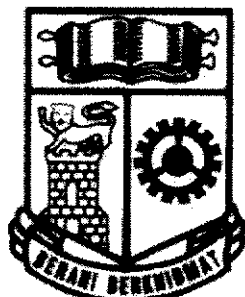


Name: _____ ()

Class: Sec 4/5 ()

Queenstown Secondary School



Preliminary Examination 2021
Secondary Four Express / Five Normal (Academic)
Humanities (Geography)
(2272/2)

27 August 2021
Friday

Time: 0800 - 0940 hrs
Duration: 1hr 40 mins

Instructions to candidates

DO NOT OPEN BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Write your full name, class and index number in the spaces provided on the question paper.
 Write in dark blue or black pen.

Section A

Answer **one** question.

Section B

Answer **one** question.

Section C

Answer **the compulsory** question.

For Examiner's Use	
Section A (13m)	
Section B (12m)	
Section C (25m)	
Total (50m)	

Candidates should support their answers with the use of relevant examples.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.

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

This document consists of 7 printed pages including this page.

[Turn over

Section A

Answer **one** question from this section.

- 1 A group of students were investigating the impacts of tourism on a beach resort in Phuket, Thailand.

Fig. 1 is an environmental perception survey that was designed by the students and Fig. 2 shows the results of the perception survey on locals.

Perception Survey						
Location: Kata Beach, Phuket						
Score						
Negative Aspect	-2	-1	0	+1	+2	Positive Aspect
Very congested with traffic						No congestion at all
Very noisy						Quiet
Heavy littering						Clear of litter
Strong, unpleasant smell						No unpleasant smell
Dangerous, feels unsafe						Completely safe, no dangers around
Groups of tourists crowding the area						No groups of tourists crowding the area

Fig. 1

Results of Environmental Perception Survey taken with 50 locals

Aspects	Score
Traffic Condition	-30
Noise Level	-25
Cleanliness	20
Smell of the area	-10
Safety of the area	10
Crowd	-5

Fig. 2

- (a) Before starting their investigation, the students conducted a pilot survey. Why would a pilot survey be helpful to the students in this investigation? [2]
- (b) The students divided into groups and positioned at regular intervals along the 200 metre beach. They conducted their survey from 10am to 11am on a weekend.

Explain the advantages of using this sampling method. [2]

[Turn over

- (c) (i) Suggest a suitable guiding question that students could use for their investigation. [1]
- (ii) Using evidence from Fig. 2, what conclusions can they draw in response to their guiding question in (i)? [3]
- (d) At the end of their investigation, students thought that it would be good to investigate the economic impact of tourism on the beach resort. Outline the steps they could take to start their investigation. [5]

[Turn over

- 2 A group of students were investigating air pressure and its possible effects on wind speed and temperature.

Fig. 3 below shows the weather data collected over two weeks.

Day	Air Pressure (mb)	Temperature (°C)	Wind Speed (km/h)
1	1007	10	6
2	1008	11	30
3	1013	13	22
4	1020	14	10
5	1021	14	17
6	1020	13	13
7	1013	12	25
8	1014	10	6
9	1020	15	9
10	1024	16	7
11	1018	14	13
12	1012	12	7
13	1014	11	15
14	1016	14	20

Fig. 3

- (a) Other than a weather tracker, identify an instrument used to measure air pressure. [1]
- (b) Comment on the relationship between wind speed and air pressure. [3]
- (c) Suggest how the changes in air pressure and wind speed can be shown in one graph. [2]
- (d) Using evidence from the data collected, write a short conclusion to answer the guiding question 'Does air pressure increase as temperature decreases?' [3]
- (e) Suggest what steps the students would need to take to ensure that the data collected for the investigation was reliable and accurate. [4]

[Turn over

Section B

Answer **one** question from this section.

3 (a) Explain how Singapore's rainfall is affected by monsoon wind. [4]

(b) 'Increasing affluence is the most important reason for growth in global tourism.'

To what extent do you agree with this statement? Use examples to support your answer. [8]

4 (a) Explain how cloud cover affects temperature. [4]

(b) 'Industries is the most important factor leading to the enhanced greenhouse effect.'

