Name of Candidate: _____ ( ) Class: _____

BUKIT PANJANG GOVERNMENT HIGH SCHOOL

Preliminary Examinations 2016

Secondary 4 Express

Geography **2236/01**

Paper 1

Date:
16th August 2016
Duration:
1 Hour 40 minutes
Time:
1115 – 1255

Additional Material (s):
Insert 1, Answer Paper and Graph Paper

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.

Write in dark blue or black on both sides of the paper.
You may use a soft pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

This paper consists of two sections: **Sections A** and **B**.
Section A (25 marks)
Answer **Question 1**

Section B (25 marks)
Answer **ONE** question.

Write all answers on the foolscap papers provided.
Candidates are encouraged to support your answers with the use of relevant examples.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.
The insert contains Figure 1 for Question 1 (ai), Figure 2 for Question 1 (bi), Figure 4 and 5 for Question 2 (ai), Figure 6 for Question 2 (b), Figure 9 for 3 (b), Figure 10A and Figure 10B for 3 (c)

Leave at least one line after each part of a question.
Begin each question/ section on a FRESH PIECE of paper.

At the end of the examination, fasten all your work securely together.
Submit Section A and Section B separately.
The number of marks is given in brackets [ ] at the end of each question or part question.

Setter: **[Turn over]**

Section A (25 marks)

This question is compulsory.

(a) A group of BPGHS students went overseas for fieldwork to investigate the effects of coastal erosion and value of tourism to New Zealand. The area of study is shown in Figure 1 (Insert).

(i) Draw an annotated field sketch of the field site shown in Figure 1. [4]

(ii) What information would students need on the day to ensure their safety before starting on their field sketch? [2]

(b) Study Figure 2 (Insert) which shows a section of a coastline, and Table 1, which shows the average length of the long axis of beach material collected along a transect X – Y.

Results of sampling of the size of beach material

Sampling Site	1	2	3	4	5	6
Distance from X (m)	0	1	2	3	4	5
Average length of long axis (mm)	40	28	22	35	12	12
Beach slope (◦)	7	8	10	6	11	13

Table 1

(i) Describe how the data in Table 1 was collected using a quadrat. [5]

(ii) The students' hypothesis for the fieldwork is "The further the distance from X, the smaller the average length of the sediments' long axis." Evaluate the validity of the hypothesis by quoting evidence from Table 1. [4]

(c) The students also decided to investigate the impacts of tourism on the residents of New Zealand. Their hypothesis is: Tourism has brought about positive impacts to the residents.

(i) A bipolar survey on the impacts of tourism in selected attractions A to E was conducted by the students. The scoring sheet for the survey is provided in Figure 2, while the tabulated results are provided in Figure 3.

Scoring sheet for the survey of the impacts of tourism

	-2	-1	+1	+2	
Lots of litter					Free from litter
Poorly-maintained pavements					Well-maintained pavements
Poor lighting					Good lighting
Poor traffic management					Good traffic management
Lacks seating areas					Seating areas
Absence of tourist-related shops					Tourist-related shops
Absence of tourist services/attractions					Tourist services/attractions

Figure 2

	Site A	Site B	Site C	Site D	Site E
Litter	+1	+1	+2	+1	+1
Maintenance of pavements	+2	+2	+2	+2	+1
Lighting	+2	+2	+2	+2	-1
Traffic Management	+1	+1	+1	-1	-2
Seating areas	-2	-1	-2	-2	-2
Tourist-related shops	+1	+2	+2	+1	+1
Tourist-related services/attractions	+1	+1	+1	+1	+1
Total Score	+6	+8	+8	+4	-1

Figure 3

Describe how the students could collect, record and present this information presented in Figure 2 and 3. [4]

(ii) Do the results in Figure 2 and 3 suggest that the impact of tourism has been largely positive in attractions A to E? Explain your answer with the support of evidence from both Figure 2 and 3. [4]

(d) The students decided to use systematic sampling while testing their hypothesis. Explain why this sampling method may not be as reliable. [2]

Section B (25 marks)

Answer one question from this section.

(2a) Study Figure 4 and 5 (Insert), which shows a stretch of coastline in Collaroy Beach, Sydney.

(i) Describe the coastline shown in Figure 4. [3]

(ii) With reference to Photographs 4 and 5, explain how the fragile nature of the coastline poses challenges for humans living in the area. [4]

(b) Study Figure 6, which shows a peaceful protest by Australians against the use of fossil fuels in a bid to save the Great Barrier Reef.

With reference to Figure 6 as well as studies you have learnt, explain the pressures faced by coral reefs around the world. [4]

(c) Refer to Figure 7 which provides information about tourism in Barcelona, Spain.

> It's happening here in Barcelona, a city of 2 million inhabitants that hosted 7.5 million tourists last year. The city government has said that it wants to increase this to 10 million visitors per year.
>
> These mind-boggling figures have led to open conflict this summer. In tourism hotspots of the city, the scale of visitor numbers is affecting not only residents' quality of life, but their very ability to live in the area.
>
> This summer, in La Barceloneta, the city's historical coastal neighbourhood, there have been assemblies, protests and tensions as locals clashed with tourists. The residents are frustrated with the dirt, noise and the rowdiness of drunk tourists who have outnumbered them in their own neighbourhood.
>
> An over-reliance on the service sector has led to the exploitation of tourism by the city.

Figure 7

With reference to Figure 7 and your own knowledge, discuss how tourism has impacted the people and economy of Barcelona. [6]

(d) 'The economic benefits derived from tourism outweigh the costs it brings to a country.'

With the support of examples, assess the accuracy of this statement. [8]

(3a) Study Figure 8, which provides information of the changes in the different profile of tourists from China from 2001 to 2011.

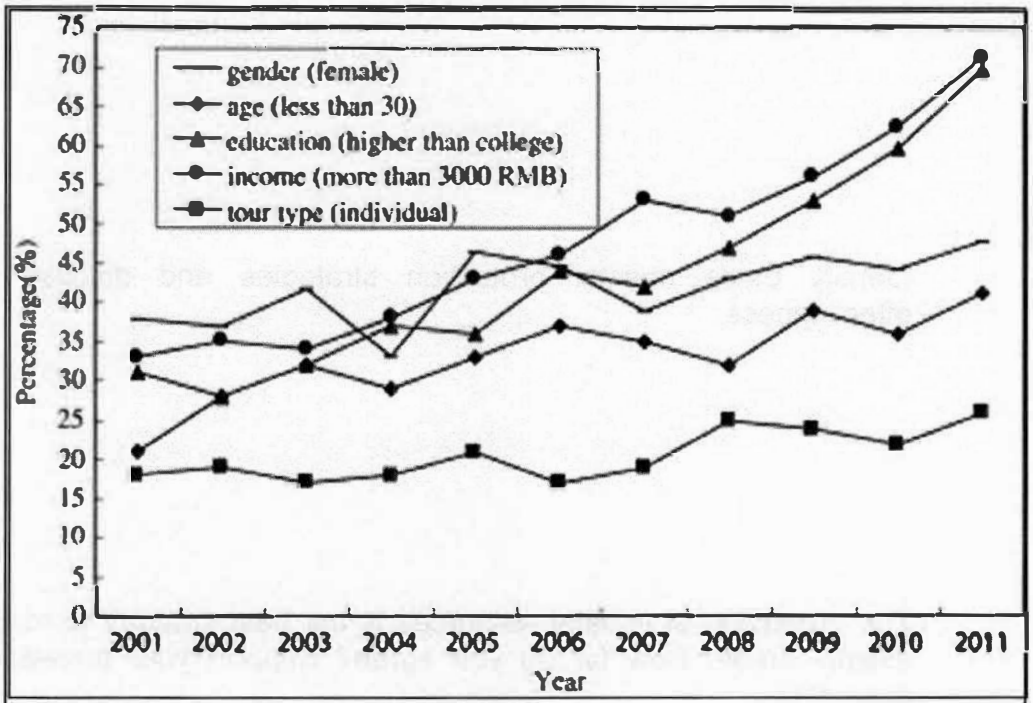

Figure 8

(i) Compare the changes of the different profiles of tourists as shown in Figure 8. [3]

(ii) Account for these changes. [4]

(b) Figure 9 (insert) shows an island before and after the development of tourism.

With reference to Figure 9, discuss the impacts caused by the growth of tourism to the locals. [4]

(c) Figure 10A and 10B (insert) show two coastal protection methods.

Identify these coastal protection strategies and discuss their effectiveness. [6]

(d) The protection of coastal resources is the best strategy to manage coastal areas. How far do you agree? Support your answer with examples. [8]

- End of Paper 1 -

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Preliminary Examinations 2016

Secondary 4 Express

Geography

Paper 1

2236/01

Date:
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1 Hour 40 minutes
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1115 – 1255

INSERT

Setter:

[Turn over]

This paper consists of 7 printed pages

Figure 1 for Question 1(ai)

Figure 1

Figure 2 for Question 1(bi)

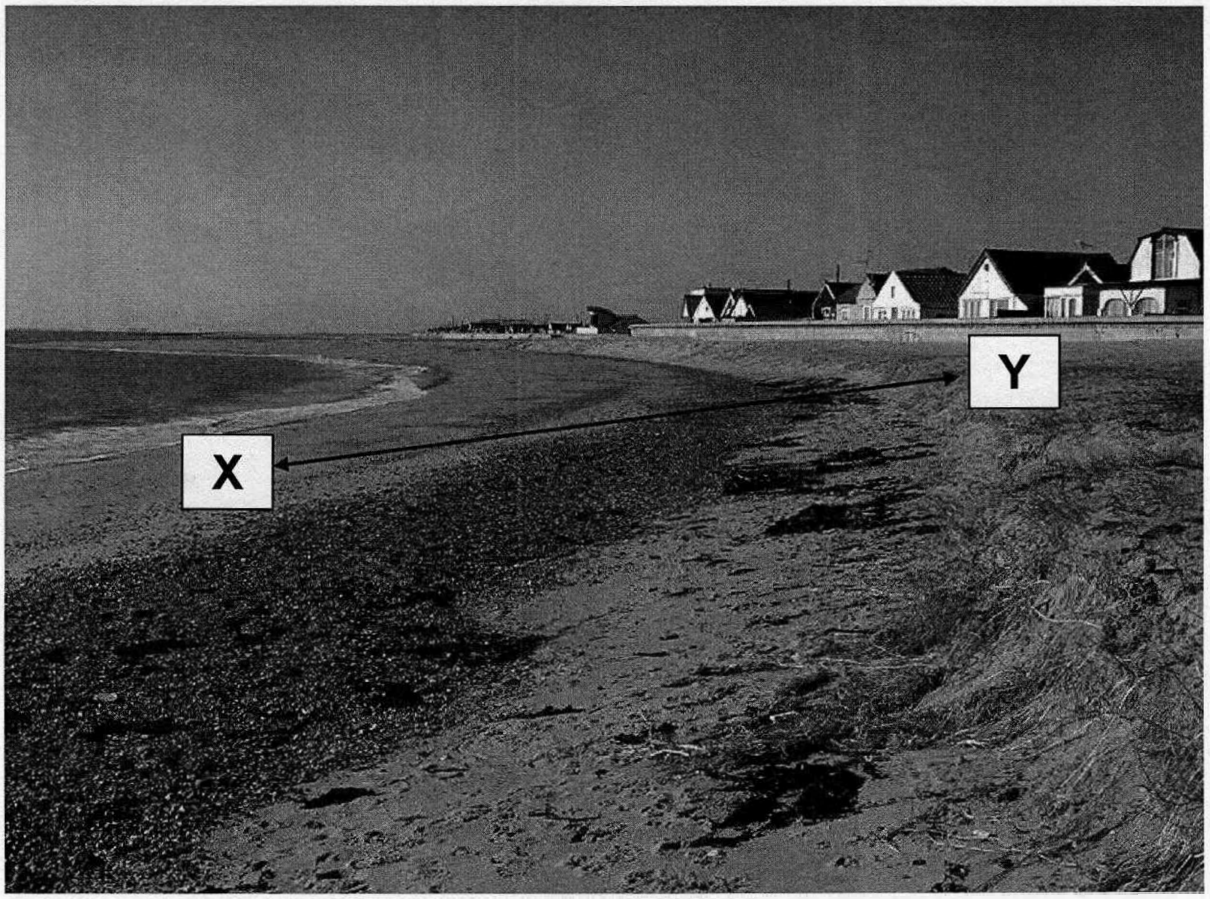

Figure 2

Figure 4 and 5 for Question 2(ai)

Figure 4

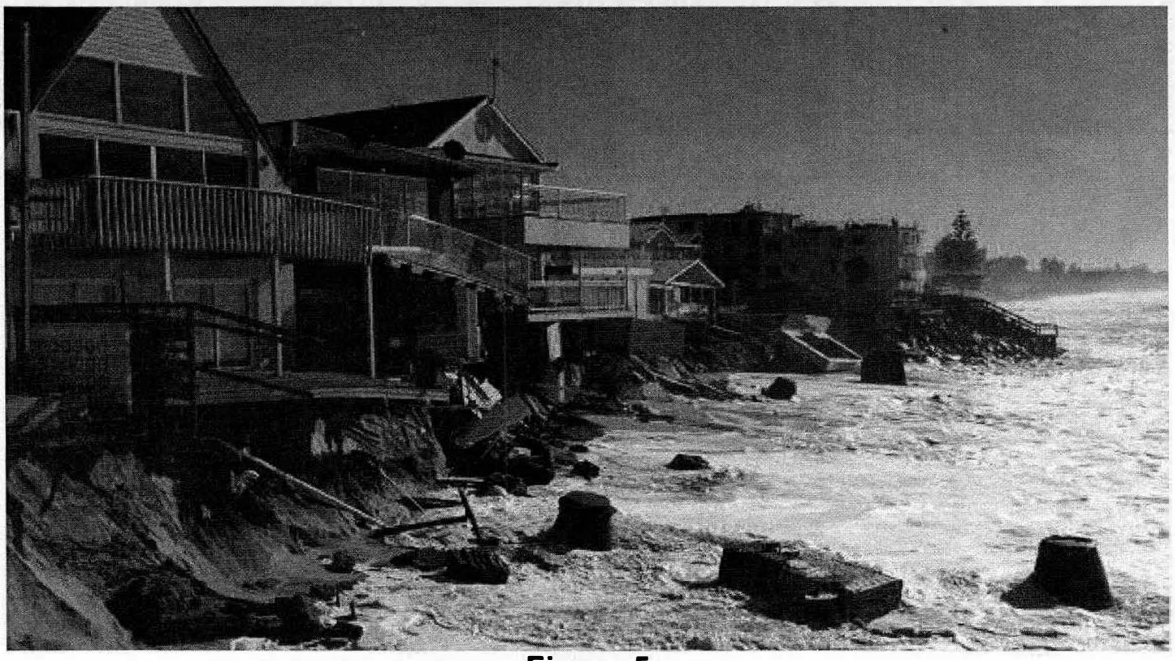

Figure 5

Figure 6 for Question 2 (b)

