosystem, local wildlife, and environmental conservation. • Mangroves play a crucial role in mitigating flood risks by stabilising shorelines and reducing the impact of storm surges. Their complex root systems help absorb and slow down floodwaters, protecting urban areas from potential damage during heavy rainfall or storms. • Mangroves act as carbon sinks by absorbing large amounts of carbon dioxide from the atmosphere, contributing to overall climate regulation. • Mangrove ecosystems also help filter and improve water quality by trapping and absorbing excess nutrients, sediments, and pollutants from runoff, thereby enhancing overall water quality. <i>Reserve 1m for description on either cultural or regulating ecosystem services.</i> <i>Award marks for any plausible description relevant to the question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
d	With reference to Fig. 1.4, explain how the development around Thomson area brings disadvantages to both people and wildlife living in the		3

	neighbourhood. Answer: <i>Award 1m for each explanation on how people affect nature.</i> • Urban expansion in Thomson can lead to the loss of habitat or a decline in the size of natural living spaces for wildlife, causing them to move into urban areas. • Road development around Thomson may result in roadkill as wildlife attempt to cross roads in search of new habitats or sources of food. • Locals may feed wildlife that venture into their communities. Such irresponsible actions can disrupt wildlife feeding habits, upset their natural diet, or cause them to associate humans with food. • Urban expansion also contributes to light and noise pollution, which stresses wildlife and affects their natural behaviours, such as nesting patterns. <i>Award 1m for each explanation on how nature affect people.</i> • As the wildlife population grows, people who are unfamiliar with how to handle wildlife may unintentionally provoke them, leading to attacks and potential injuries. • Environmental conservation efforts to protect nature parks, such as Springleaf Nature Park, and reservoirs, such as Lower Seletar Reservoir, may be perceived as limiting developments and reducing the number of facilities and amenities in urban neighbourhoods. • Animals that venture into urban areas can cause property damage, including collisions with cars, which can result in vehicle damage. <i>Reserve 1m for explanation on either local affecting nature or vice-versa</i> <i>Award marks for any plausible explanation relevant to the question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
e	With reference to Fig. 1.5, 1.6 (Insert) and Table 1.1, evaluate the validity of		AO

the student's findings regarding the road safety of Neighbourhood A. Answer: <i>Award 1m for each evaluation (valid).</i> • The findings are valid as the student investigated road safety at two locations for comparison, to provide a more comprehensive finding. • The findings are valid as the students conducted their data collection during peak hours (11 a.m. to 12 p.m. and 5 p.m. to 6 p.m.), when there are more vehicles using the roads, hence, the findings may not be underrepresented by data. • The findings are valid as they collected data at different times to analyse road safety throughout the day and to identify and assess various patterns of road behaviour across time. Different times of the day present unique road safety risks, such as the increased risk during the evening due to reduced lighting. • The findings are valid as they collected data on aspects affecting road safety, such as the number of vehicles failing to slow down and running red lights, as these actions impact road safety for all users. <i>Award 1m for each evaluation (not valid).</i> • The findings may not be valid because the road conditions in the two traffic areas are different, with Traffic Area 2 having more nearby construction. This discrepancy could impact road safety beyond just driver behaviour. • The findings may not be valid as the data collected focused solely on driver behaviour and did not consider other factors, such as road conditions, that could affect overall road safety. • The findings may not be valid as having only two data collection points may not fully represent the road safety of the entire neighbourhood. The data might underrepresent or misrepresent the overall road safety in Neighbourhood A. The inadequate coverage of the neighbourhood can also lead to generalisation of the road safety in Neighbourhood A. • The findings may also be invalid because the data were collected on different days at the two traffic areas. Variations in time and day		3 3
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	could affect the consistency of the data, leading to differences in traffic conditions across different days. <i>Reserve 1m for evaluation on either valid or invalid findings.</i> <i>Award marks for any plausible evaluation relevant to the question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			