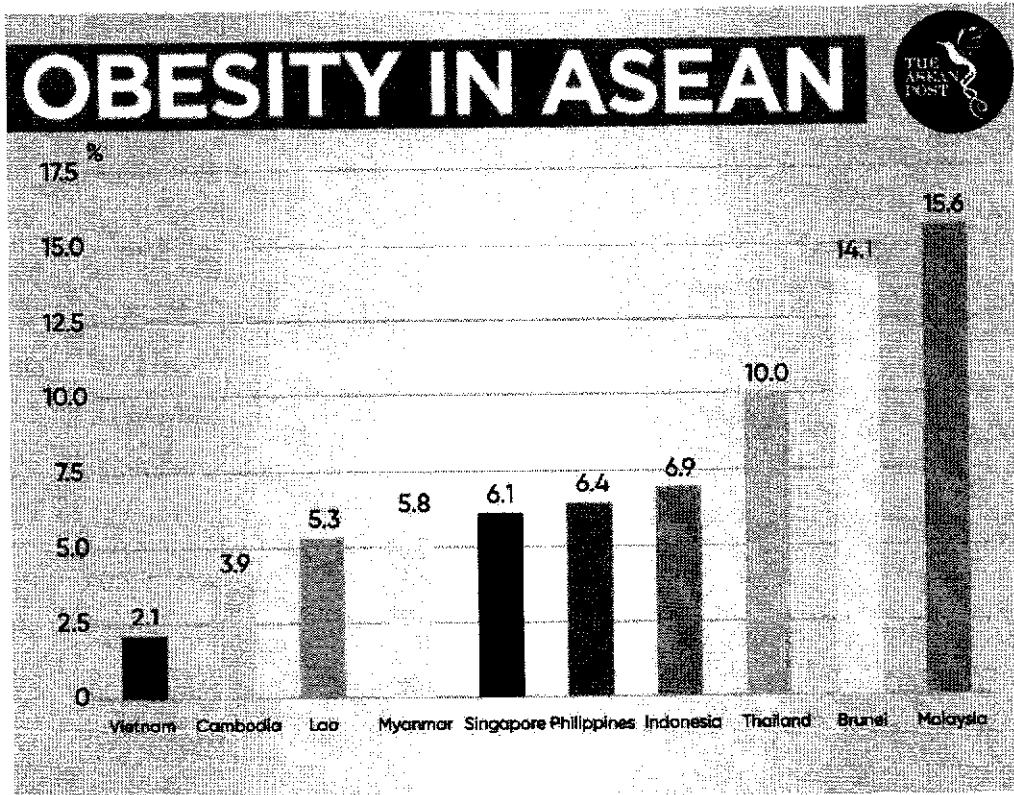
To what extent do you agree with this statement? Use examples to support your answer. [8]

[Turn over

Section C

Answer this compulsory question.

- 5 (a) Study Fig. 4, which shows the level of obesity in countries in ASEAN.



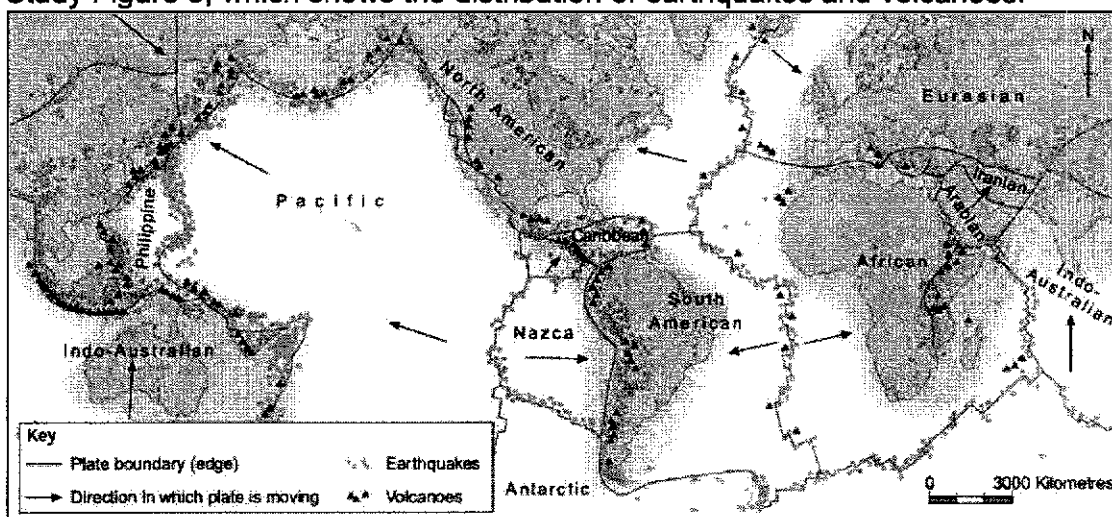
<https://theaseanpost.com/article/obesity-rise-asean>

Fig. 4

- (i) Describe the level of obesity in Asean countries shown in Fig. 4. [3]
- (ii) Explain the variation in the level of obesity experienced in Asean countries. [5]

[Turn over

(b) Study Figure 5, which shows the distribution of earthquakes and volcanoes.

