FAIRFIELD METHODIST SCHOOL (SECONDARY)

2024 PRELIMINARY EXAMINATION

SECONDARY 4 EXPRESS

HUMANITIES **2260/02**

Paper 2 Geography **1 hour 45 minutes**

Xx August 2024

Name: _____ ( ) Class: _____

Candidates answer on the Question Paper.

Additional Materials: Insert

READ THESE INSTRUCTIONS FIRST

1. Write your name, class and index number on all the work you hand in.
2. Write in dark blue or black ink.
3. You may use pencil for any diagrams or graphs.
4. Do not use paper clips, glue or correction fluid.
5. Answer in full sentences in the space provided.

Answer **three** questions in total:
Answer Question 1 **and** Question2.
Answer **either** Question 3 **or** Question 4.

The 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.

MARKS	**/ 50**

This paper consists of **14** printed pages, including the cover page, and 1 Insert.

[Turn over]

Setter: Ms Wong JY

Answer Question 1 **and** Question 2.

1 Geography in Everyday Life

(a) Study Fig. 1.1 (Insert), which shows urban beekeeping at the roof of the resident's apartment in New York City in the United States of America.

With reference to Fig. 1.1, explain how urban beekeeping can affect the local communities in New York City in the United States of America.

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_____ **[4]**

(b) Study Fig. 1.2 (Insert), which shows the planning of Tengah, a new housing estate in Singapore.

(i) Identify the level of spatial hierarchy shown in Fig. 1.2.

_____ **[1]**

(ii) Explain your answer in 1(b)(i).

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_____ **[3]**

(c) A group of secondary school students from Singapore were investigating

the level of sense of place among Housing and Development Board (HDB) households against the length of years they have resided in their housing estates in Singapore.

The students conducted an online survey with 60 HDB households across Singapore. The results of the survey are shown in Table 1.1.

Table 1.1

Sense of place among HDB households by Length of Residence

Length of Residence (Years)	Number of HDB households surveyed	Average sense of place rating (%)
< 6	10	65.9
6 to 10	10	71.4
11 to 15	10	74.6
16 to 20	10	77.3
21 to 30	10	76.4
> 30	10	80.1

Using information from Table 1.1, evaluate the validity of the students' findings regarding the sense of place among HDB household by length of residence.

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_____ **[6]**

2 Tourism

(a) Study Fig. 2.1, which shows a new article from Antara, an Indonesian New Agency, regarding Borobudur, a Buddhist temple and UNESCO World Heritage Site in Java, Indonesia.

Fig. 2.1

News article from Antara, an Indonesian News Agency, regarding Borobudur, Indonesia

Special sandals to be produced for Borobudur visitors: Minister Uno

January 15, 2022 16:45 GMT+700

Tourism and Creative Economy Minister Sandiaga Uno during his visit to Borobudur temple, Magelang, Central Java, Friday (January 14, 2022). ANTARA/HO-Kemen

Jakarta (ANTARA) - Special sandals called Upanat will be produced for visitors of Borobudur temple with the objective of structural preservation, according to Tourism and Creative Economy Minister Sandiaga Uno.

The visitors are required to wear the Upanat sandals, so as not to damage the stairs and structure of the Buddhist temple.

Earlier, General Manager of the Borobudur Temple Tourism Park Aryono Hendro revealed that the number of visitors to Borobudur temple in 2021 had declined as compared to the figure in 2020.

According to Hendro, the number of visitors had reached around 990 thousand in 2020, while in 2021, the figure only reached 420 thousand visitors. These figures are far below the visitor count before the pandemic, reaching 3.8 million in 2019.

(i) With reference to Fig. 2.1, identify the stage of tourism development of Borobudur in Indonesia.

_____ **[1]**

(ii) Explain your answer in 2(a)(i).

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_____ **[2]**

(b) Study Fig. 2.2 (Insert), which shows the weekly operated flights of selected departure countries into Qatar during the 2022 FIFA World Cup period in Qatar.

(i) Using Fig. 2.2, describe the trends of the weekly operated flights of selected departure countries into Qatar between 10 October 2022 and 25 December 2022.

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_____ **[4]**

(ii) With reference to Fig. 2.2, suggest why people travel for sports tourism.

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_____ **[2]**

(c) Study Fig. 2.3, which shows a comic on tourism - “Our holiday, their home”.

Fig. 2.3

Comic on tourism – “Our holiday, their home”

With reference to Fig. 2.3, describe the impacts of tourism development on the local community.

_____ **[4]**

(d) Outline the effectiveness of ecotourism in achieving sustainable tourism development.

