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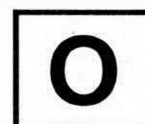
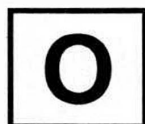


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Index Number	Class	Name
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CHIJ ST JOSEPH'S CONVENT PRELIMINARY EXAMINATION



GEOGRAPHY

2236/01

Paper 1

Thursday, 11 August 2016
1 hour 40 minutes

Secondary 4 Express

Additional Materials: Writing paper

READ THESE INSTRUCTIONS FIRST

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

Section A

Answer **Question 1**.

Section B

Answer **one** question.

Candidates are encouraged to support their answers with the use of relevant examples.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

The number of marks is given in brackets [] at the end of each question or part-question.
You are reminded to begin each question on a fresh page.

At the end of the examination, attach this Cover Page on top of all your answers securely.
Hand in the Question Paper separately.

FOR EXAMINER'S USE	
Section A	25
Section B	25
Total	50

This document consists of 7 printed pages and 1 blank page.

Setter(s):

[Turn over

Section A

Answer all questions in Section A.

- 1 A group of students were interested in conducting an investigation along a beach with the presence of groynes, as shown in Figure 1. They wanted to study how wind direction influences the direction of sediment movement and the effectiveness of using groynes in retaining sediments.

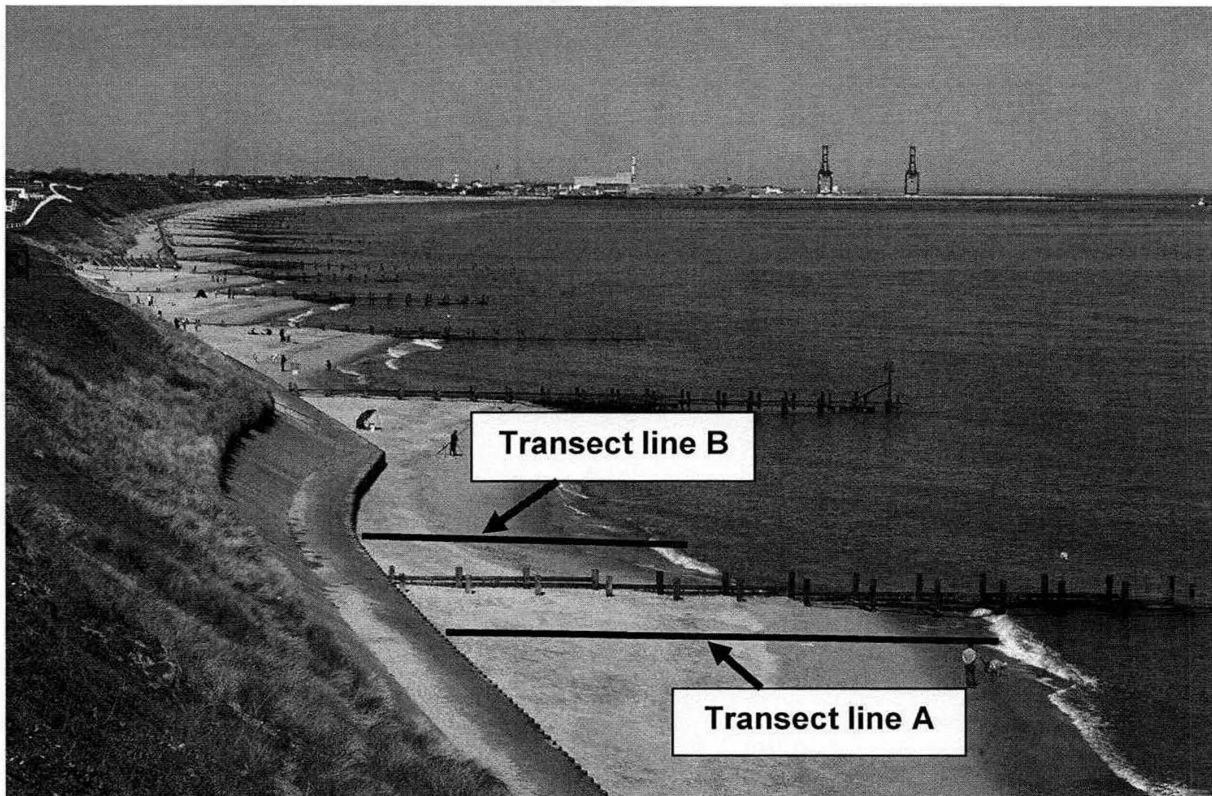


Figure 1

- a Suggest two possible reasons why students should conduct a pre-fieldwork survey before their actual investigation. [2]
- b Explain how the students could investigate whether wind direction affects the movement of sediments along the beach. [4]

- c The students tested the hypothesis 'The groyne is an effective measure in retaining sediments.'

The students measured the beach gradient at two lines of transect at **A** and **B**, one at each side of the groyne. The results are shown in Table 1.

Distance from low water mark (m)	Line A Angle of Elevation (degrees)	Line B Angle of Elevation (degrees)
2	3	0.5
4	4	1
6	6	2
8	7	4
10	6	6

Table 1

- Using the data shown in Table 1, construct a suitable graph to represent the data. [3]
- d From studying the data in Table 1, what conclusions might the students draw about their hypothesis? [3]
- e Explain two factors that might affect the validity of the conclusion made in above question. [4]

- f Some of the students extended the investigation done at the beach by testing the hypothesis that 'The presence of groynes has an impact on the number of visitors to the beach.'

First, the students carried out a questionnaire near some shops along the beach. They interviewed 50 visitors to the beach, only choosing to approach every third person who walked past them.