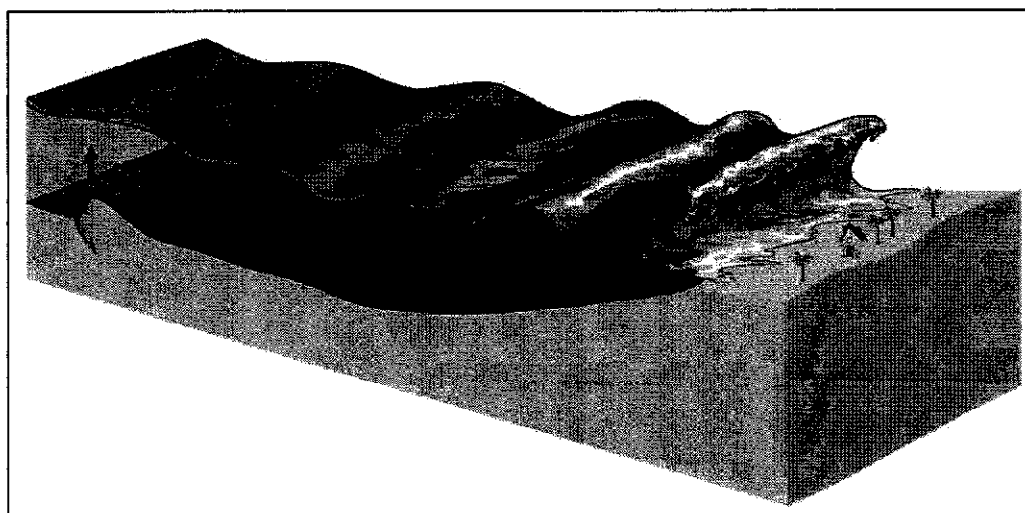


<https://www.thinglink.com/scene/885418315000840192>

Fig. 5

Using Fig. 5, describe the distribution of earthquakes and volcanoes. [4]

(c) Fig. 6 shows the formation of a tsunami.



<https://www.internetgeography.net/topics/>

Fig. 6

With reference to Fig. 6, describe the formation of a tsunami and its impact on people and the environment. [5]

(d) 'Both long and short terms responses could greatly reduce the impacts of the earthquakes.
How far do you agree with this statement? Explain your answer with examples. [8]

End of Paper

[Turn over

**QTSS Sec 4E5N Geography Elective Prelim 2021
Suggested Answer Scheme**

- 1 A group of students were investigating the impacts of tourism on a beach resort in Phuket, Thailand.

Fig. 1 is an environmental perception survey that was designed by the students and Fig. 2 shows the results of the perception survey on locals.

Perception Survey						
Location: Kata Beach, Phuket						
Score						
Negative Aspect	-2	-1	0	+1	+2	Positive Aspect
Very congested with traffic						No congestion at all
Very noisy						Quiet
Heavy littering						Clear of litter
Strong, unpleasant smell						No unpleasant smells
Dangerous, feels unsafe						Completely safe, no dangers around
Groups of tourists crowding the area						No groups of tourists crowding the area

Fig. 1

Results of Environmental Perception Survey taken with 50 locals

Aspects	Score
Traffic Condition	-30
Noise Level	-25
Cleanliness	20
Smell of the area	-10
Safety of the area	10
Crowd	-5

Fig. 2

- (a) Before starting their investigating, the students conducted a pilot survey. Why would a pilot survey be helpful to the students in this investigation? [2]
- It allows the students to have a preliminary testing of their hypothesis which could uncover unanticipated problems (either with the survey questions or the methodology) that could arise.
 - It provides them with some ideas or background knowledge to carry out their investigation with confidence.