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

3 Climate

(a) Describe the possible impacts by climatic hazards on the natural and human systems.

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_____ **[2]**

(b) Explain how sea breezes are formed.

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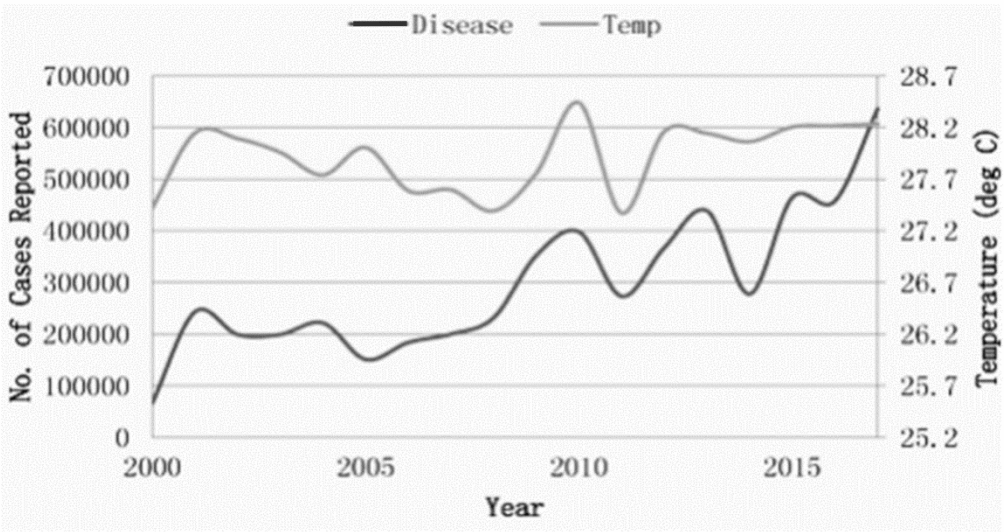
(c) Study Fig. 3.1, which is a graph showing the relationship between temperature and number of dengue cases reported.

Fig. 3.1

A graph showing the relationship between temperature and number of dengue cases reported



Using information from Fig. 3.1, describe the relationship between temperature and the number of dengue cases.

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_____ **[3]**

(d) "Latitude is the most important factor affecting air temperature across places."

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

[9]

4 Tectonics

(a) Explain why the Moment Magnitude Scale (Mw) is considered to be more accurate than the Richter Scale (ML) when measuring earthquakes.

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_____ **[2]**

(b) Study Fig. 4.1 (Insert), which shows the distribution of recent earthquakes and volcanic eruptions.

(i) Using Fig. 4.1, describe the distribution of active volcanoes and earthquake origins.

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_____ **[3]**

(ii) Explain the formation of volcanoes like Mount Agung in Indonesia shown in Fig. 4.1.

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_____ **[4]**

(c) 'The exposure of people and their properties at a place to

) earthquakes increases the disaster risks more than others.'

To what extent do you agree with this statement? Explain your answer. **[9]**

[9]

Addition al Pages

Answer Question 1 **and** Question 2.

1	**Geography in Everyday Life**		
	(a)	Study Fig. 1.1 (Insert), which shows urban beekeeping at the roof of the resident's apartment in New York City in the United States of America.	
		With reference to Fig. 1.1, explain how urban beekeeping can affect the local communities in New York City in the United States of America.	**[4]**
		Award 1 mark for each explanation of how urban beekeeping can affect the local communities and nearby nature in New York City in the United States of America, to a maximum of 2 marks. Award a maximum of 1 additional mark for further development of each explanation, where applicable. No reservation of marks for positive/ negative impact. Possible responses include: Positive impacts: - Urban beekeeping brings nature closer to people (1m) and the local communities can get to learn more about bees and their benefits. (1am) - Urban beekeeping promotes social and environment sustainability (1m) as the local communities can come together to rear and protect the urban bee hives so that the bees can thrive. (1am) -Urban beekeeping promotes economic sustainability (1m) as the local communities can harvest honey directly from their homes/neighbourhood and need not travel out to purchase them. (1am) - Urban beekeeping helps to increase pollination of flowers nearby (1m) and therefore increase the yield of fruits for the local communities. (1am) Negative impacts: - The bees may attack people in self-defence when they are provoked. (1m) During such attacks, both the bees and people may get injured. (1am) - The presence of bees may be deemed as a pest/ nuisance/ threat to people. (1m) The local communities may use insecticides to kill the bees. (1am) **AO2**	
	(b)	Study Fig. 1.2 (Insert), which shows the planning of Tengah, a new	

housing estate in Singapore.