The questionnaire used and results are shown in Figure 2.

1. What mode of transport did you take to come to the beach?	
A. By car.	40
B. By bus.	8
C. By train.	2
2. Why did you choose to visit this beach?	
A. Beautiful scenery	7
B. Cleanliness	3
C. Presence of shops near the beach	40
D. A good place to swim	0
3. What activities did you do at the beach?	
A. Have a meal at the restaurants nearby	44
B. Take a walk	5
C. Swim	1
D. Have a picnic	0
4. 'The presence of groynes does not have any impact on my experience at the beach.' Do you agree with the statement?	
A. Yes	45
B. No	5

Figure 2

- i Explain the advantages of using the type of questionnaire shown in Figure 2. [2]
- ii Suggest two ways how the questionnaire in Figure 2 could be improved. [2]
- g The students realized there could be some limitations in their data collection method that may skew their conclusion to their investigation.
Identify the sampling method used and explain a limitation that it has. [2]
- h Describe one other method the students could have used to investigate the impact groynes have on the number of visitors at the beach. [3]

Section B

Answer one question from Section B.

2a Figure 3 shows a landform in a part of a map.

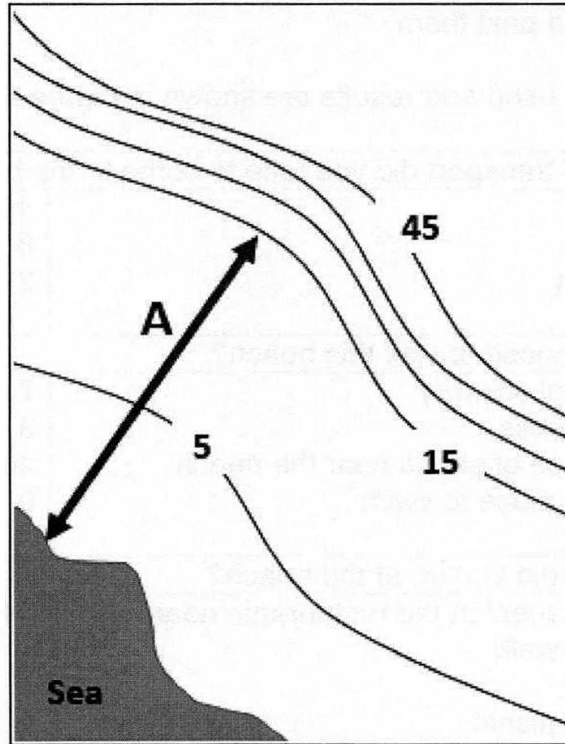


Figure 3

- i With the aid of labelled diagrams, explain the formation of the landform in Figure 3. [5]
 - ii Identify and describe the type of wave found at A. [4]
- b Figure 4 is an extract on the impacts of an earthquake that struck Japan in 2011.

A severe natural disaster occurred in north eastern Japan on March 11, 2011. The event began with a powerful earthquake of magnitude 9.0 off the north-eastern coast of Honshu, Japan's main island, which caused widespread damage on land and initiated a series of large tsunami waves that devastated many coastal areas of the country, most notably in the Tōhoku region. The tsunami also instigated a major nuclear accident at a power station along the coast.

Figure 4

- With reference to Figure 4, explain how the earthquake may affect the tourism industry in Japan and her neighbouring countries. [4]
- c Discuss how media could influence the decisions of tourists when choosing to visit a country. [4]
 - d "The development of coastal tourism will bring more benefits than harm to a country." Discuss this statement with reference to relevant examples. [8]

3a Figure 5 shows the different activities and attractions in South Korea.

