Name | Reg. No | Class

Name	Reg. No	Class

MAYFLOWER SECONDARY SCHOOL

4E5N

HUMANITIES **2260/02**

Paper 2 GEOGRAPHY

[50 marks] **PRELIMINARY EXAMINATION**

Candidates answer on the Question Paper.
Additional Materials: Insert

AUGUST 2024

1 HOUR 45 MINUTES

READ THESE INSTRUCTIONS FIRST

Write your index number and name on al the work you have hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
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 Question 3.

Q1	/14
Q2	/18
Q3	/18
Total	/50

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.

This question paper consists of [ ] printed pages.

Setter: Ms Frances Ong Vetter: Ms Alethea Goei

Section A

Answer Question 1 **and** Question 2.

1	**Cluster 1: Geography in Everyday Life**		
	(a)	Study Fig. 1.1, (Insert) which shows a pile of objects stacked along a Housing Development Board (HDB) lift landing. Explain how the hazard shown could affect residents living in the block.	[3]

- ***Award 1 mark for each explanation of the impacts of the hazard on people.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **The pile of objects could contain flammable objects that can easily catch and spread fire. [1 mark]**
  - **During a fire, people may suffer from burn injuries which may lead to disabilities or death. [1 additional mark] or**
  - **Smoke inhalation can also cause breathing difficulties and suffocation, which may lead to death. [1 additional mark]**
- **The pile of objects could also obstruct residents from evacuating quickly / block access for emergency personnel to reach victims on time. [1 mark]**
- **The piles of rubbish may attract pests [1 mark]**
  - **who can spread diseases. [1 additional mark]**
- **safety hazard with possibly heavy objects falling on passersby. [1 mark]**
  - **cause people walking by to trip and fall. [1 additional mark]**

	(b)	Study Fig. 1.2 (Insert) which shows a series of activities that Singaporeans and foreign visitors can do in MacRitchie Reservoir Park. With reference to Fig. 1.2, explain how the MacRitchie Reservoir Park may provide cultural eco-system services to visitors.	[3]

- ***Award 1 mark for each explanation of the cultural services provided by MacRitchie Reservoir Park.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Cultural ecosystem services are the non-material benefits that people obtain from ecosystems through recreation, tourism, intellectual development, spiritual enrichment, reflection, and creative and aesthetic experiences. (not required)

Possible responses include:

- **MacRitchie Reservoir Park can provide cultural ecosystem services such as educational opportunities for visitors to learn more about nature. [1 mark]**
  - **For example, schools can take students on a learning journey to the nature reserve for lessons on geography or science to learn about the adaptations and/or uses of the forest. [1 additional mark]**
- **The nature reserve can also provide a space for recreational activities like hiking, fishing, or canoeing. [1 mark]**
  - **This can improve physical and mental wellbeing of visitors to the park. [1 additional mark]**

	(c)	The Housing Development Board's (HDB) Green Towns Programme seeks to make HDB Towns more sustainable and livable. Explain how an urban neighbourhood in a HDB town can achieve environmental sustainability.	[3]

- ***Award 1 mark for each explanation of how an urban neighbourhood in a HDB town can achieve environmental sustainability.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **An urban neighbourhood can achieve environmental sustainability through providing green spaces for wildlife to thrive. [1 mark]**
  - **For example, more green spaces for biodiversity can be added in urban neighbourhoods through street trees, pocket parks and even green roofs. [1 additional mark]**
- **Environmental sustainability can also be achieved through having facilities that support waste minimization and recycling. [1 mark]**
  - **For example, conveniently located recycling bins around the neighbourhood encourage more people to recycle, reducing waste that goes into landfills. [1 additional mark]**
- **Energy- and water-efficient building designs can help to minimize use of natural resources. [1 mark]**
  - **For example, smart LED lighting and rainwater harvesting systems help to conserve use of electricity and water. [1 additional mark]**

	(d)	A group of Secondary 3 students in Mayflower Secondary carried out a geographical investigation around their school to test the following hypothesis: **Hypothesis:** Temperatures are higher nearer to buildings. They selected eight sites around the school. On a cloudy Monday at 10 am, they measured the distance from each site to the nearest building and the temperature at each site. The temperatures at the eight sites are shown in Table 1 below.	