(i) Identify the level of spatial hierarchy shown in Fig. 1.2. **[1]**

Award 1 mark for identifying the level of spatial hierarchy: Town (1m)

AO1

(ii) Explain your answer in 1(b)(i). **[3]**

Award 1 mark for each explanation, up to a maximum of 3 marks:
Candidates are required to cite data/ evidence from Fig 1.2 in their explanation.
Each point 1 mark to a maximum of (3m):
- There are a total of 18 Build-To-Order projects/ precincts which will sum up to more than 10,000 residents.
- There are a total of 5 proposed train stations under construction to serve the entire area.
- There is a dense/ grid pattern of proposed road network to provide accessibility to the numerous precincts within Tengah.
- There are four to five proposed primary school sites to serve the area, on top of two other primary schools and two secondary schools and one tertiary institute around Tengah.
- There is a mix of public and private housing to cater to the different housing needs and wants of the residents in Tengah.
- The Tengah car-free town centre features an integrated transport hub where Tengah train station and the bus interchange could serve the commuting needs of the residents in Tengah.

AO2

(c) A group of secondary school students from Singapore were investigating the level of sense of place among Housing and Development Board (HDB) households against the length of years they have resided in their housing estates in Singapore.

The students conducted an online survey with 60 HDB households across Singapore. The results of the survey are shown in Table 1.1.

Table 1.1

Sense of place among HDB households by Length of Residence

Length of Residence (Years)	Number of HDB households surveyed	Average sense of place rating (%)
< 6	10	65.9
6 to 10	10	71.4
11 to 15	10	74.6

		16 to 20 21 to 30 > 30	10 10 10	77.3 76.4 80.1	
		Using information from Table 1.1, evaluate the validity of the students' findings regarding the sense of place among HDB household by length of residence.			**[6]**
		Award 1 mark for each evaluation of the positive validity of the students' findings, to a maximum of 2 marks. Award 1 mark for each evaluation of the negative validity of the students' findings, to a maximum of 2 marks. Award a maximum of 1 additional mark for further development of each evaluation, where applicable. Possible responses: - The findings are valid because the data collected addresses the investigation question, highlighting a stronger sense of place rating for households with longer length of residence. (1m) - The findings are valid because the data was collected online and therefore no biasness to particular physical collection sites. (1m) - The findings are valid because the students conducted the survey over a sizeable sample size of 60 (1m) and a fair stratified sample size of 10 per length residence category. (1am) - The findings may not be valid because the data collected is by households while household members' sense of place is subjective to their own experiences and memories of a place. (1m) The household members could be either young children or elderly who may not understand what is sense of place or are not familiar with their housing estate. (1am) - The findings may not be valid because the survey is done across Singapore and every housing estate have different facilities/ amenities/ events to offer and thus affecting the sense of place rating. (1m) - The findings may not be valid because the any length of residence above 30 years are all classified under one category, which may inflate the data for that category. (1m) Some people, especially elderly, may reside in their housing estate for decades, but the features of a place may change or disappear over the years and thus affect the sense of place rating. (1am) **AO3**			

2	**Tourism**		
	(a)	Study Fig. 2.1, which shows a new article from Antara, an Indonesian New Agency, regarding Borobudur, a Buddhist temple and UNESCO World Heritage Site in Java, Indonesia.	

Fig. 2.1

News article from Antara, an Indonesian News Agency, regarding Borobudur, Indonesia

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According to Hendro, the number of visitors had reached around 990 thousand in 2020, while in 2021, the figure only reached 420 thousand visitors. These figures are far below the visitor count before the pandemic, reaching 3.8 million in 2019.