2		AO 1	AO 2
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a	Based on Fig. 2.1, explain how the developments in Japan have enhanced its appeal as a tourist destination. Answer: <i>Award 1m for each explanation.</i> • Japan has significantly expanded its railway transportation network to offer a diverse range of rail services and modes. Visitors to Japan can experience various forms of rail travel, from high-speed Shinkansen bullet trains to its rapid express train, to provide travellers with a unique travel experience, increasing its appeal. • The development of transport infrastructure also allows tourists to access a greater variety of local attractions, ranging from different cities to various tourist sites, thereby enhancing the destination's appeal. • Improved transport options provide tourists with a wider range of choices for places to visit within the destination, facilitating easier exploration of diverse and interesting locations. • Developments like high-speed trains, direct flight routes, and well-maintained highways shorten travel times. This convenience attracts more tourists who prefer destinations that are quick and easy to reach, thereby increasing the appeal of the destination as a tourist hub. • The expansion of public transportation reduces travel costs for tourists, which increases the appeal of a destination. By lowering transportation expenses, public transport makes travel accessible to a broader audience, including those who seeks for a low-cost travel. <i>Award marks for any plausible explanation relevant to the question.</i>		4
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
b	Explain the positive impact that tourism can bring in protecting the natural environment of tourist destinations.	2	

	Answer: <i>Award 1m for each explanation.</i> • The growth of tourism in destination countries encourages local communities and governments to maintain a pristine environment to continue attracting tourists. • Revenue generated from tourism in these regions can be used to fund the protection of aquatic and terrestrial ecosystems and reinvested into the maintenance and conservation of natural habitats and wildlife reserves, thereby protecting biodiversity. • Additionally, governments and local communities can establish environmental education programmes to share knowledge and values about the local natural environments and wildlife with tourists, encouraging them to care for these ecosystems. • Tourism can also motivate businesses to adopt sustainable practices, such as reducing waste, conserving energy, and using eco-friendly materials, while regulating tourist behaviour to be more eco-conscious, thus contributing to environmental protection. <i>Award marks for any plausible explanation relevant to the question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
c	Using Fig. 2.2, compare the changes in numbers of tourists and incomes from tourists in Havana, Cuba between 1995 and 2002. Answer: <i>Award 1m for each comparison.</i> • Generally, both the number of tourists and the income generated from tourism increased significantly from 1995 to 2001. The total number of tourists rose from 320,000 to 950,000, and income from tourism grew from US\$260 million to US\$540 million. • However, from 2001 to 2002, both the number of tourists and the income generated from tourism slightly declined, with a decrease of 50,000 tourists and US\$30 million, respectively.		3

	Between 1998 and 1999, income generated from tourism increased more significantly than the number of tourists. This suggests that tourists were spending more that year. During this period, the number of tourists increased gradually from 750,000 to 850,000, while income surged sharply from US\$430 million to US\$530 million. <i>Award marks for any plausible comparison relevant to the Fig. 2.2.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
d	Based on Fig. 2.3, explain how the popularity of Nakamise-dori can impact the social dynamics between locals and tourists. Answer: <i>Award 1m for each explanation.</i> - Overcrowded tourist areas, like Nakamise-dori, can increase opportunities for crime. The dense crowds make it easier for pickpockets to target tourists, who are often less aware of their surroundings. This can foster distrust between tourists and locals. - In busy tourist spots, tourists are susceptible to scammers who easily target tourists with fake offers, overpriced goods, or misleading information due to their unfamiliarity with local customs and prices. This can lead to tourists feeling exploited by the locals. - There can be intrusion of businesses that will start to sell souvenirs that do not reflect the true heritage of a location for profit, and this may leave locals feeling that their heritage is not preserved as they are being commercialised. - Locals may experience frustration and resentment if they feel that their culture is being misrepresented or exploited for financial gain. This frustration can negatively impact interactions with tourists, as locals might perceive them as part of the problem rather than as appreciative visitors. - Overcrowded tourist areas can lead to pollution. Persistent pollution issues can strain community relations as locals may feel that		3

	tourists are not being considerate of their environment. This can result in a more negative attitude towards visitors, potentially impacting the overall hospitality and warmth extended to tourists. <i>Award marks for any plausible explanation relevant to the question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
e	Based on Fig. 2.4, describe the various tourism experiences that tourists can have in Majorca, Spain. Answer: <i>Award 1m for each description.</i> • Tourists may be motivated to participate in activities that allow them to immerse themselves in Majorca's rich culture and history. Key sites like Bon Any, Santueri Castle, and the Sanctuary of Sant Magdalena offer unique opportunities for visitors to explore and learn about the island's heritage. • Tourists may also be drawn to Majorca's natural environments, where they can engage in challenging physical activities such as mountain climbing. The island's Northwest and Northeast regions, which feature terrain rising over 1,000 meters, are particularly well-suited for such adventurous pursuits. • Caves such as Caves of Hams and Caves of Drach can be fascinating tourist attractions due to their unique geological formations, historical significance, and natural beauty. Exploring caves offers visitors a chance to experience underground landscapes that are often inaccessible and untouched. <i>Award marks for any plausible description relevant to the question.</i>		3
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
f	Assess the effectiveness of the community-based tourism approach in achieving sustainable tourism development for local communities.		AO 3

Answer:

Award 1m for each assessment of effectiveness (effective).