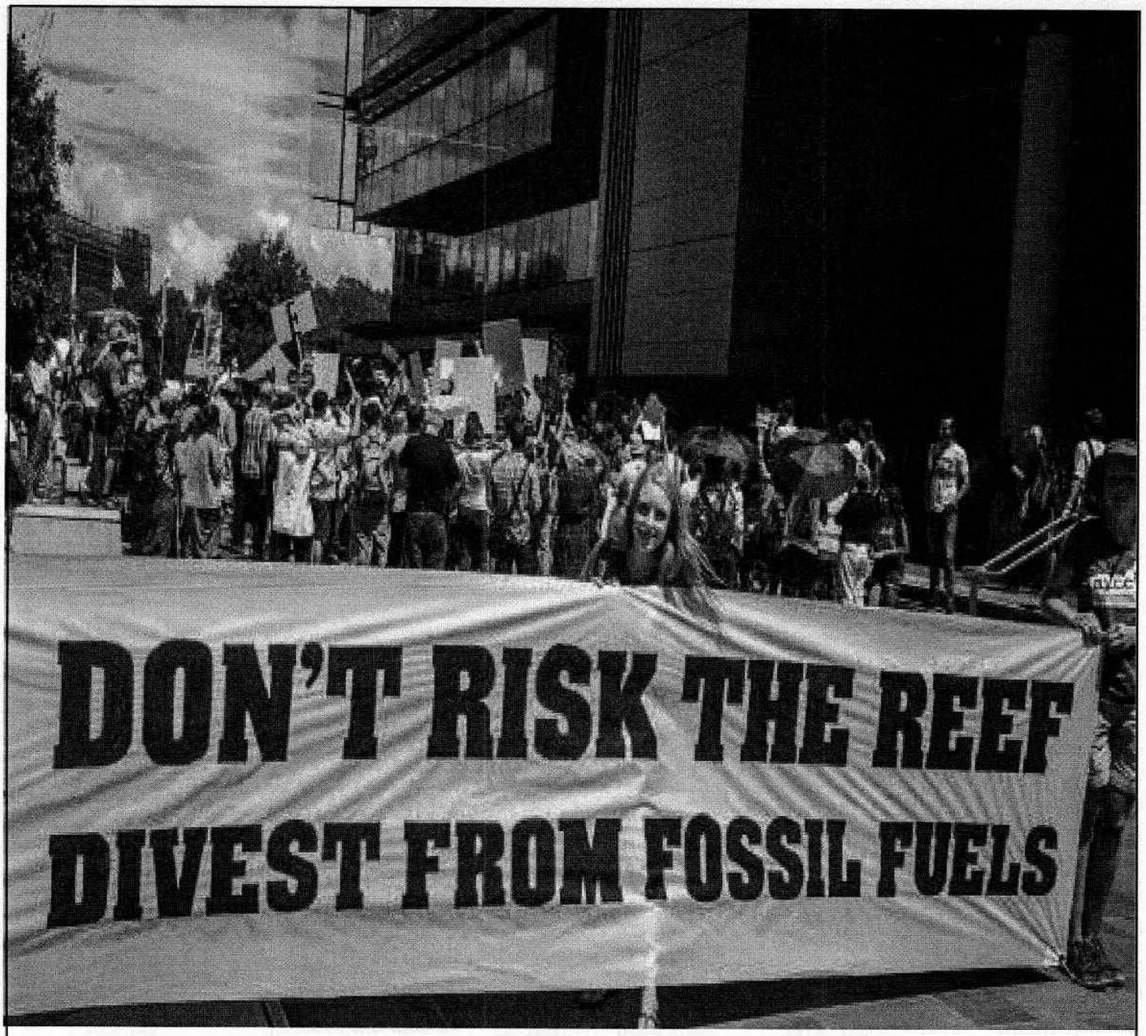

Figure 6

Figure 9 for Question 3 (b)

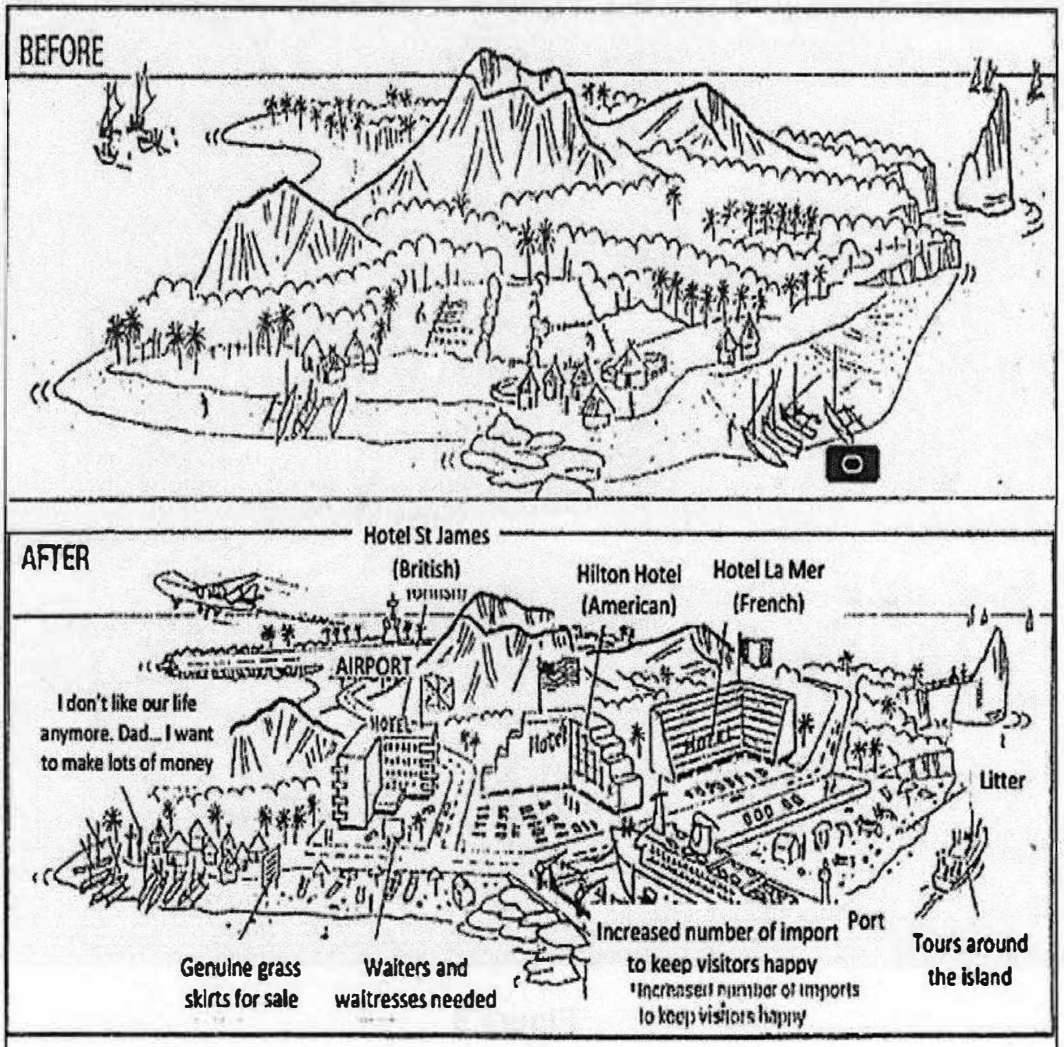

Figure 9

Figure 10A and 10B for Question 3 (c)

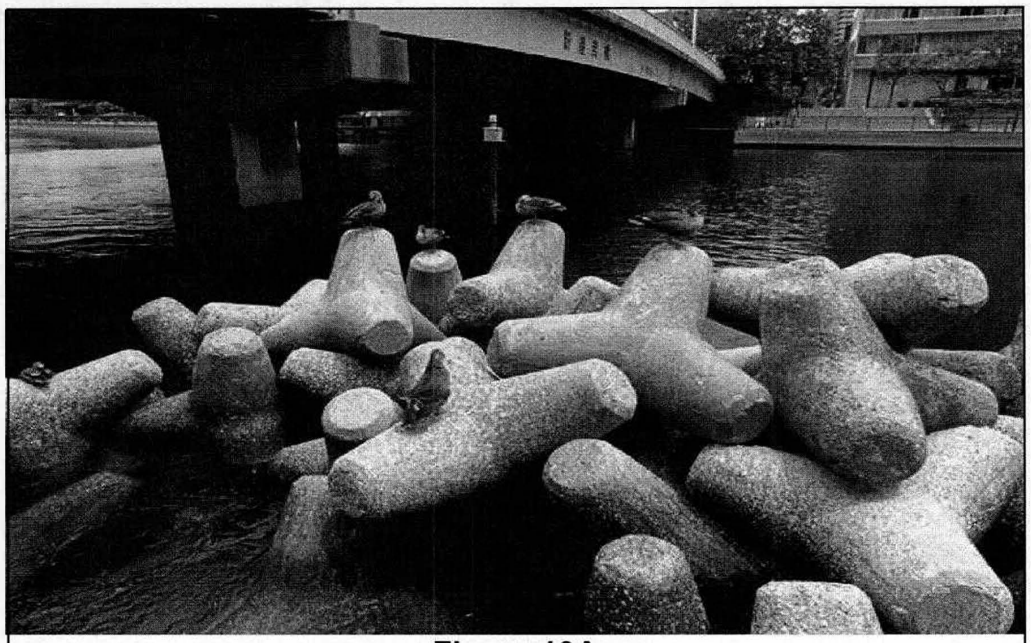

Figure 10A

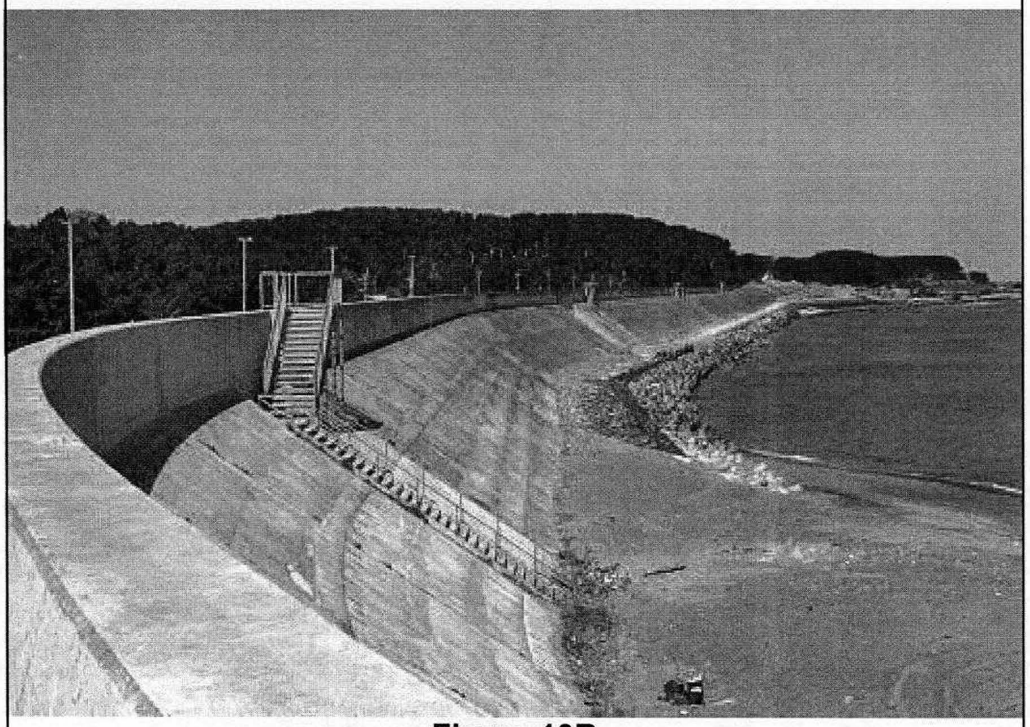

Figure 10B

Name of Candidate: _____ ( ) Class: _____

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Setter: Mr. Fabian Yong **[Turn over]**

This paper consists of **19** *printed pages.*

Section A (25 marks)

This question is compulsory.

(a) A group of BPGHS students went overseas for fieldwork to investigate the effects of coastal erosion and value of tourism to New Zealand. The area of study is shown in Figure 1 (Insert).

(i) Draw an annotated field sketch of the scenery shown in Figure 1. [4]

- Arch
- Stack
- Steep cliffs
- Headlands and bays in the background
- Some parts (Foreground) of the mainland are filled with grass
- Cap at 1 mark for sketch without annotations (only labelled)
- **Annotate with reference to the photograph (not annotating with 3 separate diagrams)**

(ii) What information would students need on the day to ensure their safety before starting on their field sketch? [2]

- Tide times (times of high tide/low tide)
- Wind conditions/size of waves
- Weather conditions (too cold, too hot or too wet for fieldwork)
- Whether the cliffs are dangerous (prone to landslides)
- Other information on beach safety
- **Answers pertaining to during and after field sketch are not accepted**

(b) Study Figure 2 (Insert) which shows a section of a coastline, and Table 1, which shows the average length of the long axis of beach material collected along a transect X – Y.

Results of sampling of the size of beach material

Sampling Site	1	2	3	4	5	6
Distance from X (m)	0	1	2	3	4	5
Average length of long axis (mm)	40	28	22	35	12	12
Beach slope (°)	7	8	10	6	11	13

Table 1

(i) Describe how the data in Table 1 was collected using a quadrat. [5]

- The quadrat is placed at various points of the beach along the transect
- A sample of 10-15 pebbles/stones of beach material is measured
- It is measured along the long axis using the Vernier calipers
- Measurement is done with a ruler when necessary
- The location of stones within the quadrat is chosen using random sampling method
- The average length is then calculated

(ii) The students' hypothesis for the fieldwork is "The further the distance from X, the smaller the average length of the sediments' long axis." Evaluate the validity of the hypothesis quoting evidence from Table 1. [4]

- Valid
- Evidence: At 0m, the average length was 40mm, and it generally decreased to 12mm at 5m
- For sampling sites 5 and 6, the average length then remained constant at 12mm respectively.
- **However, with the exception of sampling site 4, where it is located 3m from transect X, the average length was 35mm.**

Award 1m for stating valid
Award 1m for evidence

(c) The students also decided to investigate the impacts of tourism on the residents of New Zealand. Their hypothesis is: Tourism has brought about positive impacts to the residents.