		(i)	With reference to Fig. 2.1, identify the stage of tourism development of Borobudur in Indonesia.	**[1]**
		Award 1 mark for identifying the stage of tourism development of Borobudur, Indonesia. Possible responses: - Post-stagnation stage - Decline stage - Rejuvenation stage **AO1**		
		(ii)	Explain your answer in 2(a)(i).	**[2]**
		Award 1 mark for each explanation, up to a maximum of 2 marks. Possible responses: - Borobudur is in the post-stagnation/ decline stage because Fig. 2.1 shows that Borobudur is experiencing a sharp decline in visitors arrivals (1m) over the past few years, from 3.8 million visitor arrivals in 2019 to 420 thousand visitor arrivals in 2021. (1am) - Borobudur is in the post-stagnation/ decline stage because Fig. 2.1. shows that visitors are required to wear the Upanat sandals with the objective of structural preservation. (1m) This shows that Borobudur has been experiencing negative environmental impacts as the destination has reached or exceeded its carrying capacity. (1am) - Borobudur is in the post-stagnation/ rejuvenation stage because Fig. 2.1 shows that the Indonesian Tourism Authority is making efforts to preserve the structure of the Borobudur temple/ restore the attractiveness of the Borobudur temple (1m) with a new regulation to wear the Upanat sandals, so as not to damage the stairs and structure of the Buddhist temple. (1am) **AO2**		
	(b)	Study Fig. 2.2 (Insert), which shows the weekly operated flights of selected departure countries into Qatar during the 2022 FIFA World Cup period in Qatar.		
		(i)	Using Fig. 2.2, describe the trends of the weekly operated flights of selected departure countries into Qatar between 10 October 2022 and 25 December 2022.	**[4]**
		Award 1 mark for each description of the general trend, to a maximum of 2 marks. Award 1 mark for each description of the unique trend, to a maximum of 2 marks. Award a maximum of 1 additional mark for a further development of each description, where applicable. Possible responses:		

			General - The weekly operated flights of all selected departure countries into Qatar were generally constant before group stage begins on 14 Nov. (1m) - The weekly operated flights of all selected departure countries into Qatar generally saw an increase in weekly operated flights during the FIFA World Cup period/ between 14 Nov (Group stage begins) and 12 Dec (World Cup Final). (1m) - The weekly operated flights of all selected departure countries into Qatar generally saw a decrease in weekly operated flights after the FIFA World Cup Final on 12 Dec. (1m) **Unique trends** - The weekly operated flights of most selected departure countries into Qatar saw sharp spikes between 14 Nov and 12 Dec, except for Brazil which only saw a gradual increase (1m) due to the gentle slope gradient increase. (1am) - Most of the weekly operated flights into Qatar saw a spike/ an increase during the World Cup Final on 12 Dec, except for Iran (1m) which only saw an increase on 28 Nov and decrease thereafter. (1am) - From 10 Oct to 26 Dec, United Kingdom constantly saw the largest number of weekly operated flights into Qatar (1m), at least twice the amount compared to the other selected departure countries. (1am) - Morocco saw the largest increase in their number of weekly operated flights into Qatar during the World Cup period, (1m) with an increase in 30 weekly operated flights (from 15 to 45 weekly operated flights)/ a 200% increase in weekly operated flights. (1am) - Morroco saw the largest decrease in their number of weekly operated flights into Qatar after the World Cup Final, (1m) with a decrease in 30 weekly operated flights (from 45 to 15 weekly operated flights)/ a 66.7% decrease in weekly operated flights. (1am) **AO2**	
		(ii)	With reference to Fig. 2.2, suggest why people travel for sports tourism.	**[2]**
		Award 1 mark for each suggested reason as to why people travel for sports tourism, to a maximum of 2 marks. Award a maximum of 1 additional mark for a further development of the suggested reason, where applicable. Possible responses: - Sports tourists travel to participate in the sports event (1m) to achieve personal growth and self-fulfilment. (1am) - Tourists/ spectators travel to observe the sports event (1m) to seek enjoyment/ enjoy their hobby/ escape the stress of work. (1am) **AO1**		