- Community-based tourism (CBT) **encourages local communities to participate in the decision-making process** regarding tourism development in their area. This approach ensures that the **needs of both locals and tourists are addressed in a more sustainable manner**.
- CBT also implements measures to increase **economic benefits** by **encouraging locals to innovate, establish businesses, and offer tourism experiences** that cater to tourists' needs.
- CBT provides **employment opportunities and higher income for locals**, thereby **minimising economic leakages** and ensuring that financial benefits are retained within the community.
- CBT ensures that measures are in place to **enhance social benefits**, with revenues generated from tourism being **directly allocated to community projects such as funding schools and clinics**, which improves the standard of living for local residents.

Award 1m for each assessment of effectiveness (limitations).

- One of the limitations of CBT is the **potential loss of culture**. Without adequate measures, when local communities adapt their cultural practices for tourism, it can lead to **commodification**, resulting in a **loss of the authenticity** of their cultural heritage.
- Another limitation is the **competition with large-scale tourism developments**. Large-scale businesses often have the financial resources and expertise to develop tourism in the area, which can **create competition for local businesses and negatively impact their viability**.
- In some cases, **local communities may lack the necessary training and capacity** to effectively manage and promote tourism. Without adequate skills and knowledge in areas such as hospitality, marketing, and business management, local operators may struggle to deliver high-quality experiences, **leading to potential dissatisfaction among tourists and reduced economic benefits**.

Reserve 1m for evaluation on either effectiveness or limitations.

Award marks for any plausible assessment of effectiveness relevant to the

	<i>question.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			

Section B

Answer **either** Question 3 **or** Question 4.

3		AO 1	AO 2
a	Study Fig. 2.1, which shows a climate graph of a country. Answer: (i) Based on the locational landmarks shown in Fig. 3.1 and the rainfall distributions in Fig. 3.2, identify the locations of the windward and leeward sides of Cascade Range Mountains. [2] Answer: - The windward side of the mountain is Packwood [1m]. The leeward side of the mountain is Yakima [1m]. (ii) With reference to Fig. 3.1 and Fig. 3.2, explain the reasons for the differences in vegetation density between Packwood and Yakima. [4] Answer: <i>Award 1m for each explanation why there is variation in vegetation on the windward side and leeward side.</i> <i>Award a maximum of 1 additional mark for further development of each explanation, where applicable.</i> <i>Reserve 1m for comparison of variation of vegetation between windward and leeward side.</i> <i>Reserve 1m for explanation on windward side of the slope and leeward side of the slope.</i> - The windward side of the mountain range would have dense vegetation due to higher amount of rainfall while the leeward side would have sparse/little vegetation due to lesser amount of rainfall [1m]. - Prevailing wind picks up moisture over the ocean and push the warm moist air up the windward side of the mountain range [1m].	4	2

	• Rising moist air cools and at dew point temperature, it condenses on condensation nuclei to form clouds [1m]. Condensation nuclei provide surfaces where water vapour can change into liquid droplets or solid ice crystals. These water droplets and ice crystals then form clouds [1 additional mark]. • The water droplets collide and coalesce, when they become large enough, they fall to the ground as rain on the windward side which provides water for dense vegetation to grow [1m]. • As most of the moisture has fallen on the windward side, the leeward side experience dry descending air and is thus dry and lesser rainfall, leading to less dense/sparse vegetation [1m]. <i>Award marks for any plausible explanation relevant to Fig. 3.1 and 3.2.</i>		
Strengths:			
Weaknesses:			
Suggestions for Improvements:			
b	With reference to Fig. 3.3, account for the reasons influencing global temperature changes between 1990 and 1992. Answer: <i>Award 1m for each description, supported with data.</i> • The temperature fluctuated but increased slightly by 0.3°C from 1990 to 1991. • However, temperatures significantly dropped by 0.7°C between 1990 and 1991, following the eruption of Mount Merapi. <i>Award 1m for each explanation.</i> • Major volcanic eruptions, such as the eruption of Mount Pinatubo, release large volumes of carbon dioxide, water vapor, sulfur dioxide, and ash into the atmosphere. • The sulfur-based particles, dust, and ash spread throughout the lower atmosphere, where they absorb and reflect solar energy back into space, temporarily lowering temperatures. • Temperatures will return to normal once the particles are sufficiently dispersed and fall back to Earth.		3

Reserve 1m for description of change in temperature and explanation of the reasons causing the change in temperature.