[Turn over

- (b) The students divided into groups and positioned at regular intervals along the 200 metre beach. They conducted their survey from 10am to 11am on a weekend.

Explain the advantages of using this sampling method. [2]

- This would allow them to collect data from a wider profile of beach goers.
- As there are many activities that are located along parts of the beach, by positioning at regular intervals, they would reduce biasness in their data.

- (c) (i) Suggest a suitable guiding question that students could use for their investigation. [1]

“Does the development of tourism on the beach resort has a negative impact on the environment?”

Accept other plausible answers.

- (ii) Using evidence from Fig. 2, what conclusions can they draw in response to their guiding question in (i)? [3]

- Yes, the students could conclude that the development of tourism on the beach resort has a negative impact on the environment.
- The data revealed that traffic congestion (-30) and noise level (-25) have the highest negative score, which means that most of interviewees agreed that it is a serious problem.
- This is followed by the place having a smell (-10) and the presence of crowd (-5) making the environment unpleasant.

- (d) At the end of their investigation, students thought that it would be good to investigate the economic impact of tourism on the beach resort. Outline the steps they could take to start their investigation. [5]

- Students could design a questionnaire to collect data from the local people or the business operators at the beach resort.
- They could include questions such as “Have the tourist arrival created more job opportunities etc?” or “Does the tourists bring in more sales?”
- They would decide the locations to collect their data and the sampling method to use.
- They would also need to determine the sample size, time and number of days to collect their data.
- They could research on secondary data relating to economic impacts of tourism from government or other institutions.

[Turn over

- 2 A group of students were investigating air pressure and its possible effects on wind speed and temperature.

Fig. 3 below shows the weather data collected over two weeks.

Day	Air Pressure (mb)	Temperature (°C)	Wind Speed (km/h)
1	1007	10	6
2	1008	11	30
3	1013	13	22
4	1020	14	10
5	1021	14	17
6	1020	13	13
7	1013	12	25
8	1014	10	6
9	1020	15	9
10	1024	16	7
11	1018	14	13
12	1012	12	7
13	1014	11	15
14	1016	14	20

Fig. 3

- (a) Other than a weather tracker, identify an instrument used to measure air pressure. [1]

- Barometer

- (b) Comment on the relationship between wind speed and air pressure. [3]

There is **no relationship** between wind speed and air pressure. When AP was low at 1007mb and 1008mb, WS was 6 and 30km/h respectively. And when AP was high at 1013mb, WS was 25km/h, and at 1020mb WS was 9km/h. Hence, there was no observable trend.

- (c) Suggest how the changes in air pressure and wind speed can be shown in one graph. [2]

Scatter graph.

x-axis: air pressure; y-axis: wind speed

Plot the points and draw a line of best fit

Or Comparative line graph. Left y-axis: air pressure, Right y-axis: wind speed. X-axis: Day. Plot the points and draw two line graphs respectively.

[Turn over

- (d) Using evidence from the data collected, write a short conclusion to answer the guiding question 'Does air pressure increase as temperature decreases?' [3]

Conclusion: AP **does not** increase as temp decreases.

On Day 10 temp was highest at 16°C, AP was 1024mb. As temp decreases to 11°C on Day 13, AP was 1014mb.

Accept other evidence. Answers must show how a drop in temperature resulted in changes in temp.

- (e) Suggest what steps the students would need to take to ensure that the data collected for the investigation was reliable and accurate. [4]

Reliability:

- Collect more data sets daily at fixed interval to monitor the how changes in AP can affect temp and wind speed.
- Collect the data at more than one locations for comparison
- Collect the data over a longer period of time instead of 14 days

Accuracy:

- When taking readings, ensure that there is no parallax error.
- Standardise the equipment for all days to ensure consistency.
- Collect the data in open areas, away from buildings or trees so that data would be accurate
- Collect at least two readings and calculate the average.

- 3 (a) Explain how Singapore's rainfall is affected by monsoon wind. [4]

Singapore experiences higher rainfall in the end of the year especially in December.

- During **winter in northern hemisphere**, the land is cooler (since land loses heat faster than sea) and creates a high pressure area.
- At the same time, **it is summer in the southern hemisphere**, the land is warmer and creates a low pressure area.
- Winds blow from an area of high pressure to an area of low pressure as the NE monsoon winds.
- As the winds blow over land, they are cool and dry and bring little rain to India and Bangladesh.
- Nearer the Equator, they would have crossed oceans (e.g. South China Sea) and picked up moisture there which they deposit in countries like Singapore and Malaysia, bringing rain.