Table 1
Temperatures at 8 measuring sites.

Site	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Distance from school building (m)	2	3	39	1	9	2	24	42
Temperature (^{o}C)	29.3	30.1	29.1	29.9	29.4	29.8	29.3	29

	(i)	Using Table 1, what conclusions may be drawn regarding the relationship between temperature and distance from buildings?	[3]

- ***Award 1 mark for a valid conclusion.***
- ***Award a maximum of 1 additional mark for evidence/ relevant material to support conclusion made.***
- ***Award 1 mark for identification of an anomaly.***

Possible responses include:
Conclusions:

- **The hypothesis is proven right/ largely correct/ largely true. [1 mark].**
- **There is a negative relationship between temperature and distance from buildings [1 mark].**
- **Temperatures are higher nearer buildings/ temperatures are lower further away from buildings [1 mark].**

Evidence to support (contrasting data, up to 1 mark):

- **Two highest recordings are all next to / within 3m of buildings (D, F).**
- **However, three lowest recordings are all far away / more than 30m from buildings (C, G, H). [1 mark].**

Anomaly

- **B is an anomaly as it is 3 m away from building but higher temperature (30.1 °C) than site D (29.9 °C) which is nearer (1m away from building)– must say why it is an anomaly [1 mark].**

	(ii)	Evaluate the validity of the students' findings.	[2]

- ***Award 1 mark for each evaluation of the 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 include:

- **Scope: <u>The findings are valid</u> as they have taken measurements at 8 sites of varying distance from buildings which is a good representation of the school area covered [1 mark].**
- **Frequency: <u>The findings may not be valid</u> as the data was collected only one day/at one timing. Tuesday 11 am the temperatures of the 8 sites collected may not be representative of the temperatures for these locations throughout the rest of the day/ week [1 mark].**
- **OR**
- **The sites may be less hot on that day as it was a cloudy day and the variations in temperature may not be obvious hence, the results may not be conclusive. [1 mark]**

2	**Cluster 2: Tourism**		
	(a)	Study Fig. 2.1 which describe the concept of pro poor tourism. With reference to Fig.2.1, explain how the of pro-poor tourism benefitted the locals.	[4]

Pro-poor tourism is a means for improving the livelihoods and socio-economy of the stakeholder communities. In recent years, it is increasingly applied to developing countries with the aim of maintaining a balance and linkage between tourism businesses and the local people.

Fig. 2.1
Concept of pro-poor tourism

- ***Award 1 mark for each explanation of how pro-poor tourism benefitted the locals, to a maximum of 2 marks each.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **Pro-poor tourism (PPT) often generates additional income opportunities for locals. This can include employment in the tourism industry, such as working in hotels, restaurants, or as tour guides [1 mark].**
    - **Pro-poor tourism initiatives frequently provide training and capacity-building programs to enhance the skills of locals, making them more employable in the tourism sector [1 additional mark].**
- **Microfinance programs are sometimes included in pro-poor tourism initiatives, enabling locals to access financial services and start or expand small businesses [1 mark].**
    - **Access to microfinance services is an essential step in improving financial health and the incomes of the poor. [1 additional mark].**

	(b)	Study Fig. 2.2 (Insert), which shows the stages of tourism development. Explain the key characteristics of the development stage in the stages of tourism development.	[3]

- ***Award 1 mark for each explanation of the key characteristics of the development stage in the stages of tourism development, to a maximum of 3 marks.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **During this stage, there is a significant increase in investment in tourism-related infrastructure [1 mark].**
    - **This includes the construction of hotels, resorts, restaurants, transportation networks, and other amenities to accommodate the growing number of tourists [1 additional mark]..**
- **The development stage typically sees a consistent and steady increase in the number of visitors [1 mark]**
    - **This growth is often a result of successful marketing efforts, improved accessibility, and positive word-of-mouth recommendations [1 additional mark].**
- **Developed destinations offer a wide range of attractions and activities to cater to various interests and demographics [1 mark].**
    - **This diversity can include natural wonders, cultural sites, recreational opportunities, and entertainment options [1 additional mark].**
- **Tourism becomes a significant contributor to the local economy during the development stage [1 mark].**
    - **It employs a significant number of workers, and labour from other parts of the countries [1 additional mark].**

	(c)	Study Table 2, which shows the international tourists' arrivals of selected regions from around the world from 2000 to 2010.With reference to Table 2, compare the tourist arrivals between DCs and LDCs from 2000 to 2010.	[2]

Table 2
International Tourists' arrival.