Award marks for any plausible description and explanation relevant to Fig. 3.3.

Strengths:

Weaknesses:

Suggestions for Improvements:

c 'Governments should prioritise renewable energy adoption as the most viable solution to mitigate climate change.'

To what extent do you agree with this statement? Explain your answer.

Level	Marks	Generic Level Descriptors for 9-Mark AO3 Question
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

Introduction

I agree/disagree that governments should prioritise renewable energy adoption as the most viable solution to mitigate climate change. Over the last 30 years, there has been an unprecedented increase in global temperature due to human activities that produced and released large amount of carbon dioxide into the atmosphere. This calls for governments to come up with effective and sustainable mitigation measures to reduce the levels of carbon dioxide in the atmosphere.

Given factor – Use of clean energy sources

AO
3
9

Content/Argument: Adopting renewable energy sources such as solar, hydroelectric, geothermal, and nuclear power is a crucial strategy for mitigating climate change. Solar energy harnesses the power of the sun, offering a **clean and abundant resource that can significantly reduce reliance on fossil fuels**. Hydroelectric power generates electricity through the movement of water, providing a **consistent and reliable source of energy while minimising greenhouse gas emissions**. Geothermal energy taps into the Earth's internal heat, offering a **stable and renewable energy source with minimal environmental impact**. Nuclear power, though controversial, provides a high-density energy source that **produces negligible direct carbon emissions**. Together, these renewable energy technologies can **significantly reduce greenhouse gas emissions, diversify the energy mix, and contribute to a more sustainable and resilient energy infrastructure**.

Place Example: By 2030, Singapore wants to increase its solar capacity to meet about 4% of Singapore's total electricity demand today, which is about the needs of around 350 000 households.

Evaluation: However, one limitation of using clean energy as a mitigation measure for climate change is its **high cost**. The development and construction of renewable energy technologies, such as solar panels, wind turbines, and geothermal plants, require significant financial investment. These initial costs can be a **barrier, particularly for developing regions or countries with limited financial resources**. Therefore, effective and sustained government intervention is crucial to reduce costs, promote innovation, and accelerate the transition to a more sustainable energy future.

Alternate factor – Reduce deforestation and restore forest and mangroves

Content/Argument: Reducing deforestation is a vital strategy for mitigating climate change. Forests serve as significant carbon sinks, absorbing carbon dioxide from the atmosphere and storing it in their biomass. **By slowing the rate of deforestation, we increase the number of trees available to absorb carbon dioxide, thereby reducing its concentration in the atmosphere**. Similarly, restoring mangroves is a highly effective strategy for reducing atmospheric carbon dioxide and combating climate change. Mangroves can absorb and store greenhouse gases in their soils up to four times more efficiently than other tropical forests, making them a powerful tool for carbon sequestration. **By rehabilitating, revitalising, and restoring mangrove ecosystems, we can sequester substantial amounts of carbon dioxide from the atmosphere**.

Evaluation: However, reducing deforestation in rapidly growing economies presents significant challenges due to **competing land uses such as industrial expansion, agricultural development, and urbanisation**. As

these economies develop, there is often a heightened demand for land to accommodate expanding industries, increase agricultural output, and build new residential and commercial spaces. This **competition for land can lead to the clearance of forests to make way for these activities, thereby exacerbating deforestation.**

Place Example: For example, Indonesia lost more than 100,000 hectares of forest cover in 2020. Despite tighter government regulations, Indonesia's forests continue to be cleared for palm oil cultivation, logging, and mining activities. As the world's largest exporter of palm oil, a sector valued at over \$18 billion and providing more than 3 million jobs, the protection and restoration of these natural spaces remains a challenging measure to enforce.

Conclusion (Weighing): Clean energy stands out as the most effective strategy for mitigating climate change, as it directly reduces greenhouse gas emissions by replacing fossil fuels with low-carbon alternatives. While reducing deforestation is important for preserving carbon sinks and biodiversity, clean energy tackles the **root cause** of climate change, which is the emission from energy production.