[Turn over

- (b) 'Increasing affluence is the most important reason for growth in global tourism.'

To what extent do you agree with this statement? Use examples to support your answer. [8]

Possible content

I disagree to a large extent that increasing affluence is the most important reason for growth in global tourism. **(Stand)** In my opinion, the most important reason for the growth of global tourism today is the increase in ease of access to information due to developments in technology, followed by the development of package holidays. **(Summarise factors)**

Increasing affluence is an important reason for global tourism as it is a result of an increase in disposable income. **(Point)** Disposable income is the amount of income left after taxes have been paid, or the amount available for spending. With an increase in disposable income, more people are able to improve their quality of life through travelling for various reasons, such as shopping, leisure and relaxation. They may also be able to travel internationally rather than just limit their leisure activities to domestic tourism. **(Explain)** For example, due to **China's rapid development** in the past 30 years, Chinese tourists are the top tourism receipt-generating market in Singapore. In the first quarter of 2014, Chinese tourists alone spent S\$800 million. If current trends of growth continue, it is estimated that by 2030 Chinese tourists will account for a quarter of all international tourism. **(Example)** Hence, increase in disposable income of tourists in general, but also especially the tourists from developing countries such as China, are likely to be the main reason for global tourism more than package holidays. **(Link)**

However, a more important reason for global tourism could be the increase in ease of information due to developments in technology. **(Point)** Previously, most information on travel destinations was available in guidebooks or from travel kiosks. However, since the invention of the World Wide Web in the 1990s, countless travel websites, blogs and travel search engines have made it much easier for tourists to access information and plan their own travels instead of rely on package holidays. **(Explain)** For example, **TripAdvisor, a website that reviews travel accommodation and tourist attractions, generated 730 million user reviews in 2018 alone**, allowing tourists to stay up-to-date about the service, opening hours and maintenance of attractions and plan their own holidays. **(Example)** As the Internet continues to develop, package holidays are likely to be overtaken by the ease of access to information as the main reason for global tourism. **(Link)**

Another important reason is the development of package holidays is one of the reasons for the growth of global tourism as it allows tourists to enjoy multiple tourist attractions at attractive prices. **(Point)** Tourists do not have to conduct much research or make much travel arrangements when they

[Turn over

participate in package tours, which typically include accommodation, transport (both plane tickets and transport within the travel destination), tour guides, local translation and interpretation services and even some or all of the meals. This attracts more tourists to travel internationally to countries where they may not even speak the language. **(Explain)** For example, **large companies such as Thomas Cook** organise package tours to various attractions in Jamaica including Montego Bay, fishing tours at Port Antonio and golf courses. A record 4.3 million visitors arrived in 2017, with many from origin countries in Europe and North America visiting Jamaica because of the tour packages. **(Example)** Hence, the development of package holidays is one of the reasons for the growth of global tourism. **(Link)**

Conclusion: In conclusion, in globalisation world where technology is increasing becoming part of daily lives, the most important reason for global tourism growth is the development of technology leading to ease of access to information, **(Stand)**

4 (a) Explain how cloud cover affects temperature.

[4]

Presence of cloud cover

- During the day, the presence of cloud over shields (block) off some of the incoming shortwave solar radiation and prevents the land from heating up excessively. Temperature would not increase greatly.
- At night, the cloud cover traps longwave radiation and temperature drops slightly by a few degrees only.
- Thus, the presence of cloud cover can result in a small (diurnal) daily temperature range.

Without presence of cloud cover

- During the day, most of the incoming shortwave solar radiation reaches the Earth's surface, heating it up excessively, resulting in very high day temperature.
- At night, there are no clouds to trap outgoing longwave radiation which escapes into space.
- As such, temperature drops drastically, resulting in very low night temperature.
- Thus, without cloud cover most places would generally has a large daily temperature range.

[Turn over

- (b) 'Industries is the most important factor leading to the enhanced greenhouse effect.'

To what extent do you agree with this statement? Use examples to support your answer.

[8]

Possible content

I disagree with the statement that industries is the most important factor leading to the enhanced greenhouse effect. There are other reasons like deforestation and agriculture that contribute to enhanced greenhouse effect.