(i) A bipolar survey on the impacts of tourism in selected attractions A to E was conducted by the students. The scoring sheet for the survey is provided in Figure 2, while the tabulated results are provided in Figure 3.

Describe how the students could collect, record and present this information presented in Figure 2 and 3. [4]

Collect and record

- Details regarding how and where to position of students (attractions), and sampling methods
- Jot down responses of locals on copies of bipolar survey prepared beforehand

Present:

- Total up the scores
- Use standard bar graph showing positive and negative to present the findings.

(ii) The students also decided to investigate the impacts of tourism on the residents of New Zealand. Their hypothesis is: Tourism has brought about positive impacts to the residents.

Do the results in Figure 2 and 3 suggest that the impact of tourism has been largely positive in attractions A to E? Explain your answer with the support of evidence from both Figure 2 and 3. [4]

- Yes, Figure 3 suggests that the impact of tourism has been largely positive in the selected tourist sites.
- The perception score at most sites are positive, ranging from +4 to +8.
- Tourism has not resulted in severe environmental issues like littering and traffic congestion based on the +1 to +2 scores.
- **Exceptions** at Site E where tourists reported a negative score (-1) for the site.
- **Exceptions** for the provision of seating areas. Tourists at all 5 sites gave it a negative score.

(d) The students decided to use systematic sampling while testing their hypothesis. Explain why this sampling method may not be as reliable. [2]

- A systematic sampling method (e.g. interviewing every 5th person) may not be as reliable as it may result in biased results as not all members of the community have a chance of being selected.
- This method may also lead to an under or over representation of opinions of a particular community/ population.

Section B (25 marks)

Answer one question from this section.

(2a) Study Figure 4 and 5 (Insert), which shows a stretch of coastline in Collaroy Beach, Sydney.

(i) Describe the coastline shown in Figure 4. [3]

- Steep coastal cliff/escarpment
- Jagged/rocky cliff face
- Presence of horizontal rock joints at base of cliff
- Some rocky debris/rubble at base of cliff
- Gently sloping beach at base of cliff, with sand deposits

(ii) With reference to Photographs 4 and 5, explain how the fragile nature of the coastline poses challenges for humans living in the area. [4]

- Road/footpath eroded, damaged and cut off → makes access difficult for the people living in the area/require alternative access transport routes to be developed **(photographic evidence)**
- Houses, buildings and other property near the cliff may be damaged as the cliff continues to slump and retreat backwards → householders may suffer economic losses/rendered homeless **(photographic evidence)**
- Fences to property may be destroyed in parts where they collapse together with the eroded cliff → pose security risk to homeowners **(photographic evidence)**
- Exposure of underground service lines such as electricity/telephone/water → damage of communications/electricity/water supplies which will disrupt the domestic and other activities of the people living there
- Exposure of underground service lines such as electricity/ telephone/water → requires maintenance/replacement cost

Award 1 mark per point of suggestion explained, up to a maximum of 4 marks.
If no photographic evidence is provided, cap at 2 marks.
Not accepted → (Living near at or near the coast, a tsunami will affect the residents and result in the loss of lives)
Candidates are to note that the threat of tsunami is ever-present when one decides to make the coast his/her place of residence.

(b) Study Figure 6, which shows a peaceful protest by Australians against the use of fossil fuels in a bid to save the Great Barrier Reef.

With reference to Figure 6 as well as studies you have learnt, explain the pressures faced by coral reefs around the world. [4]

Pressure highlighted in Figure 6
Climate change (global warming)
- Burning of fossil fuels by industries lead to the increase in greenhouse gases such as carbon dioxide
- That may result in global warming which results in higher sea temperatures and sea levels
- Higher sea temperatures result in the loss of algae
- Leading to coral bleaching

Others based on studies made
Tourism
- Anchoring of boats
- Trampling by snorkelers, divers
- Untreated waste discharge into waters, pollution
- Erosion caused by construction of tourism infrastructure leading to siltation

Fishing
- Overfishing leading to upsetting of delicate coral ecosystem
- Destructive fishing methods such as dynamite blasting, use of cyanide, spearfishing

Agriculture
- Pesticides, fertilisers polluting the seawater

2marks max per point with elaboration
Candidates are capped at 3 marks if reference to Figure 6 is not made.

(c) Refer to Figure 7 which provides information about tourism in Barcelona, Spain.

> It's happening here in Barcelona, a city of 2 million inhabitants that hosted 7.5 million tourists last year. The city government has said that it wants to increase this to 10 million visitors per year.
>
> These mind-boggling figures have led to open conflict this summer. In tourism hotspots of the city, the scale of visitor numbers is affecting not only residents' quality of life, but their very ability to live in the area.
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> This summer, in La Barceloneta, the city's historical coastal neighbourhood, there have been assemblies, protests and tensions as locals clashed with tourists. The residents are frustrated with the dirt, noise and the rowdiness of drunk tourists who have outnumbered them in their own neighbourhood.
>
> An over-reliance on the service sector has led to the exploitation of tourism by the city.

Figure 7

With reference to Figure 7 and your own knowledge, discuss how tourism has impacted the people and economy of Barcelona. [6]

- Increase in number of foreign tourists will bring in income, foreign currency and increase the GDP which means money can be spent on areas such as health, education and transport which can help Barcelona develop.
- More jobs also means the government gain income from taxes to spend elsewhere and hence the city is keen to increase tourists numbers
- Exploitation of the people as cheap labour due to tourism where people work low hours with low wages.
- Tourism has caused tension to the people living in Barcelona- - locals clashed with tourists who have outnumbered them and have dirtied the environment and are rowdy.
- Quality of life for the locals are affected as their daily lives and living environment are affected by large numbers of tourists who do not respect the historical significance of some areas.

(Accept any plausible answers with inference to Figure 7)

Reserve 3 m if answers do not include negative or positive impacts (vice-versa)

(d) 'The economic benefits derived from tourism outweigh the costs it brings to a country.'

With the support of examples, assess the accuracy of this statement. [8]

Answers may include knowledge related to the following points:

Economic benefits of tourism	Costs of tourism
• Employment opportunities • Growth in income • Increase in foreign exchange • Infrastructure development	Economic impact • Seasonal unemployment • Underuse of facilities • Shortage of services Environment impact • Increased congestion • Vandalism • Pollution & littering • Destruction of habitats • Increased carbon footprint Social impact • Dilution of culture and local customs • Increased crime
Conclusion (link back)	

Marks	Descriptors
1-3m	• Generalised answers or with minimal detail on economic benefits and/or adverse impact of tourism. • A basic answer with little development • Reasoning rather weak and expression may be unclear. • No attempt to address the accuracy of the statement.

	• No named example is given.
4-6m	▪ Answers contain some appropriate detail. Simple details of impacts of tourism. ▪ BUT content lack balance and some relevant detail, i.e. simple indication of economic benefits and/or negative effects of tourism. ▪ Support is patchy so argument is not fully substantiated. ▪ At least 1 named example is given. ▪ **5m: Coverage of economic benefits/negative impacts of tourism only.**
7-8m	▪ Answers are comprehensive and supported by sound knowledge. ▪ Specific details and elaboration of at least two economic benefits and two negative effects of tourism. ▪ At least 1 named example is given (with details provided about the example that helps to illustrate the answer). ▪ Assessment of how tourism can impact a country in both a positive and negative way.

Economic Benefits

Employment Opportunities

The growth of tourism has led to an increase in the number of tourism-related jobs. The employment opportunities include workers in hotels, transportation, souvenir shops and tour agencies. Some jobs directly-linked to the tourism industry are travel agents, tour guides, hotel staff, waiters and waitresses.

These jobs cater to the heads of tourists. Jobs can also be indirectly linked to tourist industry whenever tourists travel and consume goods. These include taxi drivers and shop owners.

Growth in income

Growth in tourism can lead to growth in income for individuals and for a country. An example will be the fishermen on Pamilacan Island, Philippines. Local tour companies hire fishermen to take domestic and international tourists on their boats to look for and swim with whale sharks and dolphins. The fishermen ae paid between US$80 and US$100 per boat for their service, which is a significant amount for an average Filipino fisherman.

However, the revenue generated from tourism does not always remain in the country where tourists spend their money. This is because a large portion of the tourism receipts is lost as leakage, especially in LDCs. The leakage occurs when revenue earned from tourism is paid to other countries for the import of goods and services needed to meet the needs of tourists.

Increase in foreign exchange

Foreign exchange is money earned from other countries in exchange for goods and services. A larger amount of money earned from the other countries allows the receiving country to purchase goods and services from elsewhere in the world. Tourism is Fiji's largest foreign exchange earner and makes up for between 20 to 25% of the country's economy.

Singapore plays host to many international hotel chains such as the InterContinental, Marriot and Shangri-La, which invest in building and furnishing hotels and resorts, and training staff at tourist destinations. As these hotels operate in Singapore, they exchange their own currency to purchase Singapore dollars in order to make their investments. This increases the demand for Singapore dollars and contributes to Singapore's capital inflow.

The tourism industry also contributes directly and indirectly to government revenues. Governments collect revenues directly from taxes on tourists (e.g. airport tax) and from incomes taxes on employees of tourism-related businesses.

Indirect sources of government revenues from tourism are taxes placed on goods and services which are supplied to tourists. These would include manufactured goods such as the petrol used in rented cars. The taxes are collected in local currency, which increases the foreign exchange of the host country.

Infrastructure development

It is the construction of transport and communication networks, electrical frameworks and systems for water and waste disposal. Without sufficient infrastructure and appropriate facilities such as airports, roads, electricity and hotels, tourism cannot develop and would not be able to operate on a large scale.

Roads that link airports, cities and tourist sites allow tourists access to local attractions. They allow local people better access to more markets health care, education and jobs. Therefore, infrastructure built to enhance tourism also brings benefits to the locals.

Sport venues and other infrastructure are built for major sports events such as the Olympic Games and the World Cup. Such events improve the sporting infrastructure of the host countries and they are also useful even after the key event has ended.

In both the cities of Athens, Greece and Beijing, China, underground rail systems were expanded to move large numbers of visitors

during the Summer Olympics Games. Both rail systems continue to serve the local populations and tourists even after the Games.
Developing infrastructure also creates employment for local workers. This is because many workers are needed to during the construction process. Local materials may be used in constructing infrastructure, hence boosting local industries. The increased spending in the local economy encourages economic growth.

Costs of tourism
Economic impact
• Seasonal unemployment
• Underuse of facilities
• Shortage of services
Environment impact
• Increased congestion
• Vandalism
• Pollution & littering
• Destruction of habitats
• Increased carbon footprint
Social impact
• Dilution of culture and local customs
• Increased crime

(3a) Study Figure 8, which provides information of the changes in the different profile of tourists from China from 2001 to 2011.

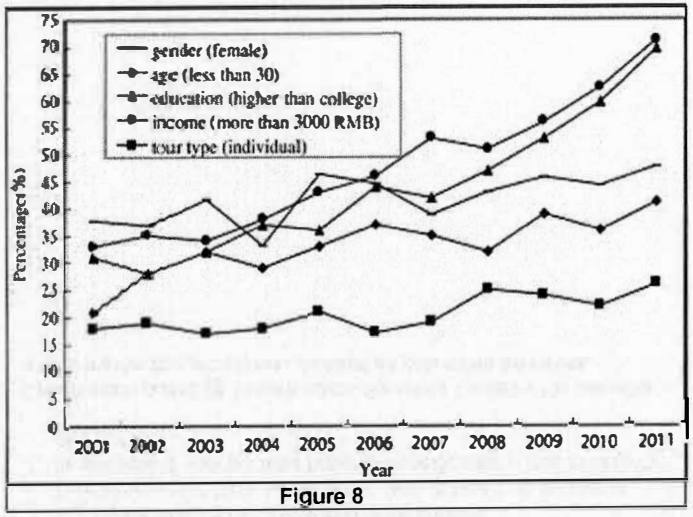

Figure 8

(i) Compare the changes of the different profiles of tourists as shown in Figure 8. [3]

- There is an overall increase in the various profiles of tourist arrivals from 2001 to 2011.
- Female tourist (37% to 45%) and individual traveling on tour (18% to 25%) has the least change.
- While those with income higher than 3000RMB and education higher than college has the greatest change. (33% to 70%)

Candidates are to compare and not purely describe the changes in the profile of tourists

(ii) Account for these changes. [4]

- With more income/education, tourists are more likely to travel as they have higher purchasing power and therefore can use the money for leisure purpose.
- With higher education, people are more aware of the uniqueness of other countries, and therefore more inclined to travel to learn about these areas.
- The rise of budget airline have made it possible for Chinese tourists to discover the rest of the world through cheaper fares on frequent flights.
- The use of technology has allowed the Chinese tourists to easily access the internet to research, plan, book and pay for their trips online with much convenience.
- Diseases like SARS in 2003, which resulted in the decline in travel by the Chinese tourists

Accept other plausible answers.
Subjective answers not accepted

- **→ More female are now not staying at home to be housewives, they are now using their leisure time to travel**
- **→ they are now signing up for tour packages instead of traveling alone as it is now cheaper to do so**

(b) Figure 9 (insert) shows an island before and after the development of tourism.

With reference to Figure 9, discuss the impacts caused by the growth of tourism to the locals. [4]

Benefits:

- Provides employment for locals e.g. waiters and waitresses.
- Preserve local heritage e.g. making of genuine grass skirts for sale
- Improve accessibility of the area e.g. airport, port.
- Increase variety of goods and services through imports and facilities.

Problems:

- Environmental degradation/pollution e.g. littering – the natural environment like the beaches are damaged.
- Loss of natural places/deforestation to build hotels and facilities.
- Contribute to global warming due to lesser trees to absorb carbon dioxide.
- Leakage of revenue, funds are channeled out of host countries e.g. hotels belong to foreign countries/imports.
- Displacement of local settlements, land is taken up by tourist development – locals may have to be relocated – loss of identify and culture.

Credit each point @ 1 mark each. Reserve 2 marks for benefits and 2 marks for problems. Accept all plausible answers.