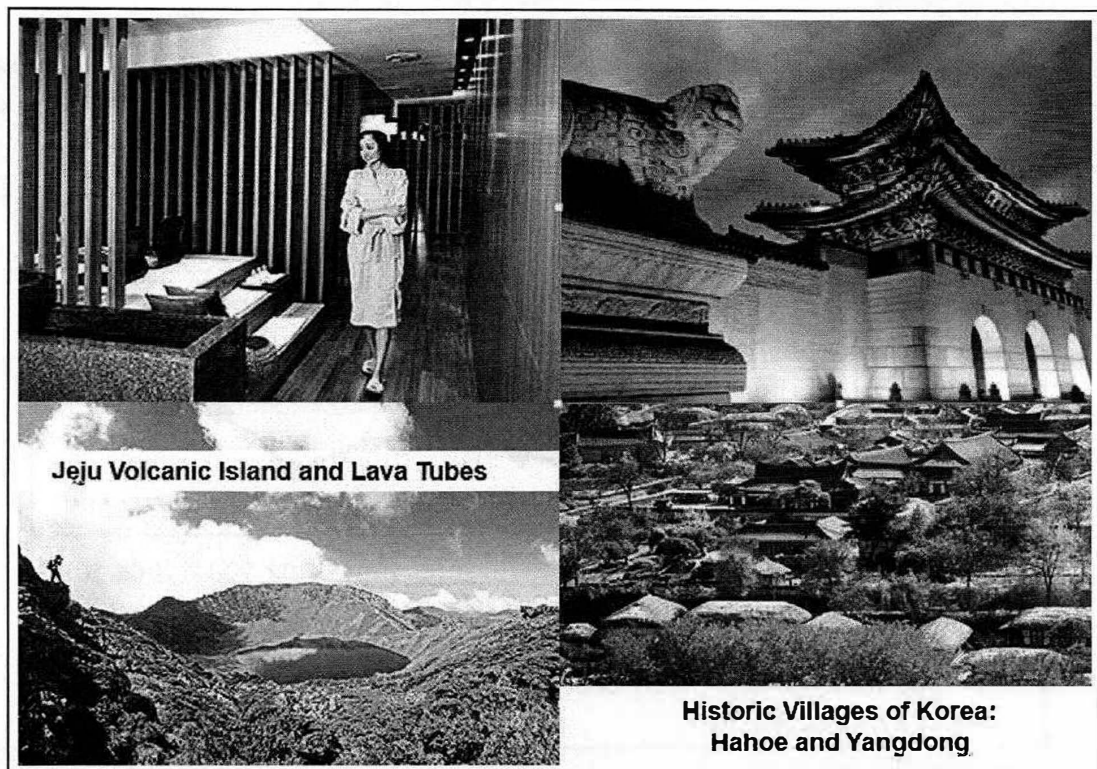


Figure 5

With reference to Figure 5 only, explain why visitors may choose to visit South Korea.

[4]

b Figure 6 is an extract on the development of tourism in India.

Tourism development in India has passed through many phases. The first step to promote tourism in India after independence was the formation of a separate Department of Tourism under the Ministry of Transport and Communications in 1958. It helps in promoting international and domestic tourism in the country. It provides infrastructure, information aimed at promotion of tourists' sites in the world market, carries out publicity campaigns and formulates policies and programmes for the promotion of tourism in the country. The Indian Institute of Tourism and Travel Management, the National Council for Hotel management and Catering technology provide professionally trained personnel to the industry.

Figure 6

With reference to Figure 6 only, discuss two impact India may experience due to tourism development in the country.

[4]

- c Figure 7 shows the trend in world tourist arrivals and tourists arrivals to India from 1995 to 2005.

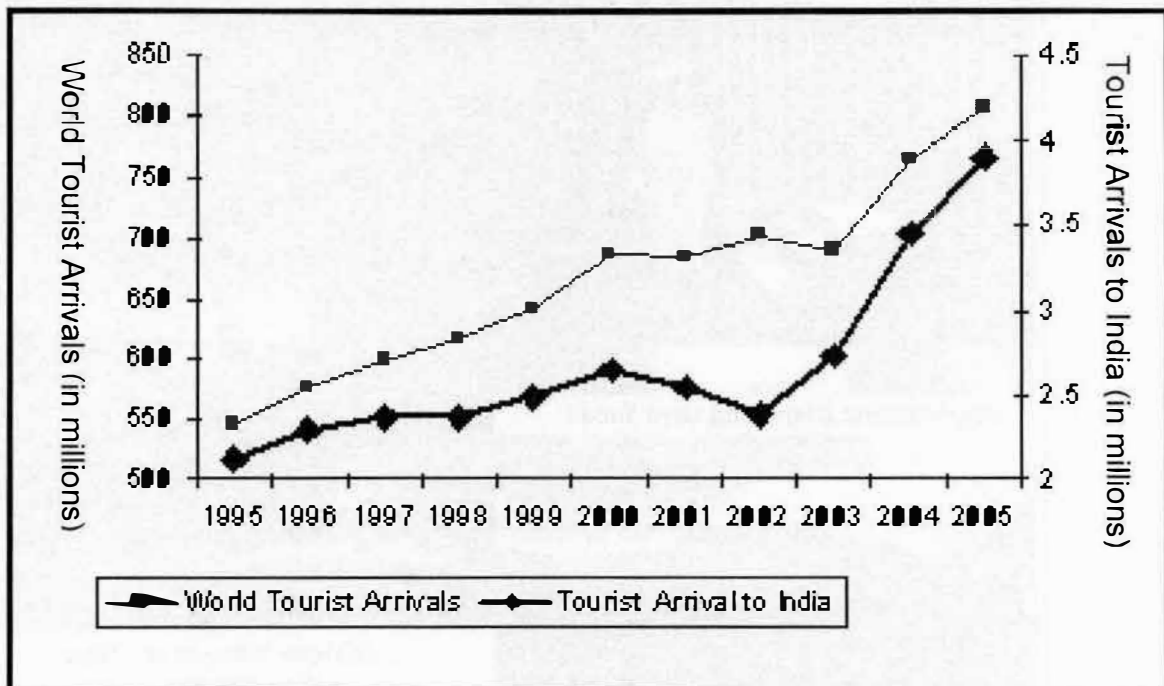


Figure 7

With reference to Figure 7, describe the trend of world tourist arrivals and tourist arrivals to India between 1995 and 2005. [5]

- d Explain possible reasons that may cause a decrease in tourism arrivals. [4]

- e "Tourists play the most important role in ensuring tourism is sustainable." Do you agree? Discuss with the use of relevant examples. [8]

-End of Paper-

Acknowledgements

Fig 1 <http://www.stacey.peak-media.co.uk/NNorfolk/Horton2010/1280-DSC02152.jpg>

Fig 4 <https://global.britannica.com/event/Japan-earthquake-and-tsunami-of-2011>

Fig 5 http://english.visitkorea.or.kr/enu/ATR/SI_ENG_2_8_1.jsp

Fig 6 http://www.academia.edu/7786318/Tourism_Development_in_India_under_Government_Five_Year_Plans

Fig 7 <http://www.gidb.org/tourism-current-tourismtrend-in-india>

Section A

Answer all questions in Section A.

- 1 A group of students were interested in conducting an investigation along a beach with the presence of groynes, as shown in Figure 1. They wanted to study how wind direction influences the direction of sediment movement and the effectiveness of using groynes in retaining sediments.