Firstly, industry is also an important reason for enhanced greenhouse effect.

[Point]

Industries refer to the production of goods and services within a country. **[Definition]**

Some industrial economic activities such as manufacturing, involve the burning of fossil fuels that results in greenhouse gas emissions. Greenhouse gases are also released by the production of goods like mobile phones and computers. According to a research, Manufacturing a mobile phone releases 60 kg of CO₂. **[Explanation]** In the past, most CO₂ emissions from industrial processes were found in Europe, and north and central America because of their heavy manufacturing activities. In recent years, countries such as China and India are also contributing more to global carbon dioxide emissions due to their rapid industrialization. The Data shows that in 2012, the industries of China contributed 5000000 thousand tonnes CO₂. **[Example]** Therefore, the **increase in greenhouse gases** emitted means that **more heat will be trapped** resulting in **an increase in global temperature**. **[Link]**

For example, according to a research, Indonesia, which is a country of Southeast Asia. Its deforestation peaked at 840,000 hectares in 2012, twice the size of Brazil. It contributed to a large amount of carbon dioxide. **[Example]** Thus, less carbon dioxide absorbed and **more** carbon dioxide being released **trapping more heat** leading to the **enhanced greenhouse effect**. **[Link]**

However, deforestation is also an important factor for enhanced greenhouse effect. **[Point]**

It refers to the loss of forests due to the removal or clearance of trees in the forested areas. **[Definition]**

Forests absorb billions of tonnes of carbon dioxide every year via photosynthesis, so taking in a significant amount of global greenhouse gas emissions. As trees are felled for wood to make products such as paper and beauty materials or removed to clear the area for mining activity, the planting of crops and the construction of infrastructure. There are fewer trees to

[Turn over

absorb carbon dioxide, leading to an increase in carbon dioxide levels in the atmosphere.

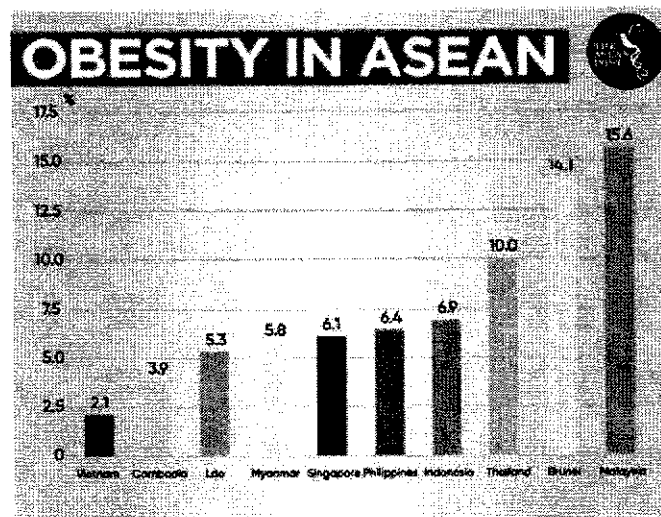
Furthermore, deforestation also exposes soil to sunlight. This increases soil temperature and the rate of carbon oxidation in the soil. Carbon oxidation is a process by which carbon in the soil reacts with oxygen in the atmosphere to produce carbon dioxide. As such, deforestation increases the rate at which carbon dioxide is released from the soil into the atmosphere. [Explanation]

Besides industries and deforestation, agriculture is also an important factor leading to the enhanced greenhouse effect. It refers to farming crops and rearing of animals for food. During farming, tractors run on fossil fuels which releases CO₂. Use of inorganic fertilisers increases nitrous oxide in soil which is released during ploughing. Cattle farming releases a lot of methane as waste gas. **For example**, researchers at the national institute of agricultural technology in Argentina measured about 1000 to 8000 litres of methane produce by a single cow in a day. Therefore, agriculture contributes more CO₂, nitrous oxide and methane into the atmosphere. More of these greenhouse gases released means more heat is trapped in the atmosphere, enhancing the greenhouse effect.

Conclusion:

In conclusion, I do not agree with the statement that industries is the important factor leading to the enhanced greenhouse effect. Although it is an important factor for enhanced greenhouse effect, there are other significant factors such as deforestation and agriculture. They all contribute to the enhanced greenhouse effects. Hence, agriculture is not the main reason for enhanced greenhouse effect.