(c) Figure 10A and 10B show two coastal protection methods.

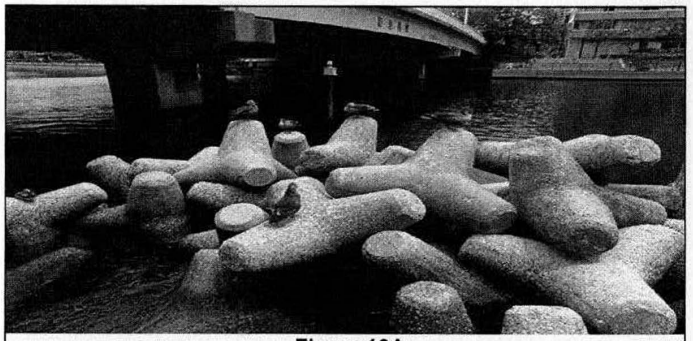

Figure 10A

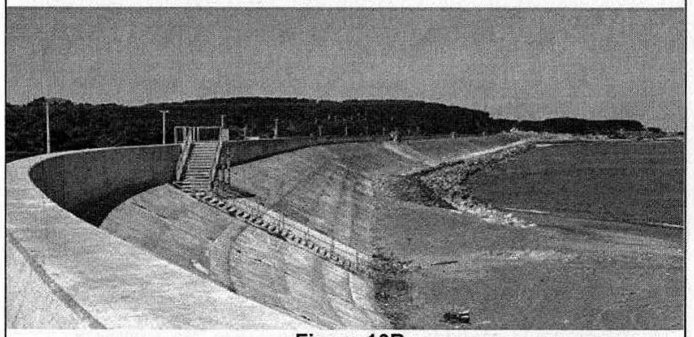

Figure 10B

Identify these coastal protection strategies and discuss their effectiveness. [6]

Method	Benefits	Limitations
Sea Walls: Structure made of concrete and built parallel to the coast (1)	Absorbs wave energy thus reducing impact on coastal rocks behind it. (1)	Costly to build and maintain as repairs need to be made frequently to prevent collapse (1) Only some energy absorbed. The rest is reflected to the base of the seawall Powerful backwash of reflected waves washes away materials at base of seawall leading to collapse (1)
Tetrapods: Four-pronged concrete structures stacked offshore in an interlocking position (1)	Helps to reduce wave energy without powerful backwash as the waves can still pass through them. (1) They are pre-casted as can be quickly placed when compared to other structures (1)	Costly to build & Aesthetically unappealing (1) Dangerous to swimmers, surfers and boaters. (1)

*Any 1 benefit and 1 problem for each strategy

(d) The protection of coastal resources is the best strategy to manage coastal areas. How far do you agree? Support your answer with examples. [8]

Level 1 (0-3m)
Generally addresses protection of coastal resources measure only
Or coastal protection measure only (e.g. seawall)
Poor description of management or protection strategy
No or poor evaluation of the management or protection strategy
No example given

Level 2 (4-6m)
Addresses at least protection of coastal resources and 1 other management strategy
Or coastal protection measures (e.g. seawall and planting of mangroves)
Some description of the management or protection strategy
Satisfactory evaluation of the management strategy
At least one example given

Level 3 (7-8m)
Addresses at least protection of coastal resources and 2 other management strategies
Clear description of management strategies
Thorough evaluation of impact management strategies
At least one example given for each strategy

Protection of coastal resources

A strategy to prevent sources from being exploited or depleted. Fish is an example of what needs to be protected and areas close to the coastline where around 90% of all marine fish are caught are vulnerable to overfishing. This is especially seen in areas where destructive fishing methods of blasting and poison fishing are used in the coral reef areas.

In both Wakatobi National Park in Indonesia and Goat Island Marine Reserve in New Zealand, zones have been marked off to prevent commercial fishing. This is done through local management or establishment of a marine reserve. Marine reserves protect marine ecosystems which allow fish and endangered species to breed and thrive.

The Goat Island Marine Reserve is now a tourist attraction because of its plentiful fish; there are now up to 14 times more snappers within the reserve than outside it. This demonstrates the positive management impact of protecting coastal resources.

However, the establishment of marine reserves is often strongly opposed by local fishermen. Their access to a valuable resource and possibly a source of food, is now being denied. The potential long-term benefits of a marine reserve may not be significant to locals who can no longer fish in an area that has supported them for a long time.

Limit damaging activities

These refer to activities that interrupt the functioning of natural systems. Some of these activities include blasting coral reefs to create a channel for boats, clearing mangroves to develop fish farms, dumping waste into coastal areas or into seas, and constructing facilities such as docks and marinas that replace the natural features of the coast.

As banning these damaging activities might be costly and inefficient, many national and local governments instead try to limit these activities. This is done through management that aligns the needs and demands of the people together with the nature of the coastal environment.

Sand dunes, which are deposits are windblown sand from the foreshore zone stabilized by plants, were often trampled on by people visiting the beach in Port Philip. Dune vegetation was being destroyed and the sand dunes were left exposed to wind erosion. Houses behind the dunes were in danger of being partly buried by the large volumes of sand blown by the wind.

To allow the dunes to recover, authorities fenced off the dunes and built access paths to the beach. This decision allowed the coastal environment to recover. However, these fences make the beach look less attractive and do not allow visitors and residents access to all parts of the beach.

Restrict development in areas prone to natural hazards

Residents and investors of coastal areas may have to spend more in construction and maintenance, and will also need to be prepared for emergencies. Governments research on how severe or widespread the problem is, plan for it, then make and enforce laws. The laws and policies involve relocation of built structures away from areas prone to natural hazards. In USA, the Federal Emergency Management Agency (FEMA) steers development away from areas prone to flooding or coastal erosion.

Avoidance, which includes regulating development such as Indonesian laws that restrict new farms and residences from being established on low-lying coastal areas.

Defences such as nourishing beaches, building seawalls and replanting coastal vegetation. Beaches in the Netherlands are closely monitored and undergo beach nourishment when long-term erosion is identified.

- End of Paper 1 -

Name of Candidate: _____ ( ) Class: _____ Calculator Model:

BUKIT PANJANG GOVERNMENT HIGH SCHOOL

Preliminary Examination 2016

SECONDARY 4 EXPRESS

Pure Geography **2236/02**

Paper 2

Date: 17 August, 2016
Duration: 1h 30 min
Time: 1045 – 1215 h

Additional materials: Writing Papers
1 Insert

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.
Write in dark blue or black on both sides of the paper.
You may use a soft pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

This paper consists of two sections: **Sections A** and **B**.
Section A (25 marks)
Answer **one** question.

Section B (25 marks)
Answer **one** question.

Write all answers on the foolscap papers provided.
Candidates are encouraged to support your answers with the use of relevant examples. Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.
The Insert contains Fig 1B and 1C for Question 1, Fig. 2B for Question 2 and Figs. 3A and 3B for Question 3.

Leave at least one line after each part of a question.
Begin each question/ section on a FRESH PIECE of paper.

At the end of the examination, fasten all your work securely together.
Submit Section A and Section B separately.
The number of marks is given in brackets [ ] at the end of each question or part question.

Setter: **[Turn over]**

This paper consists of 9 printed pages

Section A

Answer **one** question from this section.

1 (a) Study Fig. 1A, which shows the climographs of Kaneohe and Honolulu, and Fig. 1B (Insert), which shows the elevation map of Oahu, Hawaii.

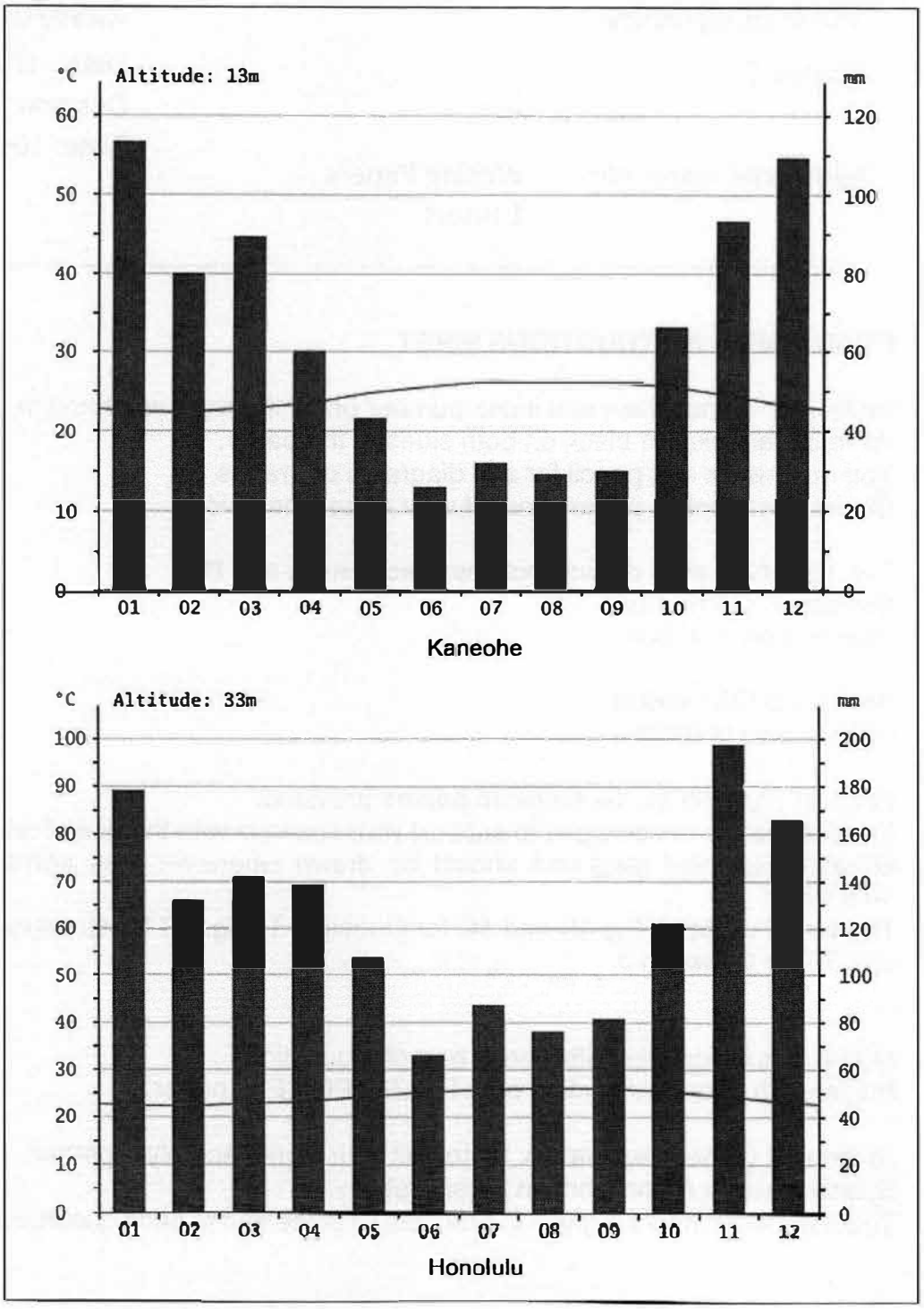

Fig. 1A

(i) Compare the climate of Kaneohe and Honolulu. [4]

(ii) With the use of diagram(s), account for the differences in precipitation in Kaneohe and Honolulu. [6]

(b) Describe and explain how temperatures are influenced by distance from the sea. [4]

(c) With the aid of Fig. 1C (Insert), describe and explain the characteristics of tropical cyclones. [3]

(d) Tropical cyclones are likely to cause more deaths and injuries in Less Developed Countries (LDCs). [8]

To what extent is the statement true? Support with examples.

2 (a) Study Fig. 2A, which shows the global temperature changes.

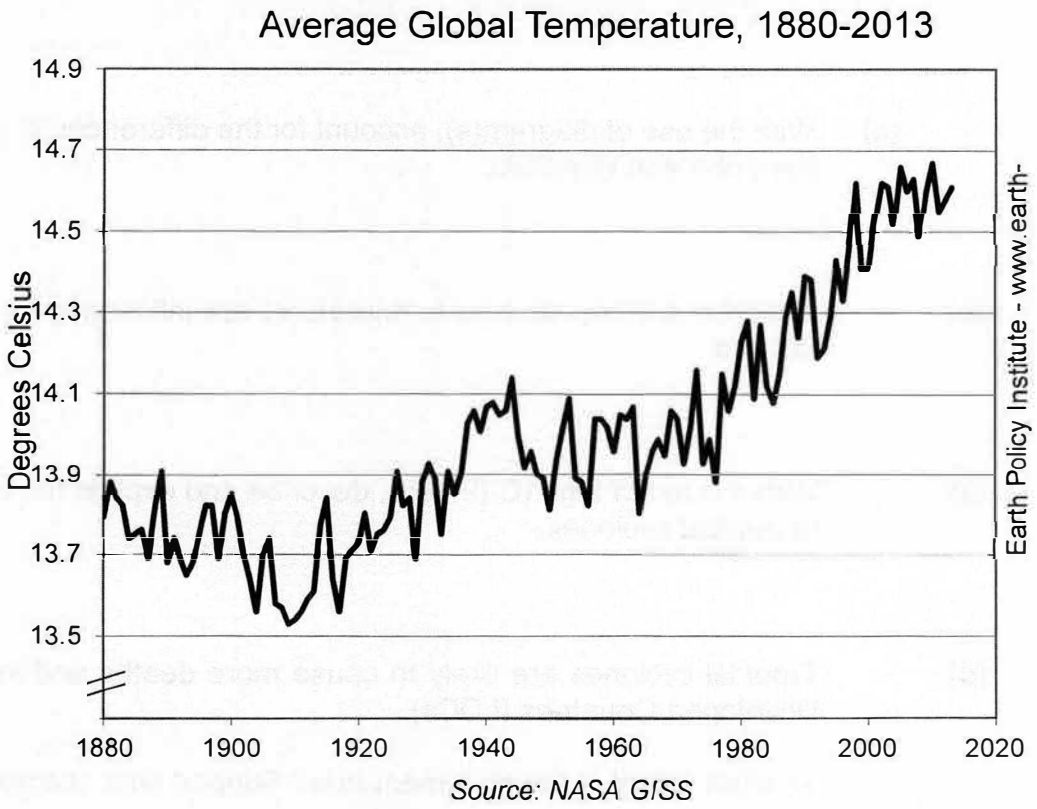

Fig. 2A

(i) Describe the changes in global temperature from 1880 to 2013. [3]

(ii) Suggest reasons for the changes in global temperature from 1880 to 2013. [4]

(b) Study Fig. 2B (Insert), which shows the distribution of volcanoes in Indonesia.