	2000	2005	2006	2007	2008	2009	2010
	in Millions						
Developed Countries (DCs)	417	413	476	497	495	474	498
Developing Countries (LDCs)	257	345	366	401	421	408	442

- ***Award 1 mark for each comparison of tourist arrival.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

Possible responses include:

- **From 2000 to 2010, LDCs and DCs tourist arrivals have increased [1 mark].**
  - **LDCs have recorded a higher increase from 257 million international tourists' arrivals in 2000 to 442 million in 2010 which is almost a 72% increase [1 additional mark].**
  - **DCs have also increased but at a slower rate of 19% from 417 million to 498 million international tourists' arrivals over the same period [1 additional mark].**

	(d)	Study Fig. 2.3 (Insert), which shows the impacts of tourism on the environment. With reference to Fig. 2.3, to what extent do you consider this statement to be true? 'The environmental advantages of tourism outweigh the environmental disadvantages.' Explain your answer.	[9]

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

Relevant content/Possible approaches include:

- **Tourism can bring about environmental advantages when local communities and governments in destination regions invest in conserving the natural environment and preserving biodiversity.**
- **This is because maintaining pristine natural attractions encourages tourists to visit and revisit.**
    - **Tourism revenue in the destination regions may be used to help fund the protection of the aquatic and terrestrial ecosystems, protecting biodiversity.**
    - **For example, protected areas or national parks can be established, where developments in the area are restricted to ensure the habitats and biodiversity are undisturbed.**
- **Revenue can also be used to employ and train specialized staff to run these parks and care for these ecosystems.**
- **Environmental education programmes may also be set up for tourists to encourage them to show care for these ecosystems.**
    - **For example, the Galapagos Island, is very popular with tourists for its rich biodiversity and scenic environments.**
    - **An entrance fee of US$100 is charged to visitors entering the Galapagos National Park in Ecuador. The revenue generated from the fees is channeled to the conservation and upkeep of the park, including the hiring of park rangers.**
- **Natural aquatic and terrestrial sites with rich biodiversity have the potential to be tourist attractions. Hence, there is often a motivation to restore degraded aquatic and terrestrial ecosystems to create new natural attractions, such as marine or national parks. This can be done by stopping and reversing degradation to these ecosystems through reforestation.**
    - **For example, in Mauritius and Seychelles, coral reefs have been negatively affected by overfishing and unsustainable fishing methods, as well as human activities on land and sea.**
    - **Careless sea activities and an increase in waste have also harmed the coral reefs. However, the coral reefs are economically significant for local livelihoods, as well as the tourism industry.**
    - **Hence, a regional project led by the United Nations Development Fund has been initiated to restore the coral reef ecosystem, to enhance both local livelihoods and the tourism industry.**
- **However, tourism can also bring about environmental disadvantages. Activities conducted in the tourism industry can cause air pollution due to the emissions of greenhouse gases.**
- **Travelling by air, sea and land require large amounts of fossil fuels to be burned, which generate a significant amount of greenhouse gases in the atmosphere.**
    - **Gases such as sulphur dioxide and nitrogen oxides can also cause respiratory illnesses, such as asthma. Air pollution can circulate over a large area, and impact areas and people far from where it originates.**
- **The tourism industry generates a significant amount of waste. In places with no proper waste disposal systems, some tourists may leave litter behind, leading to environmental degradation.**
    - **For example, some climbers visiting the Mount Everest camps in Nepal discard empty oxygen tanks, tents, food containers and even human waste on the slopes and glaciers in the area.**
    - **This improper waste disposal means that trash is left to degrade out in the open. The chemicals from the trash can contaminate the soil and even groundwater, thus leading to land and water pollution.**