- 5 (a) Study Fig. 4, which shows the level of obesity in Asean.



<https://theaseanpost.com/article/obesity-rise-asean>

Fig. 5

[Turn over

- (i) Describe the level of obesity in Asean countries shown in Fig. 4. [3]
- Low level of obesity is observed in Vietnam and Cambodia which have less than 5% of the population being obese.
 - Malaysia, Brunei and Thailand have high level of obesity at 15.6%, 14.1% and 10% respectively.
 - Indonesia, Singapore, Philippines and Myanmar experienced moderate/medium level of obesity (5-7%)

Accept any plausible answers. Answers must have at least two categories (high vs low) in description of obesity levels.

- (ii) Explain the variation in the level of obesity experienced in Asean countries. [5]

High level of obesity:

The improving economic growth in these countries could have brought about **lifestyle changes**, which in turn have led to a shift to more unhealthy diets, leading people to adopt a diet of fast food that is low in cost and low in nutritional value.

Or lifestyle changes such as poor diets (high in fats and sugar) and less physical activities (e.g. exercising) could be contributing factors.

Moderate/Medium level of obesity (Singapore especially):

In Singapore the low level of obesity could be attributed to government intervention which can positively help in tackling obesity. There have been much public education on healthy eating habits and adopting an active lifestyle.

Low/Moderate level of obesity:

Vietnam and Cambodia may be suffering from **rising food prices / rising costs of healthy food and food scarcity** in such less developed nations. With rising food prices, especially in healthy food, this could have dented the purchasing power of many low income families. They would buy less food resulting in lower food consumption.

Most of the Asean countries like Indonesia, Philippines, Vietnam and Myanmar could have less disposable incomes to begin with and hence they do not have excess food consumption.

[Turn over

(b) Study Figure 5, which shows the distribution of earthquakes and volcanoes.

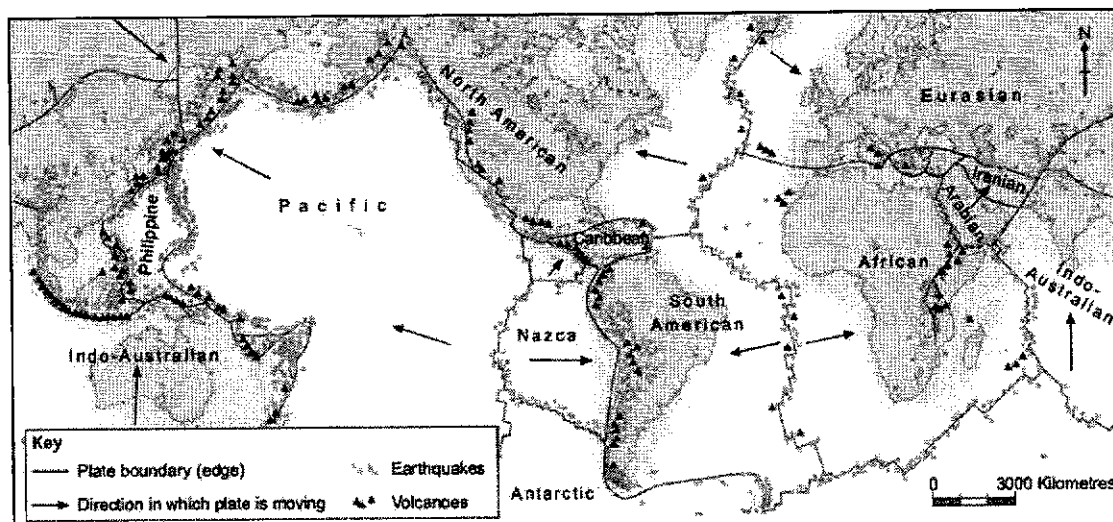


Fig. 5

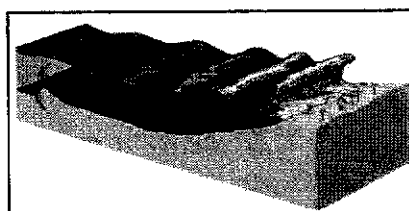
Using Fig. 5, describe the distribution of earthquakes and volcanoes.