(i) With reference to Fig. 2B, describe the distribution of volcanoes in Indonesia. [4]

(ii) With the use of labeled diagram(s), explain the formation of the Mt. Merapi. [6]

(c) Some volcanoes are more hazardous than others. [8]

To what extent is the statement true? Support with examples.

Section B

Answer **one** question from this section.

3 (a) Study Fig. 3A (Insert), which shows the infant mortality rate for Africa in 2006, and Fig. 3B (Insert), which shows the malnutrition rates for the same country in 2006.

(i) Describe and explain the relationship between the patterns shown on Figs. 3A and 3B? [4]

(ii) Suggest and explain the socio-economic factors that might account for the pattern of malnutrition shown in Fig. 3B. [3]

(b) With the use of examples, discuss the effectiveness of Green Revolution in solving food shortages. [6]

(c) Fig. 3C shows an excerpt from a report published by John Hopkins University.

Study: Despite medical advances, HIV epidemic continues across the globe

Lack of access to preventive medicine, discrimination in many counties contribute to disproportionately high HIV burden

John Hopkins University, July 6 2015.

Though overall HIV rates have flattened in recent years and a diagnosis is no longer the death sentence it was once considered, researchers are concerned that the epidemic still persists globally.

One significant obstacle is the failure to get pre-exposure prophylaxis, or PrEP (a pill that has proved highly effective in reducing transmission among this population) to the people who need it most—those who are HIV negative and are at high risk of infection.

Chris Beyrer, a Bloomberg School professor and president of the International AIDS Society, notes that the United Kingdom refuses so far to subsidize PrEP. And while it's available in the U.S., racial and economic disparities impact access, and low-income, predominantly minority communities continue to see the HIV epidemic persist.

"Stigma and discrimination continue to play a very big role in these epidemics," Beyrer says.

Fig. 3C

(c) With reference to Fig. 3C and your own knowledge, explain why is HIV still a challenge today? [4]

(d) "HIV affects only promiscuous individuals." [8]

How far do you agree with the statement? Support with examples.

4 (a) Study Fig. 4A which shows the leading cause of deaths in USA and Africa in 2012.

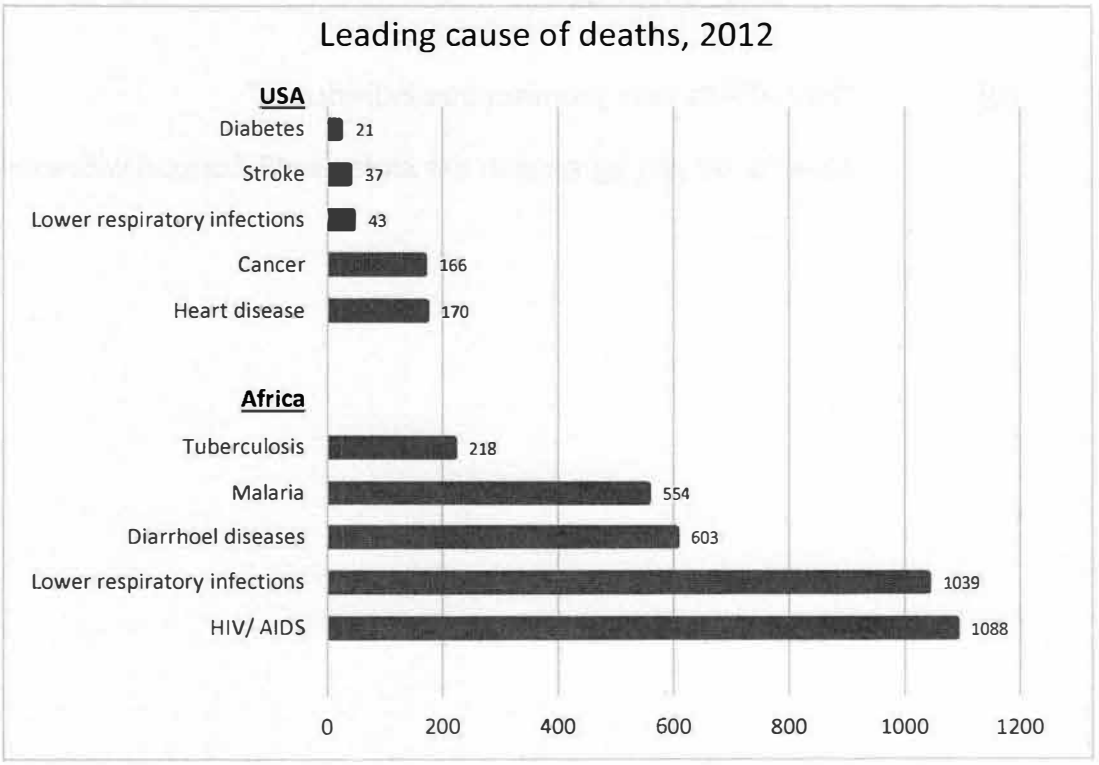

Fig. 4A

(i) Compare the leading cause of deaths in USA and Africa in 2012. [4]

(ii) Account for the leading cause of deaths in USA and Africa in 2012. [4]

(b) (i) Explain how global warming has contributed to the rise in malaria in the world. [3]

(c) Study Fig. 4B, which shows an excerpt from The Ethiopian Herald on malaria.

Ethiopia: Enhancing Efforts to Eliminate Malaria
The Ethiopian Herald, 26 April 2016

According to the World Health Organization, nearly half of the world's population that accounts 3.2 billion people is still at risk of contracting malaria. In 2015 alone 214 million new cases of malaria were reported from 95 countries. More than 400,000 people died from the disease.

The problem is seemingly more serious in Sub-Saharan Africa since nine out of ten deaths from malaria in 2015 was from the region, according to a report released yesterday in connection with the World Malaria Day.

No exception to Ethiopia, malaria is one of the leading public health problems in the country.

Malaria is not only a public health problem. It represents a significant impediment to socio-economic development in the country, for example due to a loss of work force and time, and school absenteeism.

Even worse, the incidence of malaria coincides with the major planting and harvesting season for farmers, thus its burden on agricultural activity and on the overall economy is high.

Understanding the impacts of malaria, the government of Ethiopia with partners has implemented various prevention and treatment strategies. Over the years, the nation has

Fig. 4B

(ii) Discuss the impacts on malaria on the individual and country. [6]

(c) The management of malaria only lies in the hands of the government. [8]

How far do you agree with the statement? Support with examples.

BUKIT PANJANG GOVERNMENT HIGH SCHOOL

Preliminary Examination 2016

SECONDARY 4 EXPRESS

Pure Geography **2236/02**

Paper 2

Date: 17 August, 2016
Duration: 1h 30 min
Time: 1045 – 1215 h

Additional materials: Writing Papers
1 Insert

INSERT

READ THESE INSTRUCTIONS FIRST

The Insert contains Fig 1B and 1C for Question 1, Fig. 2B for Question 2 and Figs. 3A and 3B for Question 3.

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This paper consists of 5 printed pages

Fig. 1B for Question 1(a)(ii).

Fig. 1B shows the elevation map of Oahu, Hawaii.

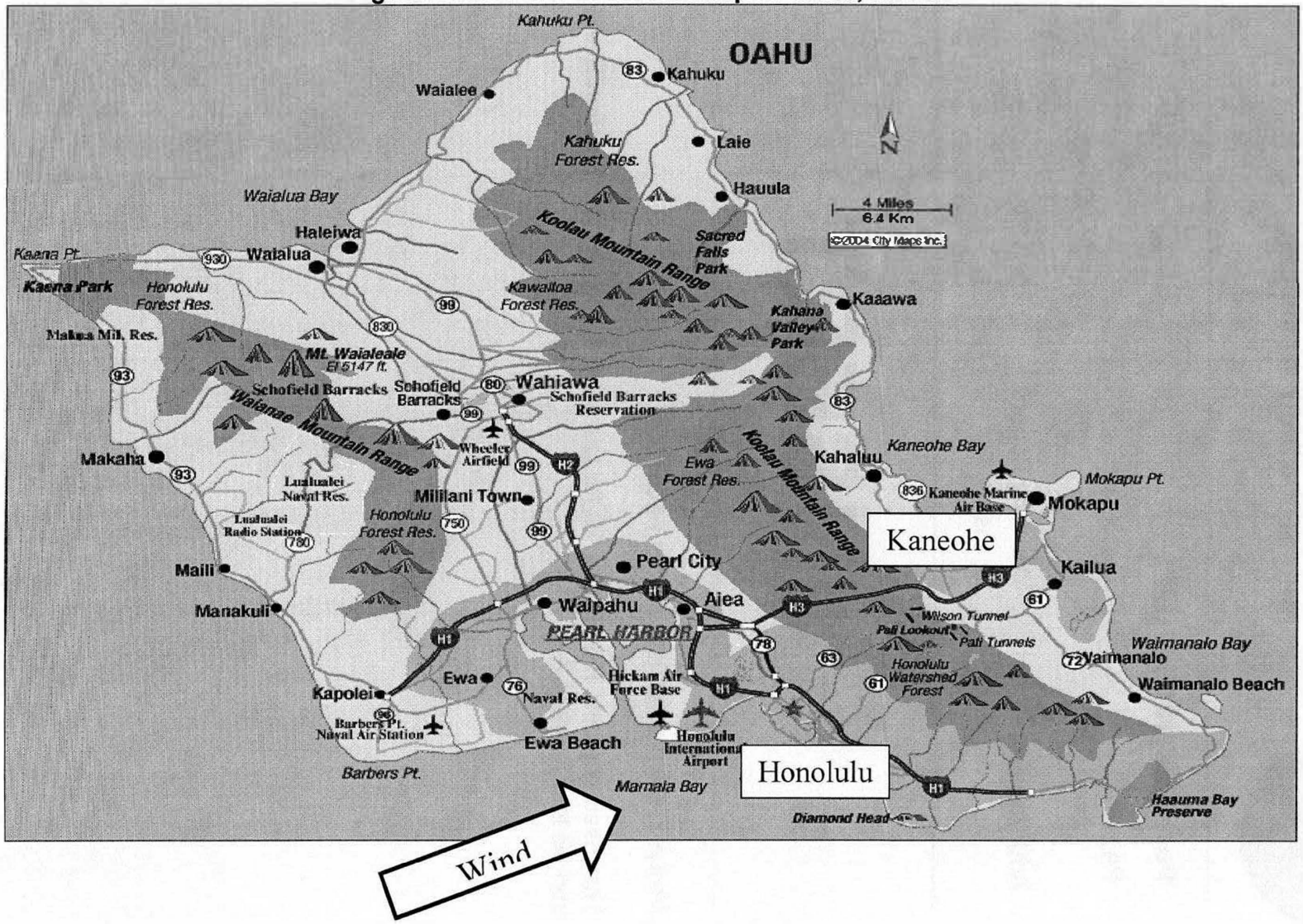

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Fig. 1C for Question 1(c).

Fig. 1C shows the structure of a tropical cyclone and its distribution in the world.