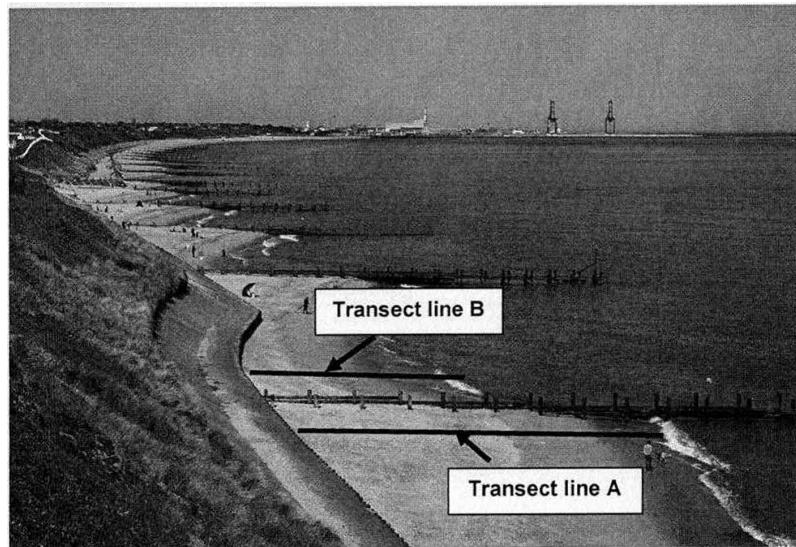


Figure 1

- a Suggest two possible reasons why students should conduct a pre-fieldwork survey before their actual investigation. [2]

Check extent of area for students to carry out investigation given the time limit

- Identify possible survey sites for investigation
- Ascertain safety of the area in which students will conduct fieldwork
- Determine a suitable timing / day / location to carry out the fieldwork (for low tide in order to carry out fieldwork)
- Familiarise themselves with the routes to the fieldwork sites

1 mark per point

Too vague

For safety purposes

Any 2 plausible reasons accepted but it has to be precise in terms and specific actions.

- b Explain how the students could investigate whether wind direction affects the movement of sediments along the beach. [4]

1m for each of the following:

- Use a wind vane to find the direction of the wind. Record the direction of the wind.
- Near the water's edge, stick the first pole into the sand. At this spot, throw a buoyant object such as an orange one metre away from the water's edge.
- Observe the pattern of travelling path of the oranges for at least 10 mins and stick a second pole into the sand where the oranges finally land.
- Compare the direction the oranges travelled and the wind direction to suggest a relationship.

- c The students tested the hypothesis 'The groyne is an effective measure in retaining sediments.'

The students measured the beach gradient at two lines of transect at A and B, one at each side of the groyne. The results are shown in Table 1.

Distance from low water mark (m)	Line A Angle of Elevation (degrees)	Line B Angle of Elevation (degrees)
2	3	0.5
4	4	1
6	6	2
8	7	4
10	6	6

Table 1

Using the data shown in Table 1, construct a suitable graph to represent the data. [3]

Students should draw graph that indicates gradient. Otherwise, can accept line or bar graph.

Title: 1m

X and Y axis correctly labelled : 1m

Data accurately represented : 1m

- d From studying the data in Table 1, what conclusions might the students draw about their hypothesis? [3]

1m for stating hypothesis or conclusion.

1m for explaining why the hypothesis is proven

1m for using data from given figure

The hypothesis is true.

This is so as the angle of elevation is steeper at line of transect A than B, especially so when it is at 2 to 8 metres from the water mark, ----- Therefore, we can conclude

that sediment are indeed retained (more) at one side of the groyne.

- e Explain 2 factors that might affect the validity of the conclusion made in above question.

Scope of investigation – the students only studied one point or location in the entire beach / they only studied one beach with groynes.

Frequency of data collection – students only collected data once, at one timing. This might have affected validity as data would differ or there might be disparity in data over various days.

Choice of location – due to human activities / other engineering methods, hence need to choose an appropriate location

- f Some of the students extended the investigation done at the beach by testing the hypothesis that 'The presence of groynes has an impact on the number of visitors to the beach.'

First, the students carried out a questionnaire near some shops along the beach. They interviewed 50 visitors to the beach, only choosing to approach every 3rd person who walked past them.

The questionnaire used and results are shown in Figure 2.

1. What mode of transport did you take to come to the beach?	
A. By car.	40
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A. Have a meal at the restaurants nearby	44
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4. 'The presence of groynes does not have any impact on my experience at the beach.' Do you agree with the statement?	
A. Yes	45
B. No	5

Figure 2

- i Explain the advantages of using the type of questionnaire shown in Figure 2.

[2]

Any two of the following points (1m for each point):

- Allow students to speak with or interview with a larger number of people/ gather large amounts of information or data in a shorter amount of time
- Results in the questionnaire can usually be quickly and easily quantified
- Can easily use data to do comparisons once the data have been presented

Any other plausible points

- ii Suggest two ways how the questionnaire in Fig. 2 could be improved.

[2]

Any two of the following points (1m for each point):

- Have a combination of open and closed-ended questions instead of just closed-ended questions
- Include more questions about how the presence of groynes affects the impact of the visitor's experience at the beach (that are relevant)
- Allow visitors to select more than one option for each question in the survey
- Provide more options for the questions or allow visitors to answer with an 'others' option so that they are able to give their individual views

Any other plausible points

- G The students realized there could be some limitations in their data collection method that may skew their conclusion to their investigation.

Identify the sampling method used and explain a limitation that it has.