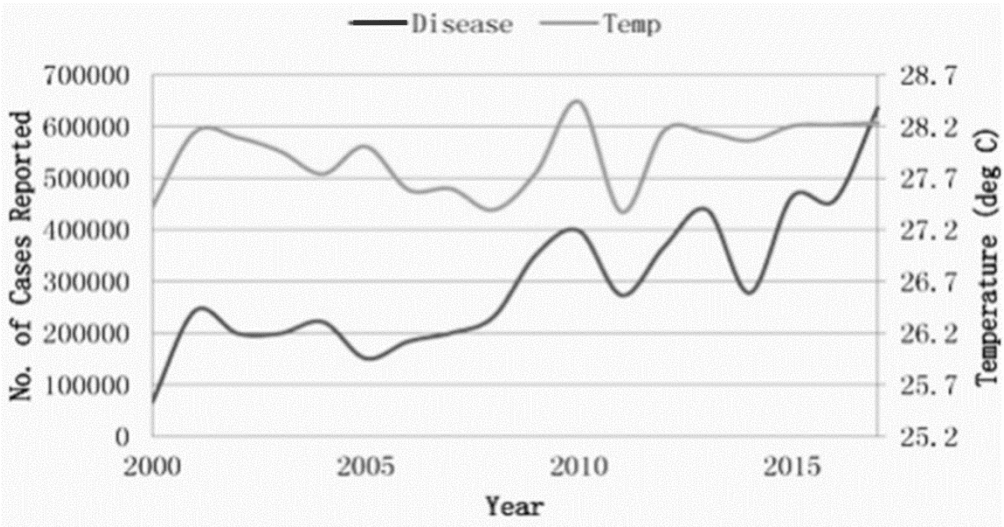
	(c)	Study Fig. 2.3, which shows a comic on tourism - “Our holiday, their home”.	
		Fig. 2.3 **Comic on tourism – “Our holiday, their home”**  	
		With reference to Fig. 2.3, describe the impacts of tourism development on the local community.	**[4]**
		Award 1 mark for each description on the impact of tourism on the local community. Award a maximum of 1 additional mark for further development of each description, where applicable. Possible responses: - Tourism development could bring about positive economic impacts because the tourism industry is labour intensive (1m) and as portrayed in Fig. 2.3, locals are largely employed to support the tourism development, hence providing them with employment opportunities and a livelihood. (1am) - Tourism development could bring about negative economic impacts due to economic leakages resulting in less tourism revenue. (1m) As seen in Fig. 2.3, investments may be made to develop tourism, however, economic leakages could happen and the revenue from tourism does not reach the locals, thus minimising the income earned by locals from tourism and not being able to improve on their standard of living. (1am) - Tourism development could bring about negative social/economic	

		impacts when the local community becomes overdependent on tourism for a living. (1m) As seen in Fig. 2.3, the local community are willing to support and get crushed by the immense pressure of the tourism development. This could imply that they are willing to undertake any form of harsh working conditions or low wages as long as they are employed. (1am) - Tourism development could bring about negative economic impacts because the tourism industry is volatile and susceptible to unexpected events like natural disasters, unfavourable political situations, economic downturn and outbreak of diseases. (1m) The local community's overdependence on tourism for its income and employment ("rice bowls") makes them vulnerable to tourism fluctuations and thus affecting their livelihoods ("rice bowls crack"). - Tourism development could bring about negative environmental impacts as the tourism development depletes natural resources from the local community. (1m) As seen in Fig. 2.3, the electrical transmission tower appears to be generating more electricity towards the tourism development. This could deplete electrical supply to the local community, which could directly affect their daily routines or lead to a spike in electricity pricing to the local community due to its limited supply. (1am) **AO2**	
	(d)	Outline the effectiveness of ecotourism in achieving sustainable tourism development.	**[5]**
		Award 1 mark for each strategy of ecotourism in achieving sustainable tourism development, to a maximum of 2 marks. Award 1 mark for each limitation of ecotourism in achieving sustainable tourism development, to a maximum of 2 marks. Award a maximum of 1 additional mark for further development of each reason, where applicable. Possible responses: Effective: - Ecotourism often takes place within natural areas for tourists to experience and interact with nature. This increases tourists' knowledge and appreciate of nature. (1m) In turn, tourists are encouraged to take action to conserve and minimise damage to the environment, achieving environmental sustainability. (1am) - Measures/ rules/ regulations/ laws are put in place to protect the environment of ecotourism destinations. (1m) Authorities/ park rangers ensure that the laws set up to protect the environment are adhered to such that damage to the environment is minimised, thus achieving environmental sustainability. (1am) - For example, the authorities in Galapagos Islands in Ecuador implemented rules and regulations like: (1am) - Limiting number of visitors allowed in the park on any given day to minimise disturbances to the wildlife.	-

		- Tourists are required to pay an entrance fee of USD$100 when visiting the park, and the revenue earned is used to fund conservation projects. - Tourists are not allowed to explore the islands on their own. A guide, who educates the tourists, is required at each site. Ineffective: - Ecotourism is not effective when the aims of ecotourism are being compromised. This is because people may have a strong desire to earn profits from ecotourism. (1m) When ecotours are overwhelmingly popular with tourists, and the presence of many tourists interacting with nature may destroy the environment they seek to protect, and environmental sustainability may not be achieved. (1am) - For example, in the Galapagos Islands, the large increase in the number of tourists has resulted in erosion along some trails, and also caused disturbance to wildlife and plants. Oil spills from many boats have resulted in serious water pollution. (1am) **AO1**	