- **Many accommodations in tourist destination regions may not have the proper sewage systems, such as wastewater treatment facilities. Water pollution occurs when untreated sewage is disposed of into the sea.**
- **For example, in Boracay Island, the Philippines, local businesses, including accommodations, were not connected to the underground sewage line. This meant that sewage was not treated and was dumped directly into the sea, leading to a degradation of the water quality in the sea, threatening aquatic ecosystems.**

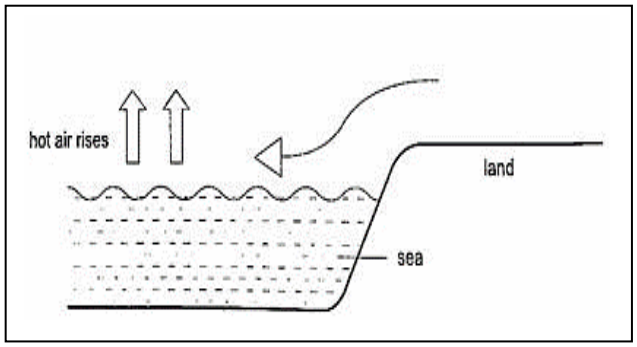
- **Tourist activities may result in an overuse of ecosystem provisioning services such as natural resources.**
  - **For example, the booming tourist industry in Bali, Indonesia, draws a lot of water per day. In addition to taking water from the public water supply system, hotels also draw large amounts of groundwater to meet tourists' demand.**
  - **This leads to rivers in the regions drying up, threatening the survival of terrestrial and aquatic species.**
- **The construction of tourist facilities may encroach on natural areas, destroying natural environments and threatening wildlife habitats. Careless tourists may trample on plants, make too much noise which can disturb and frighten animals.**
  - **For example, in Maldives, the government built large-scale facilities for accommodation, food and recreation for tourists, threatening the coastal environment. Rock and sand are dumped into the sea during the construction process, covering and suffocating corals, resulting in lack of big corals near the newer resorts. In the long term, animals dependent on the coral reefs for food and shelter, such as reef sharks, may lose their habitats and source of food.**
- **I consider this statement to be true to a small extent. Although tourism revenue can be used as funds to conserve the nature sites, large influx of tourists due to mass tourism led to many nature sites exceeding it carrying capacity.**
- **Hence resulting in environmental damages. Damage caused to the environment can be irreversible and loss of biodiversity may also become permanent.**

Section B

3	**Cluster 3: Climate**		
	(a)	Study Fig. 3.1, which shows one way in which wind is formed at coastal areas. Using Fig. 3.1, explain how wind may form in the coastal area shown.	[3]

Fig. 3.1

How wind is formed at a coastal area.



- ***Award 1 mark for each explanation of how wind may form in the area shown to a maximum of 3 marks.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **In the night, the sea, and the air above it lose heat slowly. The warmer air is less dense and rises, forming lower pressure over the sea [1 mark].**
- **The cooler air above the land is denser and sinks, creating an area of higher pressure over the land [1 mark].**
- **Air moves from an area of higher pressure over the land to lower pressure over the sea, forming the land breeze [1 mark].**

	(b)	Study Fig. 3.2, which shows the mean monthly temperatures of two cities, Edinburgh, UK and Moscow, Russia, and Fig. 3.3, which shows their locations.	
	(i)	Use Fig. 3.2 to calculate the annual temperature range for Moscow	[1]

Award 1 mark for annual temperature range.
20^{o} C -(-7.9^{o} C) = 27.9^{o} C or 28^{o} C

	(ii)	With reference to Fig 3.3, explain the difference in the annual temperature range between Moscow and Edinburg.	[5]

- ***Award 1 mark for each explanation of how distance from sea affects summer and winter temperatures in Moscow and Edinburgh.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include:

- **Sea heat up and cools down more slowly [1 mark].**
  - **During winter, the sea is warmer than land, warming the air along coastal areas [1 additional mark].**
  - **During summer, the sea is cooler than land, cooling the air along coastal areas [1 additional mark].**
- **Moscow being in the center of the continent do not experience this moderating effect of the sea [1 mark].**
  - **Therefore, due to maritime effect, Edinburgh has a lower annual temperature range (11 °C) [1 additional mark].**
  - **Moscow has a larger annual temperature range (27.9 °C) due to the continental effect [1 additional mark].**