[2]

- systematic sampling
- It is more biased, as not all members or points have an equal chance of being selected and may therefore lead to over or under representation of a particular pattern

- h Describe one other method the students could have used to investigate the impact groynes have on the number of visitors at the beach.

[3]

- Bi-polar survey
Allows for collection of qualitative data on people's perception
Includes choosing pairs of opposite characteristics where a range of scores is assigned to each criteria listed in the table

Section B

Answer one question from Section B.

2a Figure 3 shows a landform in a part of a map.

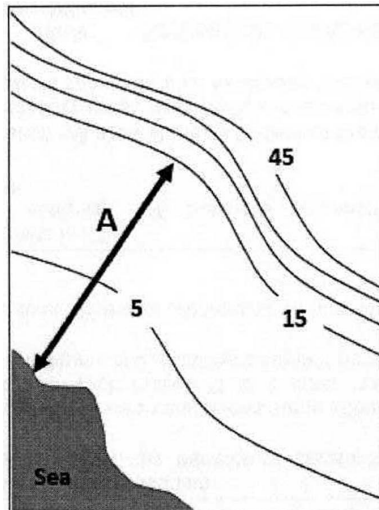
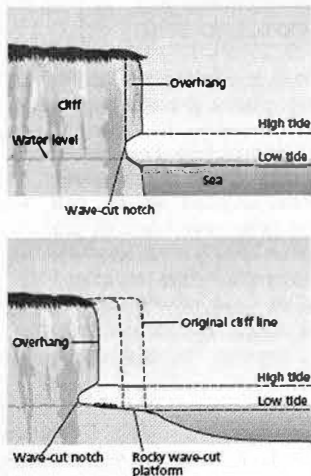


Figure 3

i With the aid of labelled diagrams, explain the formation of the landform in Figure 3. [5]



<http://croesy-gcse-geography.doomby.com/medias/images/wave-cut.jpg>

- Wave erosion along a line of weakness produces a cut called a notch on the coast. The notch is further eroded to form a cave.
- Further erosion causes the overhanging part of the cave to collapse into the sea and a cliff is left behind.
- Continuous erosion causes the cliff to move back or retreat inland. Over time, a wave-cut platform is formed at the foot of the cliff.

2 mark for diagrams

1 mark per point, max 3 marks

ii Identify and describe the type of wave found at A. [4]

- Destructive wave
- Weak swash, strong backwash
- They have tall breakers that have a high downward force and a strong backwash.
- Their frequency is high with between 13 and 15 waves per minute.
- Destructive waves have a large wave height and short wave length.

1 mark per point

b Figure 4 is an extract on the impacts of an earthquake that struck Japan in 2011.

A severe natural disaster occurred in north eastern Japan on March 11, 2011. The event began with a powerful earthquake of magnitude 9.0 off the north-eastern coast of Honshu, Japan's main island, which caused widespread damage on land and initiated a series of large tsunami waves that devastated many coastal areas of the country, most notably in the Tōhoku region. The tsunami also instigated a major nuclear accident at a power station along the coast.

Figure 4

With reference to Figure 4, explain how the earthquake may affect the tourism industry in Japan and her neighbouring countries. [4]

- Destruction of infrastructure will discourage tourists from visiting Japan because it poses greater risks to the safety of the tourists
- This will in turn affect the country's economy as there is a decrease in earnings from the tourist dollar
- Discourage citizens of Japan from travelling overseas therefore effecting the tourism industries of nearby countries,
- losing income from the Japanese tourists
- Nuclear accident may affect neighbouring countries so tourists avoid Japan and neighbouring countries
- Tourists who now avoid Japan may choose to visit the neighbouring countries, therefore increasing the number of tourists there, increase in tourism spending, boost economy

1 mark per point, max 4 marks

Need to address both Japan and neighbouring countries

1 mark reserved for making reference to the figure

c Discuss how media could influence the decisions of tourists when choosing to visit a country.

[4]

- Media refer to channels such as television, radio, newspapers, internet and reports about a country or an area
- Positive reports such as the friendliness of the local population / interesting culture can encourage tourists to visit
- Negative reports such as disease outbreaks can deter visitors both immediately and for many years to come
- and tourists become more aware of destinations that have previously not considered and may also lead to some places gaining popularity because of favourable media reports

d "The development of coastal tourism will bring more benefits than harm to a country." Discuss this statement with reference to relevant examples.

[8]

L1 (1-3)	- Introduction to coastal tourism - Brief description of benefits / harms of coastal development - Listing of the various ways that coastal areas are being developed for tourism - Listing of uses of coasts - No examples
L2 (4-6)	- Introduction to coastal tourism - Attempts to discuss the benefits of developing coastal areas for tourism - Brings in another reason and shows some attempt to discuss it - Analyses how each reason (1 to 2 other reasons) contributes to benefits and harms of coastal development (for tourism) to a country No examples: max 4/5 marks (depending on how thorough the preceding answer is)
L3 (7-8)	- Has all points in L2 - Detailed analysis, well balanced arguments with concluding paragraph • This question will allow students to discuss the benefits and harms of both developing coasts and tourism in a country. Students with high level answers should be able to discuss both simultaneously in their essays • Useful article: http://nsql.gso.uri.edu/washu/washuw99003/1-Introduction Miller.pdf • E.g. Harm: Loss of coastal habitats such as mangroves (if they are removed) • E.g. Benefit: Increase in conservation efforts of coastal ecosystem to attract tourists

3a Figure 5 shows the different activities and attractions in South Korea.