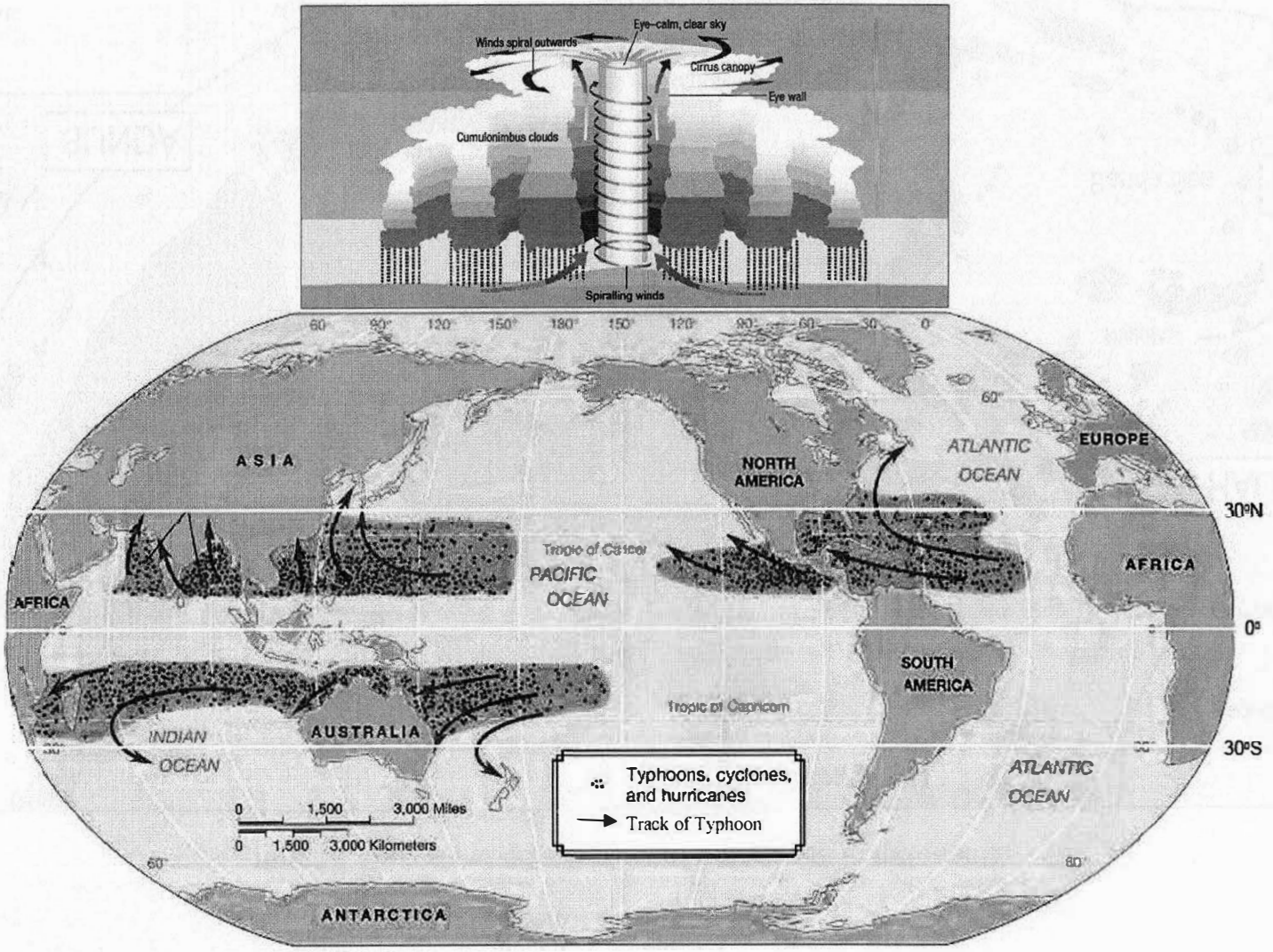
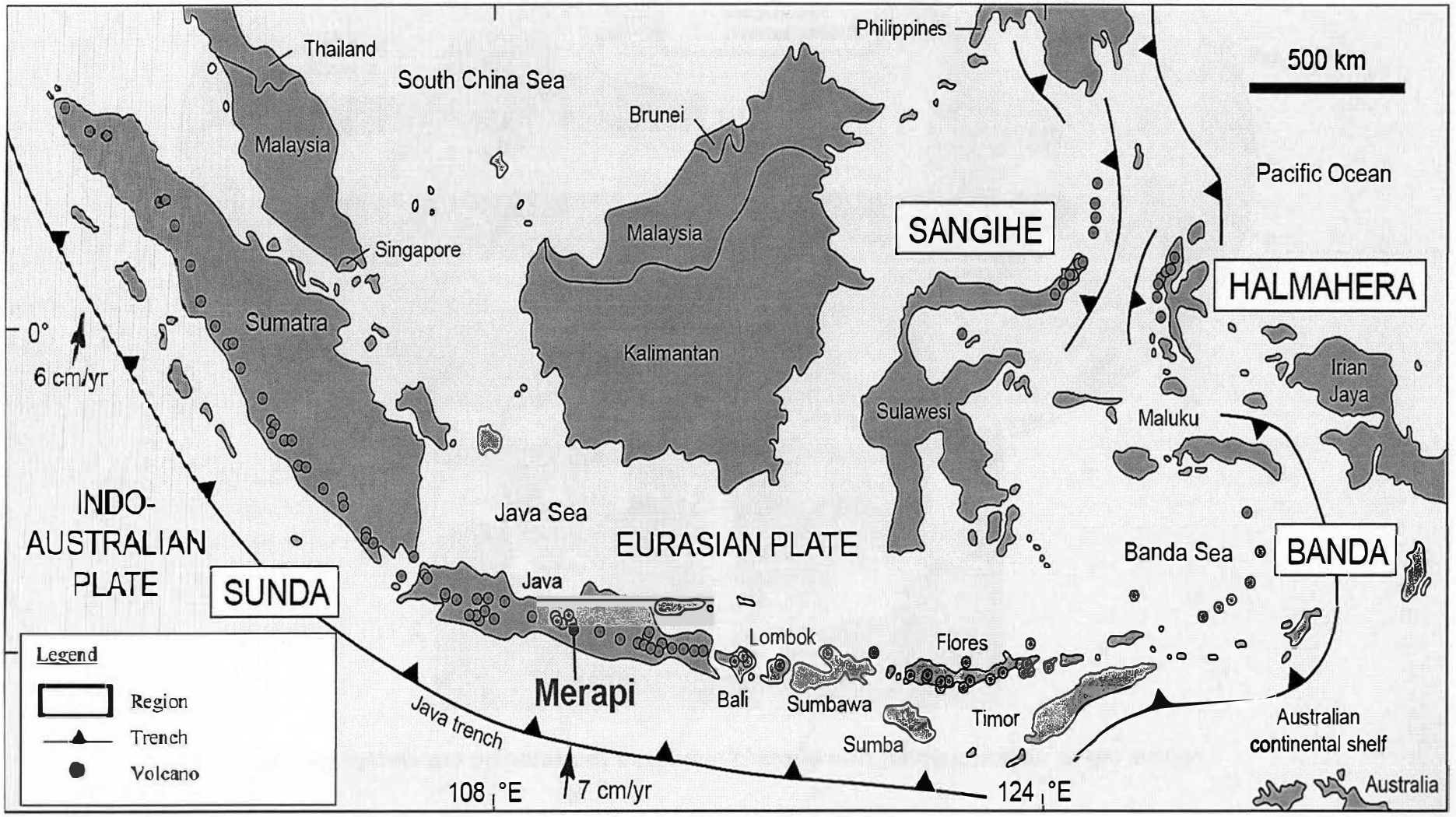


Fig. 2B for Question 2(b)(i).

Fig. 2B shows the distribution of volcanoes in Indonesia.



Figs. 3A and 3B for Question 2(b)(i).

Fig. 3A shows the infant mortality rate for Africa in 2006 and Fig. 3B shows the malnutrition rates for the same country in 2006.

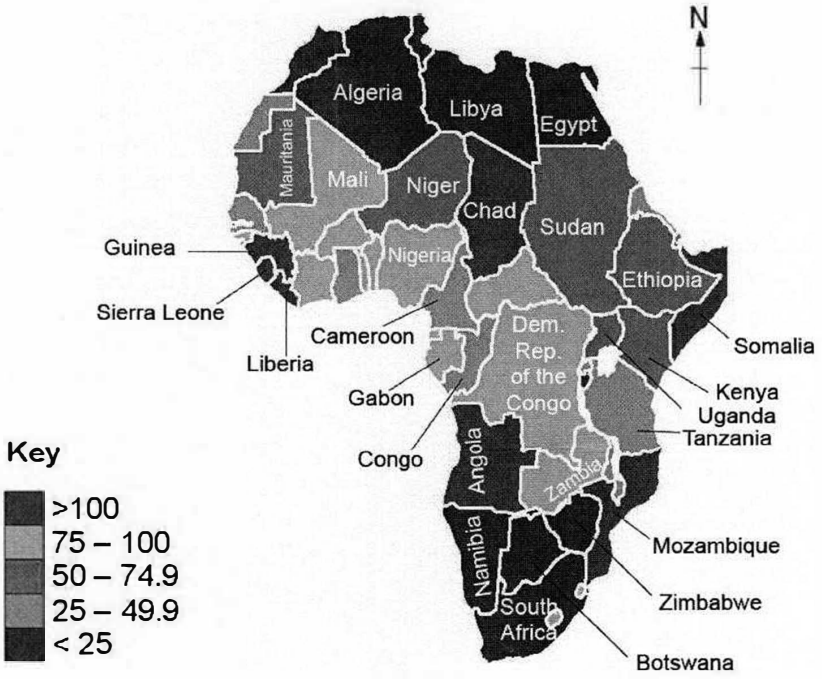


Fig. 3A: Infant Mortality rate for Africa, 2006

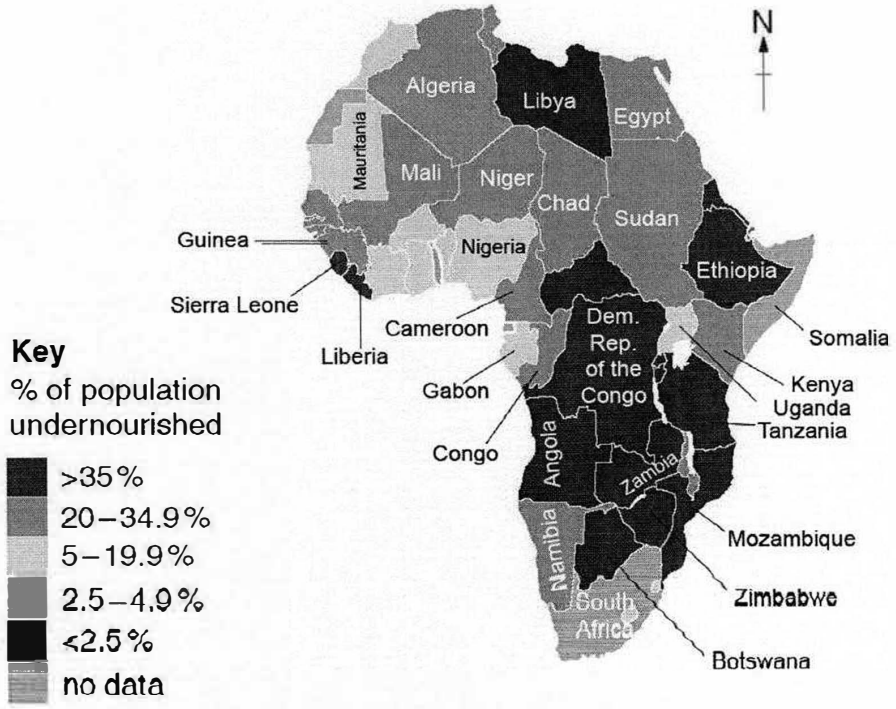


Fig. 3B: Malnutrition rate for Africa, 2006

Name of Candidate: _____ ( ) Class: _____ Calculator Model: [ ]

BUKIT PANJANG GOVERNMENT HIGH SCHOOL

Preliminary Examination 2016

SECONDARY 4 EXPRESS

Pure Geography **2236/02**

Paper 2

Date: 17 August, 2016
Duration: 1h 30 min
Time: 1045 – 1215 h

Additional materials: Writing Papers
1 Insert

MARKING SCHEME

Setter: [redacted]

[Turn over]

This paper consists of 24 printed pages

Section A

1	(a)		Study Fig. 1A, which shows the climographs of Kaneohe and Honolulu, and Fig. 1B (Insert), which shows the elevation map of Oahu, Hawaii.

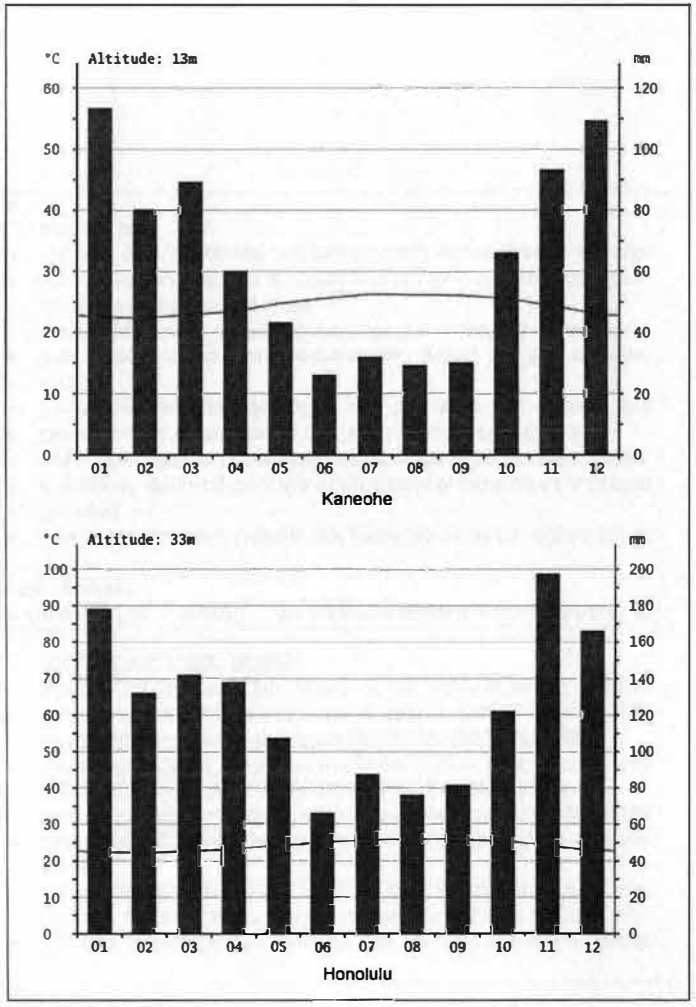
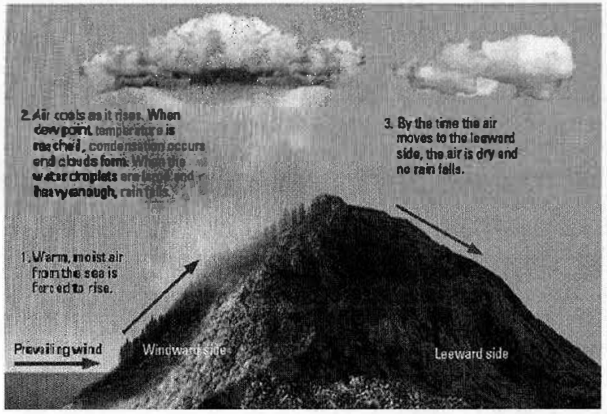


Fig. 1A

		(i)	Compare the climate of Kaneohe and Honolulu.	[4]
			• Both Kaneohe and Honolulu experienced high mean monthly temperature. Keneohe 24.1°C, Honolulu 24.3°C • Both Kaneohe and Honolulu have low annual temperature range of about 3°C/ Honolulu has a higher annual temperature of 6°C while Kaneohe has a lower annual temp range of 3°C • Both Kaneohe and Honolulu have wet and dry season/ received rain throughout the year with higher rainfall in the months of October to January and lower rainfall in the months of June to September • Honolulu has a higher total annual rainfall of 1492mm than Kaneohe of 770mm./ Honolulu has a high total annual rainfall of 1492mm while Kaneohe has a moderate total annual rainfall of 770mm. •	
		(ii)	With the use of diagram(s), account for the differences in precipitation in Kaneohe and Honolulu.	[6]
			• **4m explanation, 2m well-labeled diagram**  1. Warm air blows from the ocean towards the land carries moisture/ Wind blows from the sea towards Honolulu, picking up moisture along the way. 2. The warm, moist air from the ocean is then forced to rise up the windward side of Koolau Mountain. 3. As air rises, it cools. When the temperature reaches dew point temperature, condensation occurs and clouds are formed. When the water droplets in the clouds become too big and heavy, they fall as rain on the windward side of the mountain (Honolulu).	