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

3	**Climate**		
	(a)	Describe the possible impacts by climatic hazards on the natural and human systems.	**[2]**
		Award 1 mark for each description on the possible impact by climatic hazards on the natural system. Award 1 mark for each description on the possible impact by climatic hazards on the human system. Possible response: - Drier than usual weather conditions can result in wildfires, causing forests to be destroyed. - Droughts can affect the amount of agricultural yield, food supply and individual income. **AO1**	
	(b)	Explain how sea breezes are formed.	**[4]**
		Award 1 mark for each explanation on how sea breezes are formed. Possible response: - In the day, heat from the sun is absorbed by both the land and the sea through shortwave radiation. (1m) - The land and the air above it gain heat quickly. The warmer air is	

		less dense and rises, forming lower pressure over the land. (1m) - On the other hand, the sea and the air above it gain heat slowly. The cooler air is denser and sinks, forming higher pressure over the sea. (1m) - Air moves from an area of higher pressure over the sea to lower pressure over the land, forming the sea breeze. (1m) **AO1**	
	(c)	Study Fig. 3.1, which is a graph showing the relationship between temperature and number of dengue cases reported.	
		Fig. 3.1 **A graph showing the relationship between temperature and number of dengue cases reported**  	
		Using information from Fig. 3.1, describe the relationship between temperature and the number of dengue cases.	**[3]**
		Award 1 mark for each description on the relationship between temperature and the number of dengue cases. Award a maximum of 1 additional mark for further development of each description, where applicable. Possible responses: - Generally, there is a corelation between temperature and the number of dengue cases. (1m) - The number of dengue cases increases and decreases when temperature increases and decreases accordingly. (1m) For example, when temperature rises in 2010 to 28.5°C, the number of dengue cases also increases to 400000 cases. (1am) - However, there is an inverse relationship between temperature and the number of dengue cases at times. For example, when	

temperature was constant at 28.2°C from 2015 onwards, the number of dengue cases increases sharply from 480000 cases to 620000 cases. (1m)

AO2

(d) "Latitude is the most important factor affecting air temperature across places."

To what extent do you agree with this statement? Explain your answer. **[9]**

Generic Level Descriptors for 9-mark AO3 Questions		
Level	**Marks**	**Descriptors**
3	7 – 9	Develops arguments that support both sides of the discussion clearly, using a range of points with good elaboration. Examples used demonstrate a comprehensive understanding of the issue or phenomenon. Evaluation is derived from a well-reasoned consideration of the arguments.
2	4 – 6	Develops arguments that support one side of the discussion well, using one or two points with some elaboration. Example(s) used demonstrate a good understanding of the issue or phenomenon. Evaluation is well supported by arguments.
1	1 – 3	Arguments are unclear with limited description or may be listed. No examples provided or examples are generic, demonstrating a basic understanding of the issue or phenomenon. Evaluation is simple, missing, or unclear.
0	0	No creditworthy response.

Relevant content

Factors influencing temperature across places:
- Latitude (Given factor)
- Altitude
- Type of surface
- Distance from sea

Possible response:
Latitude is a factor affecting air temperature across all locations. At the global scale, temperatures are lower at higher latitudes. Due to the Earth's spherical shape, the angle at which the sun's rays strike the Earth's surface (solar angle) varies at different parts of the Earth.
The higher the latitude, the smaller the solar angle, therefore solar

		radiation is less direct, is spread over a larger area and is less concentrated, leading to lower temperatures. For example, Beijing, China (40°N of equator) has temperatures averaging 12°C, which Singapore (1°N of the equator) has temperatures averaging 29°C. Altitude is a factor affecting air temperature across places with presence of relief/ mountains. At a local scale, temperatures are lower at higher altitude. At higher altitudes, air is less dense and air pressure is lower as gravity pulls most of the air molecules towards the ground surface. With fewer air molecules, air has a lower ability to absorb and radiate heat, leading to lower temperature. For example, average temperatures at Genting Highlands (altitude of 1700m above sea level) is about 21°C while the average temperatures in the surrounding areas which are at sea level is about 32°C. Type of surface is a factor that can affect air temperature across places. Dark surfaces (e.g. exposed soil and forests) generally absorb more solar radiation and radiate more heat, resulting in higher temperatures. On the other hand, light-coloured surface (e.g. clouds and snow) generally reflect more solar radiation and radiate less heat, resulting in lower temperatures. As such, urban areas end to have higher temperatures than the surrounding rural areas because urban areas comprise larger areas of dark surfaces (e.g. roads) which absorb more solar radiation and radiate more heat than forests and water bodies. Glass-covered skyscrapers reflect sunlight to the ground surface. This increases absorption of solar radiation and heat radiation by ground surfaces. For example, night-time temperatures at Singapore's Central Business District were found to be 2°C warmer than the area near MacRitchie reservoir, which has very dense vegetation. Distance from the sea is a factor affecting air temperature at coastal and inland areas. Sea heats up and cools down more slowly than land. During winter, the sea is warmer than land, warming the air along coastal areas. During summer, the sea is cooler than land, cooling the air along coastal areas. On the other hand, inland areas do not experience this moderating influence of the sea, and instead experience the continental effect. For example, Anchorage, a coastal city in Alaska, USA, has a lower annual temperature range of 23°C while Fairbanks, an inland city in Alaska, USA, has a higher annual temperature range of 40°C. **AO3**	