[4]

- EQ and Volcanoes are found along convergent plate boundaries of
 - Eurasian and Indo-Australian Plates, on Sumatra and Java islands
 - Pacific and Philippines Plates,
 - Pacific and North American Plates, on the west coast of N. America continent
 - Pacific and South American Plates, on the west coast of S. America continent
 - Pacific Ring of Fire (found along the edge of Pacific ocean)
- Volcanoes are also distributed in the middle of the Atlantic Ocean along the divergent plate boundaries of
 - North American and Eurasian Plates and
 - South American and African Plates
- Volcanoes can also be spotted in the middle of the Pacific Ocean
- Volcanoes are also distributed in the East African Rift Valley zone

Accept other plausible answers.

(c) Fig. 6 shows stages in the formation of a tsunami.



<https://www.internetgeography.net/topics/>

Fig. 6

[Turn over

With reference to Fig. 6, describe the formation of a tsunami and its impact on people and the environment. [5]

Formation [3m]

- When an earthquake, volcano or landslide happens on the ocean floor, water is displaced.
- This water forms the start of the tsunami and is undetected in deeper oceans
- When the waves reach shallow water, the height can increased by several metres
- As approaching shallower waters experience greater friction and slow down the waves and force them to increase in height.

Impacts [2m]

- Tsunami can cause damage to coastal communities in many countries. The most damage was experienced in the low-lying coastal areas where houses could be swept inland and out to sea resulting in loss of lives and property. Many survivors would be left homeless and suffering from post-traumatic stress.
- Tsunami can great modify the physical environment where is can change the entire coastlines. Damage to infrastructure such as water treatment plant or transportation routes can cause disruption of services.

- (d) 'Both long and short terms responses to the effects of earthquakes could greatly reduce its damage.'

How far do you agree with this statement? Explain your answer with examples. [8]

Possible content

Short-term response

- Sending a Search and Rescue effort
One effective response to minimise fatalities after an earthquake event is a short-term response of sending in a search and rescue team. After an earthquake, there will be survivors or injured who are trapped beneath the rubbles and are in need of assistance, the search and rescue team will be responsible in locating and uncovering them. **This response will reduce fatalities as the trapped survivors can receive the timely medical treatment that they require as well as avoid being crushed by the buildings should they collapse from subsequent aftershocks.**

An example is in Tohoku, Japan in 2011, where sniffer dogs and heat sensors were also deployed in the search team, where they successfully rescued many who were trapped. However, as people are unlikely to survive after 72hours/three days without water, the rescuers have only a limited amount of time to locate and free the survivors. Also, the possibility of

[Turn over

aftershocks will still be high after the earthquake event, threatening the lives of the rescue teams as well.

- Provision of Emergency, food and medical supplies
Issuing first aid to victims and supplying necessities to earthquake torn areas. Pacify victims and help them to cope with the situation emotionally. Set up medical treatment centres/shelters which could save lives. Humanitarian aid and donations from other countries who want to assist in the relief efforts. Mobilised rescue operations to search for survivors and minimise the total death toll.

Long-term response

- Provision of health care
One effective response to minimise fatalities after an earthquake event is a long-term response of providing health care for the survivors. Health options such as long-term counselling are provided to the survivors of the earthquake events. These survivors could have lost their loved ones, homes or jobs and are experience a traumatic period of their lives. **Through this response, problems are identified early and addressed, helping the survivors cope with their emotional loss and moving on with life successfully and positively.** An example is in Christchurch, New Zealand, in 2011, where a great number of health workers were deployed in the area to help the survivors cope with problems such as anxiety and depression. However, the process of restoring the resilience of people after an earthquake can be very challenging as they may continue to face a shortage of important basic services such as water and food.
- Rebuilding of infrastructure to be earthquake resistant
For example, developed countries like Japan are able to construct seismically isolated buildings which utilize devices such as elastomeric isolators, sliders, rotating ball bearings and dampers to absorb and reduce the energy of vibration during an earthquake.
For example, Taiwan has also constructed earthquake resistant buildings like **Taipei 101** which features a shock absorbing base and pillars, coupled with a large counterweight which acts against the movement of an earthquake to keep the building from swaying too much.

Possible conclusion

Both long and short term responses are effective in minimising the effects of earthquakes and reducing its impacts. Long term responses can minimise the damage incurred from future earthquakes by building infrastructure and implementing evacuation drills. Short term responses are effective in managing the immediate effects of an earthquake and if implemented successfully, can minimise the number of deaths related to secondary impacts of earthquakes such as fires and the spread of diseases.

[Turn over