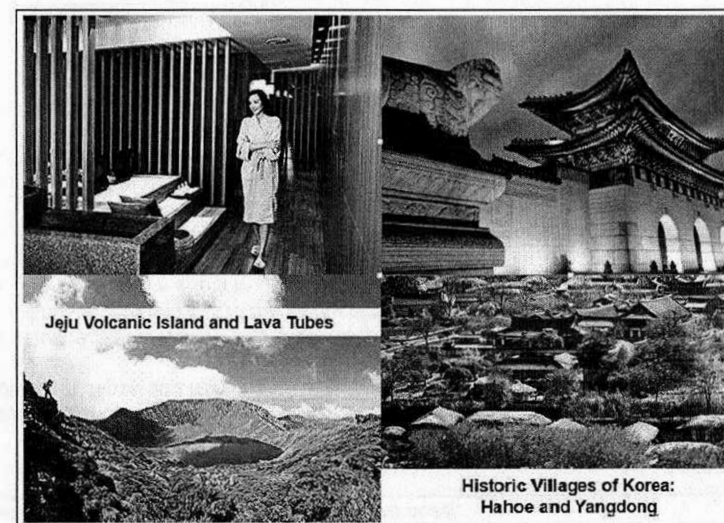


Figure 5

With reference to Figure 5 only, explain why visitors may choose to visit South Korea.

[4]

- For health tourism: to enhance and restore their minds and bodies, in hope of gaining therapeutic value through massages
- For heritage tourism: to experience Korea's culture and to understand the history of the places such as its Historical villages
- For Korea's beautiful scenery, provides opportunities for tourists' activities such as mountaineering and hiking.

Any 2 types of tourism

b Figure 6 is an extract on the development of tourism in India.

Tourism development in India has passed through many phases. The first step to promote tourism in India after independence was the formation of a separate Department of Tourism under the Ministry of Transport and Communications in 1958. It helps in promoting international and domestic tourism in the country. It provides infrastructure, information aimed at promotion of tourists' sites in the world market, carries out publicity campaigns and formulates policies and programmes for the promotion of tourism in the country. The Indian Institute of Tourism and Travel Management, the National Council for Hotel management and Catering technology provide professionally trained personnel to the industry.

Figure 6

With reference to Figure 6 only, discuss two impact India may experience due to tourism development in the country.

[4]

- Increase in job opportunities, improvement in economy
- Development of country due to infrastructure improvements by government's Department of Tourism under the Ministry of Transport and Comms
- Economic benefit from promotion of tourism, more tourists will visit
- Social impact → more tourists may cause harm to the environment such as littering / development will affect environment
- Improvement / building of new infrastructure → allow tourism to further develop → boost economy

- c Figure 7 shows the trend in world tourist arrivals and tourists arrivals to India from 1995 to 2005.

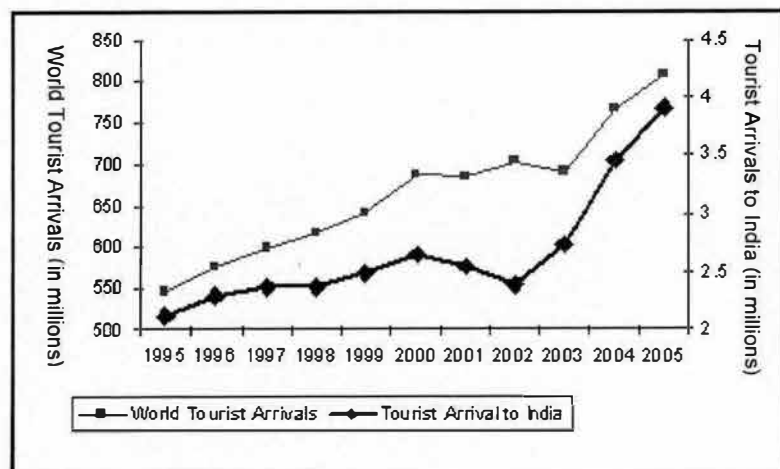


Figure 7

With reference to Figure 7, describe the trend of world tourist arrivals and tourist arrivals to India between 1995 and 2005.

[5]

Overall trend for both → 1 mark

World tourist arrivals

- Gradual increase from 1995 to 2000 from 550 to 680 million
- Growth became quite constant between 2000 to 2003
- Increase from 2003 to 2005 from 680 to 800 million

Tourist arrivals to India

- Gradual increase from 1995 to 2000 from about 2.1 million to 2.6 million tourist arrivals
- Sudden decrease from 2000 to 2002 from 2.6 million to 2.4 million
- Sharp increase from 2002 to 2005 from 2.4 million to 3.9 million

2 marks for world tourist arrivals
2 marks for tourist arrivals to india
1 mark for use of stats

- d Explain possible reasons that may cause a decrease in tourism arrivals.

[4]

Students to explain any of the 2 factors below

- Political instability
- Disease outbreak
- Natural disasters
- regional recession

- e "Tourists play the most important role in ensuring tourism is sustainable." Do you agree? Discuss with the use of relevant examples.