	(c)	Study Fig.3.4, which show an impact of climate change. Explain two ways in which climate change has impacted the aquatic ecosystems.	[4]

- ***Award 1 mark for each explanation, to a maximum of 2 marks.***
- ***Award a maximum of 1 additional mark for further development of each explanation, where applicable.***

Possible responses include (max 2m each impact):

- **Climate change can result in coral bleaching. The increase in ocean temperature causes algae that live in corals to leave the corals, causing the corals to die [1 mark].**
  - **When corals die, species that depend on the coral reefs will lose their food source and habitat and will thus experience a population decline [1additional mark].**
- **Climate change can lead to ocean acidification. The increase in carbon dioxide emissions leads to oceans absorbing excessive amounts of carbon dioxide, making oceans acidic [1 mark].**
  - **Ocean acidification will threaten aquatic organisms such as mussels and oysters, as their shells will be dissolved by the carbonic [1additional mark].**
- **Climate change will disrupt marine food webs because there will be a change in geographic distribution of aquatic species. Due to warming oceans, aquatic species migrate to areas where temperatures are more favourable, causing increase/decrease in biodiversity [1 mark].**
  - **Food webs will have a change of predators and prey. Species that are not able to adapt will be threatened or have population decline. Some species may flourish due to suitable conditions [1 additional mark].**
- **Slowing down of global ocean circulation reduces the sinking of water at the poles, which separates phytoplankton from nutrients, resulting in a drop in phytoplankton [1 mark].**
  - **Species which feed on phytoplankton will suffer from a lack of food [1 additional mark].**

	(d)	Study Fig. 3.5 (Insert), which shows the greenhouse gas emissions by sector in Australia. Using Fig 3.5, compare the trends in greenhouse gas emissions for each	

		sector in Australia from 1990 to 2019.	[5]

- ***Award 1 mark for each comparison.***
- ***Award a maximum of 1 additional mark for further development of each comparison with data form Fig. 3,5, where applicable.***

Possible responses include:

- **From 1990 to 2019, Green House Gases (GHG) emissions increased the most for Electricity and heat [1 mark].**
  - **from about 145 million tonnes CO2 equivalent in 1990 to 220 million tonnes CO2 equivalent in 2019 [1 additional mark].**
- **From 1990 to 2019, Agriculture is the only sector which experienced an overall decrease [1 mark].**
  - **from about 180 million tonnes CO2 equivalent in 1990 to 125 million tonnes CO2 equivalent in 2019 [1 additional mark].**
- **While both Electricity and heat and Transport had increasing trends, Transport had a much smaller increase [1 mark].**
  - **from 60 million tonnes CO2 equivalent in 1990 to 100 million tonnes CO2 equivalent in 2019 [1 additional mark].**
- **Agriculture had the most inconsistent trend /fluctuating trend [1 mark].**
- **as it had very significant fluctuations between 1998 to 2019, between values of 225 million tonnes CO2 equivalent and 110 million tonnes CO2 equivalent [1 additional mark].**
- **All three sectors experienced an increase in GHG emissions during the period of 1998 to 2001 [1 mark].**
  - **Between 1998 and 2009, GHG emissions in Electricity and heat and Transport increased gradually (+data), while Agriculture fluctuated between (+data) [1 additional mark].**
  - **From 2009 to 2011, Electricity and heat is the only sector with a decreasing trend (+data), while the other 2 sectors had increasing trends (+data) [1 mark].**

End of paper

Table of Specification

Section A	AO1	AO2	A03	Marks
Q1.a	3			
Q1.b	3			
Q1.c	3			
Q1.d (i)			3	
Q1.d (ii)			2	
Sub-Total				14
Q2.a.		4		
Q2.b.		3		
Q2.c.		2		
Q2.d.			9	
Sub-Total				18
(18)				
Q3.a	3			

Q3.b.(i)		1		
Q3.b.(i)		5		
Q3.c.	4			
Q3.d.		5		
Sub-Total				18
	16	20	14	

AO1: Knowledge with Understanding 15%
AO2: Skills and Analysis 20%
AO3: Judgement and Decision-Making 15%
Total 50%