			4. The air on the leeward side of the mountain is usually dry as most of the moisture would have fallen on the windward side. Thus, the Kaneohe (leeward side) receives little/ no rainfall. •	
	(b)		Describe and explain how temperatures are influenced by distance from the sea.	[4]
			• Maritime Effect: During Summer, the air over the sea is cooler than the air over the land as the land heats up faster than the sea. The cooler air over the sea helps to lower temperature of coastal areas. • During Winter, the air over the sea is warmer than the air over the land as the sea cools down slower than the land. The warmer air over the sea increases the temperature of coastal areas. • Continental Effect: As inland areas are further from the sea, the temperatures of these areas are not influenced by the sea. • Hence, the coastal areas experienced a cooler summer and warmer winters and the inland areas experienced a warmer summer and cooler winters.	
	(c)		With the aid of Fig. A (Insert), describe and explain the characteristics of tropical cyclones.	[3]
			• Low pressure area/ Intense low pressure systems, especially at the core. • A mass of revolving clouds around a central calm core / A central eye surrounded by the eyewall (a ring of towering thunderstorms), • Develop over warm oceans and seas, usually above 26.5°C. • Found between latitudes of 8° and 15° north and south of the equator • The winds move counter-clockwise (right) in the northern hemisphere and clockwise (left) in the southern hemisphere because of the Coriolis force. • Strong winds (119km/h or more) due to steep pressure gradient • Formed over the ocean and move inland where it loses strength and die off. •	

	(d)		Tropical cyclones are likely to cause more deaths and injuries in Less Developed Countries (LDCs). **To** what extent is the statement true? Support with examples.	[8]

Level 1 (0-3m)	Level 2 (4-6m)	Level 3 (7-8m)
▪ Brief description ▪ Only focus on 1 component (Only focus on income/ knowledge) ▪ No examples	▪ Somewhat detailed explanation of 2 components ▪ include both income and knowledge ▪ Support with general examples	▪ Detailed explanation of at least 3 components ▪ Include both income and knowledge ▪ Include other factors like population density ▪ Support with detailed examples ▪ Personal opinion

- Need 3 components (with detailed explanation) + specific egs to get Level 3 (7-8m)
- If no example at all, 3m max.

LDCs:

- lack money
- lack knowledge
- lack technology
- higher population density

- Lack access to medical facilities or treatment due to low affordability/ limited facilities as limited investment/ poor transport network
- Lack money to build community cyclone shelter/ hurricane – resistant building
- Low education → ignore prediction and warning/ lack knowledge on measures/ fatalistic approach

2	(a)		Study Fig. 2A, which shows the global temperature changes.	

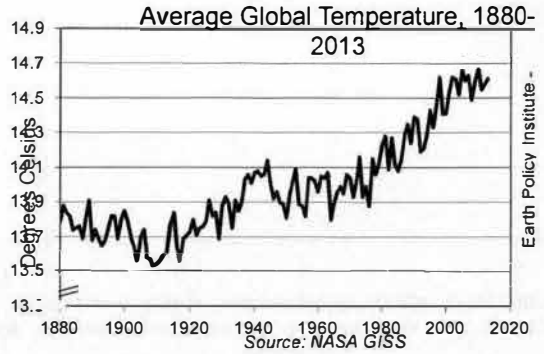


Fig. 2A

		(i)	Describe the changes in global temperature from 1880 to 2013.	[3]

- **Description + data = 1m**

- Increases from 13.8°C in 1880 to 14.6°C in 2013
- Wide fluctuation in between
- Lowest temperature recorded in 1910 at 13.55°C (***don't need to talk about highest since it is the end point that is the highest***)
- Rapid increase in temperature from 1960 at 13.8°C to 14.6°C in 2013
- Temperature generally falls from 13.8°C in 1880 to 13.6°C in 1910 *(or other periods that has very drastic fall)*

		(ii)	Suggest reasons for the changes in global temperature from 1880 to 2013.	[4]

- Variation in solar output: An increase in magnetic activity results in an increase in solar radiation. An increase in solar radiation results in more sunspots and a higher earth global temperature. Areas surrounding the sunspots radiate more energy to make up for the cooler sunspot areas

- Volcanic eruptions: Dust particles from eruption form condensation nuclei →creating more cloud cover → Dust and ash also reflect away incoming solar radiation → Temporarily cools the earth for months or years

- Burning fossil fuels: Due to their high carbon content, fossil fuels contribute to the increase in greenhouse gases by producing large amounts of carbon dioxide → With more greenhouse gases, it is able to trap more heat, thus increasing world's temperature (enhanced greenhouse effect)

- Deforestation: With deforestation, there are fewer trees and other plants to absorb carbon dioxide → increase in carbon dioxide levels in the atmosphere → it is able to <u>to trap more heat</u>, thus increasing world's temperature (enhanced greenhouse effect)
- Deforestation exposes soil to sunlight. This increases the soil temperature and the rate of carbon oxidation in the soil. As such, deforestation increases the rate at which carbon dioxide is released from the soil into the atmosphere → increase in carbon dioxide levels in the atmosphere → it is able to <u>trap more heat,</u> thus increasing world's temperature (enhanced greenhouse effect)

- Agriculture: Rice cultivation and padi fields/ Cattle farming/ Organic matter such as dead leaves and manure releases methane during decomposition/ use of machinery → increase of greenhouse gases in the atmosphere → it is able to <u>trap more heat</u>, thus increasing world's temperature (enhanced greenhouse effect)

- Industries: Secondary industries, which are industrial economic activities such as manufacturing, involve the burning of fossil fuels that result in greenhouse gas emissions → increase of greenhouse gases in the atmosphere → it is able to <u>trap more heat,</u> thus increasing world's temperature (enhanced greenhouse effect)

- Urbanization: Large amounts of fossil fuels are burnt to provide energy for household activities in urban areas/ The high concentrate of cars, buses and other forms of transportation in urban areas/ Constructing infrastructure and producing construction materials → increase of greenhouse gases in the atmosphere → it is able to <u>trap more heat,</u> thus increasing world's temperature (enhanced greenhouse effect)

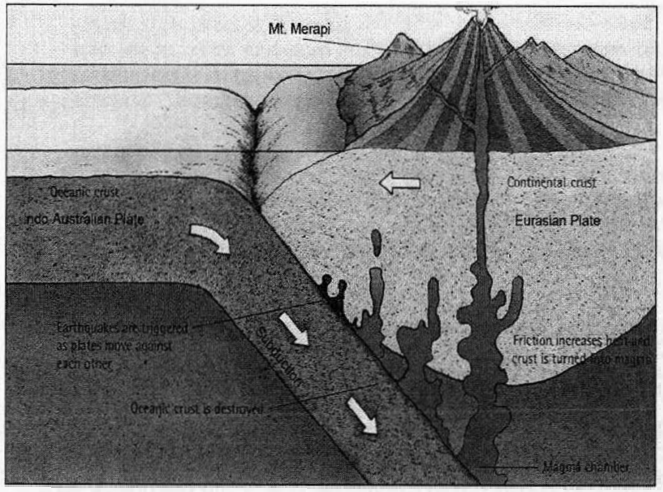
(b) Study Fig. 2B (Insert), which shows the distribution of volcanoes in Indonesia.

(i) With reference to Fig. 2B, describe the distribution of volcanoes in Indonesia. [4]

- Near the plate boundary, e.g. boundary between the indo-australian plate and Eurasian plate
- Near the coast, e.g. east of Sumatra, south of Java, Flores
- Distributed in a linear pattern
- Near to the trench, e.g. Java trench
- Most concentrated in the Sunda region (OR quote countries)
- Most near to the land, but some in the sea (e.g. Banda Sea)
- Part of Pacific Ring of Fire
-

(ii) With the use of labeled diagram(s), explain the formation of the Mt. Merapi. [6]

- **4m explanation, 2m well-labelled diagram**



- When <u>Indo-Australian oceanic plate</u> move <u>towards Eurasian continental plate,</u>
- the heavier and denser Indo-Australian oceanic plate will <u>slide beneath</u> the Eurasian continental plate in a process called subduction causing the solid mantle material to <u>melt</u>
- The magma will rise to the surface through cracks/ faults forming high silica lava and they flow slowly over a small area then they <u>cool and solidify</u>
- Overtime, successive eruptions of ash and lava built up Mount Merapi, which has a slightly concave profile (steeper at top, gentler at base)
-

	(c)		Some volcanoes are more hazardous than others. To what extent is the statement true? Support with examples.	[8]

Level 1 (0-3m)	Level 2 (4-6m)	Level 3 (7-8m)
▪ Brief description ▪ Only one component (only type of volcano is discussed ▪ No examples	▪ Somewhat detailed explanation of 2 components ▪ Support with general examples	▪ Detailed explanation of at least 3 components ▪ Support with detailed examples ▪ Personal opinion

- **3 components (with detailed examples) + accurate specific examples = Level 3 (7-8m)**

Some volcanoes are more hazardous than others as there are different types of volcanoes or different class of volcanoes or other factors

Stratovolcanoes – more hazardous
Shield volcanoes – less hazardous

Vs

Active - more hazardous
Extinct – less hazardous
(Dormant can be very hazardous as it is more unpredictable and it has accumulate lots of pressure without release)

Vs

Other factors:
Distance from eruption
Population density
Emergency drill

Reference:
Stratovolcanoes
- Tend to form at subduction zones, where an oceanic plate slides beneath a continental plate and contributes to the rise of magma to the surface
- The magma is ejected onto the earth's surface as high-silica lava.

- High-silica lava flows slowly over a small area before solidifying and it traps more gases.
- As a result, violent eruption of lava and ash result.
- Example:
  - Mount Mayon, Philippines
  - Mount Rainier, USA
  - Mount Vesuvius, Italy
  - Mount Merapi, Indonesia

Shield volcanoes
- Common near divergent plate boundaries (esp oceanic plate – oceanic plate divergence) where magma rises directly from the mantle.
- Formed where low-silica lava has been ejected
- Low-silica lava flows easily and spreads out over a large area before solidifying
- Since the lava does not trap much gas, eruptions are usually not explosive
- Example:
  - Mount Washington, USA
  - Mauna Loa, Hawaii

			Section B	
3	(a)		Study Fig. 3A (Insert), which shows the infant mortality rate for Africa in 2006, and Fig. 3B (Insert), which shows the malnutrition rates for the same country in 2006.	
		(i)	Describe and explain the relationship between the patterns shown on Figs. 3A and 3B.	[4]
			Description: • High malnutrition High IMR o Angola (>100 IMR, >35% mal) o Mozambique (>100 IMR, >35% mal) • Low malnutrition Low IMR o Libya (<25 IMR, <2.5% mal) • high malnutrition Low IMR o Botswana (<25 IMR, >35% mal) o Zimbabwe (<25 IMR, >35% mal) Explanation: • A baby without sufficient nutrients will suffer from malnutrition, hence he/she will be weak and more susceptible to diseases, as a result infant mortality rate will rise • In Botswana, even though they experienced high malnutrition, there may be good healthcare facilities/ help available to sustain the life of these babies, preventing them to die below one year of age, hence accounting for the low infant mortality rate.	
		(ii)	Suggest and explain the socio-economic factors that might account for the pattern of malnutrition shown in Fig. 3A.	[3]
			• Low education → No job/ low paying job → less income → lower ability to purchase enough/ variety of food (nutrition) → malnutrition OR • Low education → lack knowledge of what nutrients to take / balanced diet → consume less balanced diet → malnutrition • Poverty/ Low income → lower ability to purchase enough/ variety of food (nutrition) → malnutrition • High population → insufficient supply of food/ shortage of food → consume insufficient food/ nutrition → malnutrition	
	(b)		With the use of examples, discuss the effectiveness of Green Revolution in solving food shortages.	[6]
			• **1m on explanation, 1m on example, 1 on limitations (3m per method)** • **Max 4m if without limitations/ examples** • High yielding varieties (HYVs): Increased resistance to pests and diseases and/or ability to grow within a shorter growing season → more harvests in a year → increase food supply	

			o E.g. 'Wonder Rice': shorter growing season of 100 days as compared to 120 days for non-HYVs. → increase harvest → increase food supply o E.g. IR36 (HYV Rice): maturation period of 105 days instead of 135 days for previous HYVs and 150 days for traditional varieties of rice→ increase harvest → increase food supply o E.g. IR8 (HYV rice) saved India from famine in 1960s. This rice enabled farmers to produce twice as much grain as tradition varieties. By 1990, 70% of wheat and rice grown in India were HYVs. → increase harvest → increase food supply o E.g. From 1970 to 2010, Green Revolution has helped rice production to multiply more than two times and wheat production to multiply more than four times→ increase harvest → increase food supply • HOWEVER: expensive so LDCs cannot afford or LDCs farmers lack knowledge to apply HYVs/ requires more water and fertilisers but LDCs cannot afford • Chemicals o Fertilisers → provide nutrients for healthy plant growth → increase crop yield → increase food supply o Pesticides → kill insects and small animals that destroy crops → crops protected → increase crop yield → increase food supply o Example: Malation (1980s) solve fruit fly problem in California, USA o Herbicides → kill weeds → crop gets sufficient nutrients and water → increase crop yield → increase food supply o Limitations: Eutrophication/ pollution (Explain) • Mechanisation → speeds up processes, reduce reliance on human labours → increase efficiency → increase crop yield → increase food supply • Limitations: Expensive.... • Irrigation o Irrigation → increase arable land → increase crop production → increase food supply o Irrigation → multiple cropping → increase crop yield → increase food supply o Example: The Great Man-Made River, Libya o Limitation: Expensive/ LDCs lack knowledge/ Salinization/ water logging (explain) o Example: Murray-Darling Basin, Victoria, Australia (Salinization)	

	(c)		Fig. 3C shows an excerpt from a report published by John Hopkins University.	

Study: Despite medical advances, HIV epidemic continues across the globe

Lack of access to preventive medicine, discrimination in many counties contribute to disproportionately high HIV burden

John Hopkins University, July 6 2015.

Though overall HIV rates have flattened in recent years and a diagnosis is no longer the death sentence it was once considered, researchers are concerned that the epidemic still persists globally.

One significant obstacle is the failure to get pre-exposure prophylaxis, or PrEP (a pill that has proved highly effective in reducing transmission among this population) to the people who need it most—those who are HIV negative and are at high risk of infection.

Chris Beyrer, a Bloomberg School professor and president of the International AIDS Society, notes that the United Kingdom refuses so far to subsidize PrEP. And while it's available in the U.S., racial and economic disparities impact access, and low-income, predominantly minority communities continue to see the HIV epidemic persist.

"Stigma and discrimination continue to play a very big role in these epidemics," Beyrer says.