[8]
AO2

L1 (1-3)	- Introduction to sustainable tourism - Listing of the various groups that has a role in sustaining tourism - Brief description but does not specify how tourists have a role in sustaining tourism - No examples
L2 (4-6)	- Introduction to sustainable tourism - Listing of the various groups that has a role in sustaining tourism - Attempts to discuss the role of tourists in sustaining tourism - Brings in another reason and shows some attempt to discuss it - Analyses how each reason (1 to 2 other reasons) contributes to sustainable tourism - Can also mention management of tension between locals and tourists / the various groups so that tourism can continue to exist/thrive in that area No examples: max 4/5 marks (depending on how thorough the preceding answer is)
L3 (7-8)	- Has all points in L2 - Detailed analysis, well balanced arguments with concluding paragraph

-End of Paper-

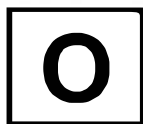
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 Fig 4 <https://global.britannica.com/event/Japan-earthquake-and-tsunami-of-2011>
 Fig 5 http://english.visitkorea.or.kr/enu/ATR/SI_ENG_2_8_1.jsp
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 Fig 7 <http://www.gidb.org/tourism-current-tourismtrend-in-india>

Index Number	Class	Name
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CHIJ ST JOSEPH'S CONVENT PRELIMINARY EXAMINATION



GEOGRAPHY

2236/02

Paper 2

Tuesday, 16 August 2016
1 hour 30 minutes

Secondary 4 Express

Additional Materials: Writing paper

READ THESE INSTRUCTIONS FIRST

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

Write in dark blue or black pen.

You may use a soft pencil for any diagrams or rough working.

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

Section A

Answer **one** question.

Section B

Answer **one** question.

Candidates are encouraged to support their answers with the use of relevant examples.

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

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

You are reminded to begin each question on a fresh page.

At the end of the examination, attach this Cover Page on top of all your answers securely.

Hand in the Question Paper separately.

FOR EXAMINER'S USE	
Section A	25
Section B	25
Total	50

This document consists of 9 printed pages and 1 blank page.

Setter(s):

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Section A

Answer one question from this section.

- 1 Figure 1 shows where volcanoes are located along the Ring of Fire.

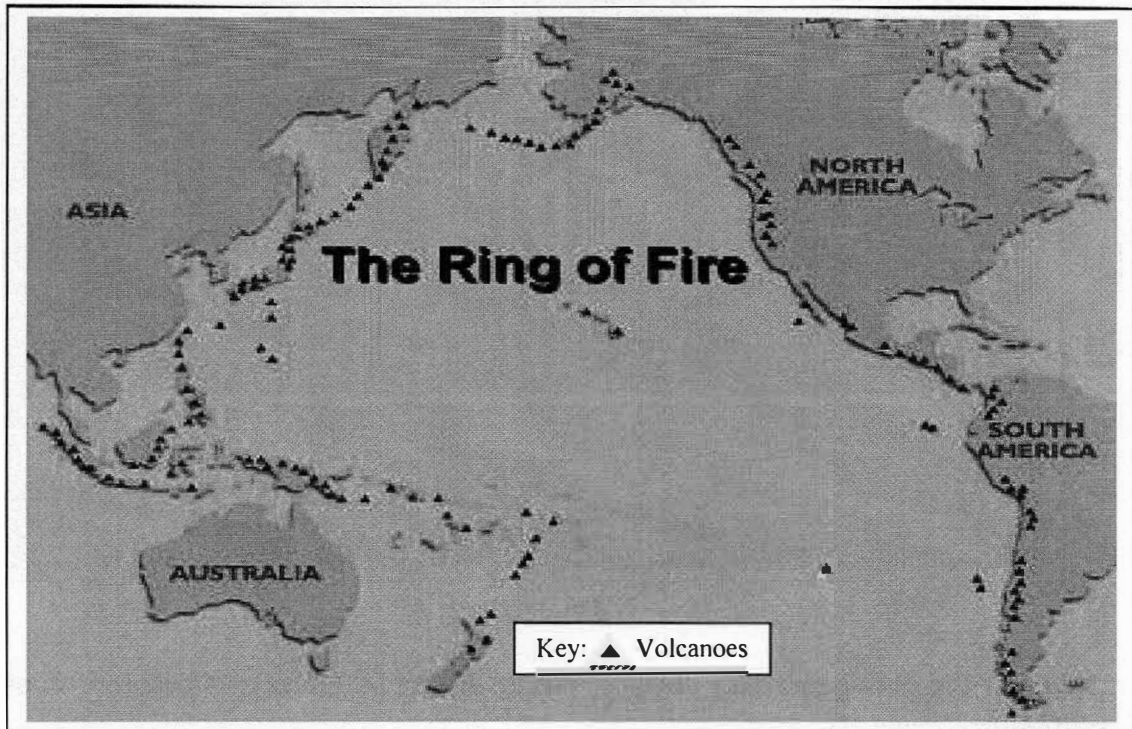
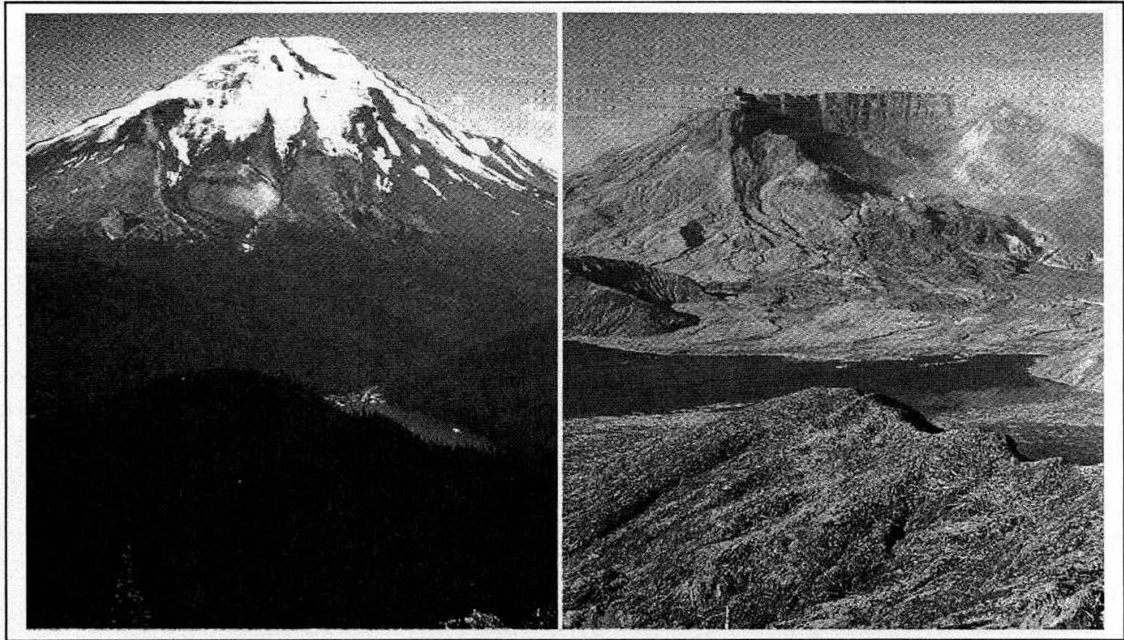