4	**Tectonics**		

	(a)	Explain why the Moment Magnitude Scale (Mw) is considered to be more accurate than the Richter Scale (ML) when measuring earthquakes.		**[2]**
		Award 1 mark for each explanation on why the Moment Magnitude Scale (Mw) is considered to be more accurate than the Richter Scale (ML) when measuring earthquakes. Possible response: - The Richter Scale (ML) calculates earthquake magnitude using the height of the largest wave recorded on seismometers while the Moment Magnitude Scale (Mw) rates earthquake magnitude based on the total energy released during the earthquake. (1m) - The Moment Magnitude Scale (Mw) is considered to be more accurate because an earthquake with many large, intense waves may release more overall energy and do more damage than an earthquake that is measured based on a single drastic spike. (1m) **AO1**		
	(b)	Study Fig. 4.1 (Insert), which shows the distribution of recent earthquakes and volcanic eruptions.		
		(i) Using Fig. 4.1, describe the distribution of active volcanoes and earthquake origins.		**[3]**
		Award 1 mark for each description of the relationship between the distribution of active volcanoes and earthquake origins. Award a maximum of 1 additional mark for further development of each description, where applicable. Possible responses: - The distribution of active volcanoes generally coincides with the distribution of earthquake origins. (1m) Most of them overlap around the Pacific Ring of fire/ the Pacific Plate or along plate boundaries. (1am) - Active volcanoes can be found at places where there is no/ minimal origins, (1m) such as those at Hawaii/ in the middle of the Pacific Plate or along the west coast of Africa or at Saudi Arabia/ North east of Africa. (1am) - There are places where there are many earthquake origins but no presence of active volcano, (1m) such as the linear cluster of earthquake origin along the Indian Ocean and Southern Ocean or the cluster of earthquake origin on the western offshore of South America. (1am) **AO2**		
		(ii) Explain the formation of volcanoes like Mount Agung in		

			Indonesia shown in Fig. 4.1.	**[4]**
		Award 1 mark for each explanation for the formation of volcanoes like Mount Agung found along the Sunda Arc in Indonesia. Award a maximum of 1 additional mark for further development of each description, where applicable. Possible responses: - Volcanoes like Mount Agung found along the Sunda Arc in Indonesia are formed due to the **convergence** (1m) between the Indo-Australian Plate and Eurasian Plate. (1am) - The **denser** oceanic Indo-Australian Plate will **subduct** under the continental Eurasian Plate, (1m) forming the Sunda oceanic trench. (1am) - As the subducting plate sinks into the mantle, the high pressure forces water out of its oceanic crust. Water lowers the melting point of the overlying mantle, causing it to melt, forming magma. (1m) - Magma rises through weak areas in the crust to the Earth's surface, forming volcanoes like Mount Agung on the continental Eurasian Plate. (1m) **AO1**	
	(c)	'The exposure of people and their properties at a place to earthquakes increases the disaster risks more than others.' To what extent do you agree with this statement? Explain your answer.		**[9]**
		Generic Level Descriptors for 9-mark AO3 Questions **Level** **Marks** **Descriptors** 3 7 – 9 Develops arguments that support both sides of the discussion clearly, using a range of points with good elaboration. Examples used demonstrate a comprehensive understanding of the issue or phenomenon. Evaluation is derived from a well-reasoned consideration of the arguments. 2 4 – 6 Develops arguments that support one side of the discussion well, using one or two points with some elaboration. Example(s) used demonstrate a good understanding of the issue or phenomenon. Evaluation is well supported by arguments. 1 1 – 3 Arguments are unclear with limited description or may be listed. No examples provided or examples are generic, demonstrating a basic understanding of the issue or phenomenon. Evaluation is simple, missing, or unclear.	