Fig. 3C

	(c)		With reference to Fig. 3C and your own knowledge, explain why is HIV still a challenge today?	[4]
			• **Max 2m if no reference to figure** • Social stigma: HIV/AIDS patients faces discrimination → Social stigma has resulted in people with HIV/AIDS trying to hide their health condition and not seeking treatment. • High Cost of PrEP (due to lack of subsidies) → unable to afford treatment → high risk of infection • Low income → unable to afford checks/ treatment → increase risk of infection • Low income → Result in lower rate of education → higher chances of engaging in high-risk activities → higher chances of contracting HIV/ ADS • Education: The low level of education, esp in LDCs, cause low awareness of HIV/ AIDS (how it is transmitted/ treatment) • Cultural practices keep girls from knowing about sex and sexuality until marriage (lack knowledge) → unable to command rights (to reject inappropriate sexual practice or culture) → increase risk of spread	

			• In LDCs, traditional societies that practise polygamy also have higher incidences of HIV/AIDS cases as have multiple sex partners. • Lapses in medical practices: Corruption and negligence associated with medical practices (contaminated syringes) contribute to spread of HIV/AIDS • LDCs: Poor access to healthcare (due to less investment from govt/ poor transport network) → unable to receive checks/ treatment → high risk of infection • Vice trades: Some women (especially those who move from the villages) have limited access to education and job training, resulting in limited job options → these women may resort to commercial sex work due to the lack of viable options → Thus, they are vulnerable to HIV/AIDS • Mobility: People who have left their families in search of work may feel socially excluded and get involved in risk-taking behaviours → increase risk of infection • Development of modern transportation (e.g. airline transportation) has helped in the spread HIV/AIDS → The disease spread in a shorter period of time and reached more people across the globe • The tourism industry contributes to the spread of HIV/AIDS →increase tourism due to increase income → Tourists often take risks that they would not take at home, e.g. drink more, engage in unprotected sex → increase risk **Accept any plausible answers*	
	(d)		"HIV affects only the individual." How far do you agree with the statement? Support with examples.	[8]
			Level 1 (0-3m) ▪ Brief description ▪ Only discuss effect on individual ▪ No examples **Level 2 (4-6m)** ▪ Somewhat detailed explanation of 2-3 groups ▪ Include individuals and 1-2 other groups ▪ Support with general examples **Level 3 (7-8m)** ▪ Detailed explanation ▪ Include individuals and 2 other groups ▪ Must include effect on country ▪ Support with detailed examples ▪ Personal opinion • **3 components (with detailed explanation) + specific examples = Level 3 (7-8m)** • **No examples = max 3m** • **Individual vs other individual vs family vs country**	

<u>The individual</u>
Once infected → affect health → reduce life expectancy (e.g. reduce LE by 6 years old or reduce LE by 10.8 by 2025 or killed 35million)
Once infected → affect health → absent from work often → lower pay
Once infected → affect health → spend more money on health care → lesser money available for other expenditure → decrease personal quality of life

<u>Can also affect other individual:</u>

1. Children or infants born to HIV-positive mothers/ family
    - Children are vulnerable to HIV/AIDS because they are dependent on their parents.
        - 90% of all children living with HIV/AIDS acquired it from their mothers during pregnancy, birth or breastfeeding.
        - More than 3.4million children around the world living with HIV/ AIDS with 390000 more being infected each year
        - In 2007, 2 million children (under 15 years old) were living with HIV/ AIDS
            - 90% were in Sub-Saharan Africa
        - In 2007, 270000 children worldwide died of HIV/ AIDS
    - Increase orphans: 17 million orphans due to HIV
    - children lose their parents from HIV/ AIDS → no one to support them financially or emotionally → unable to afford education (drop out of sch due to stigma) → low education → unable to find a job/ low paying job → decrease income
    - children lose their parents from HIV/ AIDS → no one to support them financially or emotionally → unable to afford education (drop out of sch due to stigma) → low education → unable to find a job/ low paying job → engage in high risk activities (or being forced into the sex industry and recruitment as child soldiers) → increase risk of infection

<u>Can affect other groups</u>

2. Family
    - Family suffer loss of income → need to spend on healthcare for HIV patient → less money available for other areas e.g. education, food → affects personal quality of life
    - 1/3 of family's income used to care for HIV patient (Ghana, Africa)

3. Country
    - Country experienced slower economic growth
        - increase public health expenditure → lesser money available for other areas of

development e.g. building of infrastructures and services → reduce investment or business → economic growth hindered
- HIV/ AIDS infected people → high death rate → reduce skilled labour → affect productivity, sales, taxes and income → economic growth affected
- HIV/ AIDS infected people → high death rate → reduce skilled labour → increase cost of recruitment and training → less profits
- HIV/ AIDS infected people → more absences → reduce productivity → less goods and services for sale → less income/ profits
- South Africa spent US$12billion on healthcare for HIV in 2010.

**Accept any plausible answers*

4	(a)		Study Fig. 4A which shows the leading cause of deaths in USA and Africa in 2012.

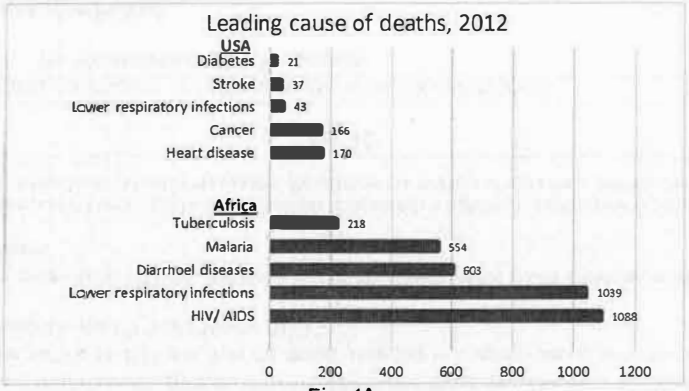


Fig. 4A

		(i)	Compare the leading cause of deaths in USA and Africa in 2012.	[4]

- Description + data = 1m
- Both USA's and Africa's leading cause of deaths includes lower respiratory infection. Africa has 1039 people infected while than USA has 43 people infected.
- More people die from lower respiratory infection in the Africa (1039) than USA (43).
- More people die from diseases in the Africa (3502) than USA (437).
- The top killer in the USA is heart disease, claiming 170 lives, while the top killer in Africa is HIV/ AIDS, claiming 1088 lives
- The lowest top 5 leading disease in Africa cause more deaths than the top leading disease in USA. E.g. Tuberculosis caused 218 deaths in Africa while Heart disease caused 170 deaths in USA.
- USA's leading cause of deaths is mainly degenerative diseases while Africa's leading cause of deaths is mainly infectious diseases.

**Accept any plausible answers*

		(ii)	Account for the leading cause of deaths in USA and Africa in 2012.	[4]

USA – More degenerative diseases due to:

1. Diet: High consumption of meat and other non-staple food due to higher income and purchasing power→ Higher prevalence of obesity → more degenerative diseases (e.g. heart disease)
2. Lifestyle: Lower levels of physical activity due to more hired help/ spend more time at work → Higher prevalence of obesity → more degenerative diseases (e.g. heart disease)

Africa – More infectious diseases due to:

1. Education: lower education → lack knowledge of disease and how it is transmitted → increase risk of transmission → increase risk of infection → more infectious disease (e.g. HIV)
2. Education: lower education → unable to find jobs/ low-paying jobs → less income → unable to afford healthcare or seek treatment → increase infection →more infectious disease (e.g. HIV)
3. Poverty: Poverty → unable to afford healthcare or seek treatment → increase infection →more infectious disease (e.g. HIV)
4. Poverty: Poverty → unable to afford food → malnutrition → weak body → more susceptible to infection → increase infection →more infectious disease (e.g. Diarrhoel disease)
5. Healthcare: less investment in healthcare → less medical personnel and facilities → unable to receive timely medical help → increase infection →more infectious disease (e.g. HIV)
6. Living condition: Overcrowding → easy to spread disease→ increase infection → more infectious disease (e.g. malaria)
7. Living condition: Low access to clean water supply → more breeding zones/ contamination water contains bacteria → increase infection → more infectious disease (e.g. malaria)
8. Living condition: Low access to sanitation → easy to spread disease→ increase infection → more infectious disease (e.g. malaria)

**Accept any plausible answers*

	(b)	(i)	Explain how global warming has contributed to the rise in malaria in the world.	[3]
			▪ Global warming → increase global temperature → increased lifespan of female mosquito → increased bites by female mosquito → more infection ▪ Global warming → increase global temperature → shorter developing time for mosquito parasites → mosquitos become active and infectious sooner → more infection ▪ Global warming → increase global temperature → melting of ice caps → rise in sea level → more flooding → form pools of water for mosquitoes to breed in → increase mosquitos → increase risk of malaria ▪ Global warming →increase incidence of rain → → form pools of water for mosquitoes to breed in → increase mosquitos → increase risk of malaria **Accept any plausible answers*	
	(c)		Study Fig. 4B, which shows an excerpt from The Ethiopian Herald on malaria.	
			Ethiopia: Enhancing Efforts to Eliminate Malaria The Ethiopian Herald, 26 April 2016 According to the World Health Organization, nearly half of the world's population that accounts 3.2 billion people is still at risk of contracting malaria. In 2015 alone 214 million new cases of malaria were reported from 95 countries. More than 400,000 people died from the disease. The problem is seemingly more serious in Sub-Saharan Africa since nine out of ten deaths from malaria in 2015 was from the region, according to a report released yesterday in connection with the World Malaria Day. No exception to Ethiopia, malaria is one of the leading public health problems in the country. Malaria is not only a public health problem. It represents a significant impediment to socio-economic development in the country, for example due to a loss of work force and time, and Fig. 4B	
		(ii)	Discuss the impacts on malaria on the individual and country.	[6]
			• **3m for individual, 3m for country** Impact on individual ▪ Malaria → affect health → reduce life expectancy/ cause death ▪ Woman who contract malaria during pregnancy → infect unborn baby → increase infant mortality rate	

			▪ Malaria → affect health → absent from work often → lower pay → lesser money available for healthcare or other expenditure ▪ Malaria → affect health → absent/ dropout from sch → less educated → unable to find job/ find low-paying job → less income ▪ Malaria → affect health → spend more money on health care → lesser money available for other expenditure → lower personal quality of life (or less education → can't find work/ lower paying job → less income) Impact on country ▪ Malaria → increase public health expenditure → lesser money available for other areas of development e.g. building of infrastructures and services -→ lower economic growth ▪ Malaria → bad reputation → tourist fear contract disease → less tourism → less GDP → slow down economy ▪ Malaria → high death rate → reduce skilled labour → lower productivity → less income → slow economic growth ▪ Malaria → high death rate → reduce skilled labour → increase cost of recruitment and training → less income/ profits → slow economic growth ▪ Malaria → high death rate → reduce skilled labour → reduce investment or business → economic growth hindered ▪ Malaria → more absences → reduce productivity → less goods and services for sale → less income/ profits → less gdp → lower economic growth ▪ Malaria → affect farmers → low productivity at farms → less crop yield → less food available for consumption → food shortage → malnutrition or starvation	
	(c)		The management of malaria only lies in the hands of the government. How far do you agree with the statement? Support with examples.	[8]
			Level 1 (0-3m) ▪ Brief description ▪ Only discuss solution by government ▪ No examples **Level 2 (4-6m)** ▪ Somewhat detailed explanation of 2-3 solutions ▪ Discuss solution by government and 1-2 other roles ▪ Support with general examples **Level 3 (7-8m)** ▪ Detailed explanation of at least 3 solutions ▪ Include solution by government and 2 other groups ▪ Support with detailed examples ▪ Personal opinion • **3 components (with detailed explanation and limitations) + specific examples = Level 3 (7-8m)**	

- **Govt vs individual vs community vs international organisation**

Example	Description	Successes	Limitations
Government – Precautionary measure			
Thermal fogging in Thailand	• Involves the distribution of insecticides by using fog produced by heat • Thermal fogging is applied during malaria outbreaks and in uncontrolled transmission areas • In principle, thermal fogging is applied once a week for 4 consecutive weeks	• useful way to increase the body's immunity to certain diseases	• Thermal fogging is expensive and must be carried out on a regular basis in order to be effective • The thick fog causes reduced visibility and is a traffic hazard
Government - Mitigation			
NEA's approach to vector control	• five-pronged approach to vector control (Surveillance, education, enforcement, research and regulation) • launched 'Do the Mozzie Wipeout' to prevent an outbreak of dengue fever • worked on outreach to raise awareness on prevention methods • uses the 'Colour Coded Alert System' to indicate the corresponding preventive measures to take	• The WHO cited Singapore as a good role model in preventing and managing dengue cases and encouraged other countries to learn from Singapore. • The number of cases with more serious dengue fever has decreased	• Most people are unaware or complacent about Aedes mosquitoes breeding at their place of residence • Due to climate change, mosquitoes breed faster at higher temperatures • More people had been infected with Den-1, a new dominant virus • Majority of the population

		in recent years since the 2005 dengue outbreak.	has no immunity against the new virus
Community			
Community-based mosquito control in Managua, Nicaragua	• Community residents conducted surveys to ascertain neighbourhood residents' existing understanding of dengue and mosquito-control practices • Residents identified mosquito breeding sites and examined households for breeding sites	• Dengue infection in children declined by more than half from 2004 to 2007 • Households were 25% less likely to have breeding sites for mosquitoes •	• The community needs cooperation from the government to manage water and waste • The government could help monitor out-of-reach areas (*e.g. sewers*) on behalf of the community •
Geographic Information System (GIS) in Vellore, India	• identifies the location of infections and pinpoints the start of outbreaks of dengue fever • used to locate potential mosquito breeding zones that may be targeted for control	• Volunteers from the community helped to collect data for the mapping of dengue fever outbreaks • Identifying and reducing breeding sites of mosquitoes is most effective long term • GIS can be used to alert the public of	• Street addresses may not be available for mapping purposes • The relationship between pinpointing a disease and the potential environmental risk factor is difficult to prove • Inaccurate data may be used in the mapping of the disease

		an impending outbreak of dengue	
International Organiation			
Rolling Back Malaria: The Global Strategy and Booster Program	• Started by the World Bank in 2005 • Aims to mobilise financial and technical resources from within and outside the World Bank to provide items such as insecticide-treated bed nets, antimalarial drugs • Lower taxes on such items • Improve and maintain long-term commitment to malaria control by governments and civil society groups	• More than 300,000 village-based volunteers have been trained and supplied with antimalarial drugs • Almost 3 million insecticide-treated bed nets were distributed • Local governments, community groups and NGOs have become actively involved in a number of activities • Reported cases of malaria declined for the states of Maharashtra (93.3%), Gujarat (80.8%), and	• The World Bank has limited control over how the fund is used in health care once the finances have been provided to the country • In Ghana, despite increased Ministry of Health budget (partly funded by World Bank), malaria incidence is on the rise

		Rajasthan (40.6%) from 1997 to 2002