		0 0 No creditworthy response. Relevant content Factors influencing tectonic disaster risks: - Exposure: Population density, distance from epicentre - Nature of hazard: Duration of shaking, time of shaking - Vulnerable conditions: Quality of building design and construction, soil and rock properties Possible response: The exposure of people and their properties at a place to earthquakes increases the people and their properties to the disaster risks. The higher the population density, the greater the number of people and buildings that are exposed to earthquakes, thus increases the disaster risks. This is because when large numbers of people are located within buildings, more people will be trapped when the building collapse, causing more injuries and loss of lives. For example, the densely populated Japanese industrial city of Kobe (3,000 people per km^2) was severely affected by a Mw 6.9 earthquake in 1995, where it killed over 6,000 people and injured about 40,000 people. The nearer a place is to the epicentre, the greater the number of people and buildings exposed to the hazard, hence increases the disaster risks. This is because when a place is nearer to the epicentre, less energy is absorbed by the rocks before the seismic waves reach the city. Thus, the seismic waves reaching the place will be stronger, causing more violent shaking. As a result, buildings and bridges are more likely to collapse, and people will more likely be trapped, leading to more injuries and loss of lives. For example, the 2020 Mw 7.0 earthquake in Port-au-Prince, Haiti, resulted in more than 220,000 deaths as its epicentre was only about 25km west of the city. There are also other factors that can influence the disaster risks of a place to earthquakes. The quality of the building design and the construction of a place also plays a huge part in determining the extent of the disaster risks. This is because the poorer the quality of the building design and construction, the more vulnerable the buildings and infrastructure are to collapsing, leading to more trapped people, injuries and loss of lives, hence, increases the disaster risks. For example, during the 2010 Mw 7.0 earthquake that occurred in Port-au-Prince, Haiti, many buildings and infrastructure collapsed because they are made of poor-quality materials, and the concrete pillars holding up the buildings are poorly reinforced. As a result, more than 90% of all buildings near the epicentre were destroyed during the earthquake,	

		contributing to more than 220,000 lives lost. The soil and rock properties of a place can also contribute to the extent of disaster risks caused by earthquakes. When the soil is soft, saturated and loose, the higher the potential of liquefaction taking place when the ground shakes, hence, increases the disaster risks. This is because buildings may be more vulnerable to collapse as they may sink into the liquefied soil and tip over, and people will more likely be trapped in the collapsed buildings, leading to more injuries and loss of lives. For example, large areas of Port-au-Prince, Haiti lie on layers of relatively soft soil. When the 2020 Mw 7.0 earthquake occurred, the seismic waves were amplified and this led to the collapse of many buildings and caused more than 220,000 lives loss. The duration of ground shaking can also influence the extent of disaster risks. The longer the duration of ground shaking, the more damaging an earthquake will be to the place. This is because structures such as buildings and bridges subjected to a long period of stress are more likely to collapse, and people will more likely be trapped in collapsed infrastructure, leading to more injuries and loss of lives. For example, the 2011 9.0 Mw Tohoku earthquake in Japan lasted for 6 minutes and caused massive damages to buildings. The time of the day influences the activities carried out by people and how they respond when an earthquake strikes. An earthquake that happens in the night tends to increase the disaster risk of a place. This is because if people are asleep at night, they will be less alert and are unable to evacuate quickly compared to if they are alert in the day. Hence, people will more likely be trapped, leading to more injuries and loss of lives. For example, the 1995 Kobe, Japan Mw 6.9 earthquake occurred in the early morning at around 6am. As many people were asleep, they were trapped at home, leading to more than 6,000 lives lost. In conclusion, I agree with the statement that the exposure of people and their properties at a place to earthquake increases the disaster risks more than others. This is because with increasing human population and urbanization, population density can be very high at many places. This naturally increases the disaster risks of earthquakes to increasing number of people at increasing number of places. In addition, urban areas are increasing with urbanization, hence also increasing the chances of cities being closer to the epicentres of earthquakes. On the other hand, factors like quality of building design and construction and soil and rock properties could be managed with technology and land use planning, especially by developed countries, hence, the disaster risks caused by earthquakes can be managed. OR	

		I conclusion, I disagree with the statement that the exposure of people and their properties at a place to earthquake increases the disaster risks more than others because I feel that the nature of the earthquake increases the disaster risks more. This is because factors like the duration of the shaking and the time of shaking are natural factors that are beyond the control of humans, unlike population density and location of cities which are human factors. Therefore, these factors could increase the disaster risks of earthquake at a place due to its unpredictability, which could cause people at those affected places to be caught off guard. **AO3**	

End of suggested answer scheme

Breakdown

Question	AO1	AO2	AO3
Q1: GiEL	1%	7%	6%
Q2: Tourism	8%	10%	-
Q3: Climate OR	6%	3%	9%
Q4: Tectonics	6%	3%	9%
Total	15%	20%	15%