Figure 1

- a Describe the Ring of Fire and explain why it has a concentration of active volcanoes. [5]
- b Explain how convection currents move tectonic plates. [4]

- c Study Photograph A which shows the before and after images of the eruption of Mt St Helens, Washington, USA.



Photograph A

- i Describe the changes in the physical landscape of Mt St Helens before and after the eruption. [4]
- ii Discuss, with examples, the environmental risks and economic benefits of living in volcanic regions. [4]
- d "Short term responses are not as effective as long term mitigation measures in managing the effects of earthquakes." [8]
To what extent do you agree to this statement? Discuss with suitable examples.

- 2 Photograph B shows the features of a landform found in the Himalayan range.



Photograph B

- a Describe the features of this landform and suggest how tectonic processes resulted in its formation. [4]
- bi Suggest why Singapore experiences much convectional rain. [4]
- ii Explain the formation of convectional rain. [4]

- c Figure 2 shows the percentage of carbon dioxide emissions in the world.

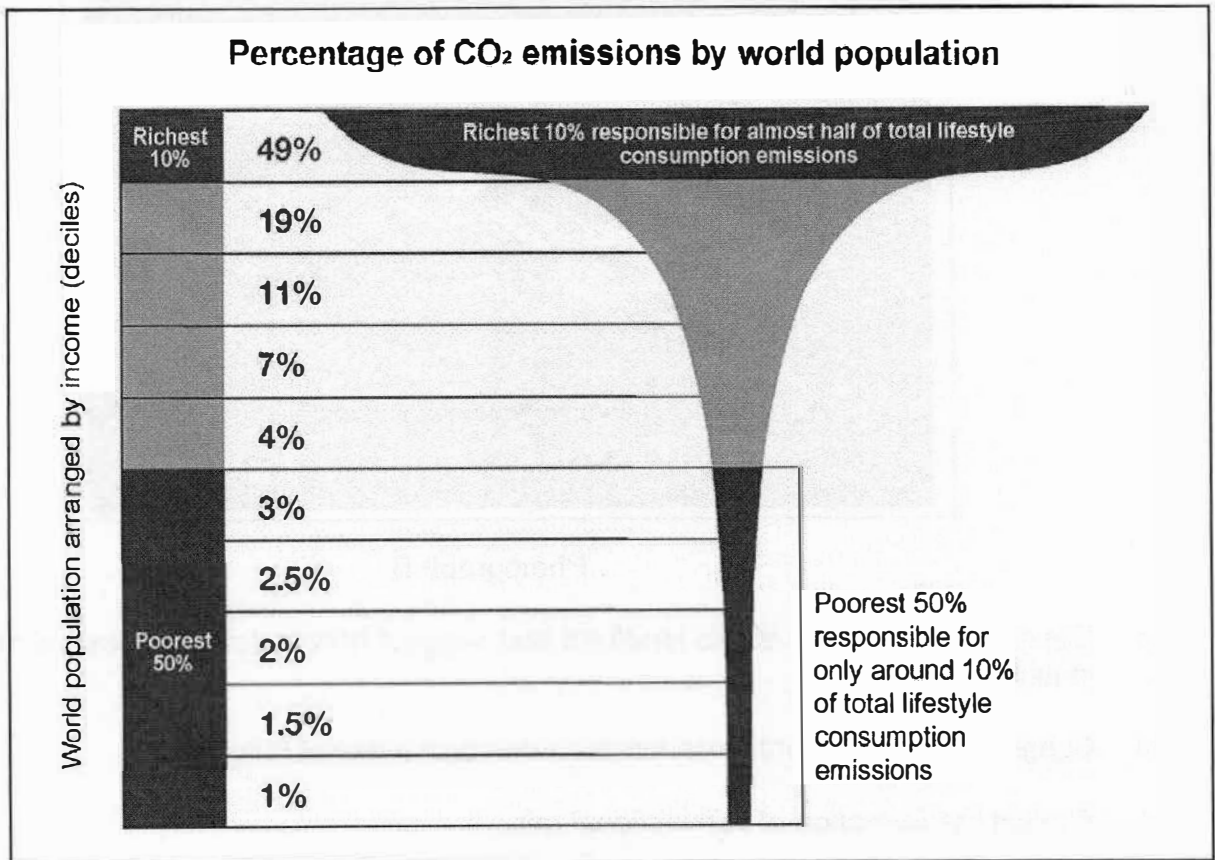


Figure 2

- Explain the difference in carbon dioxide emissions by the richest and the poorest people in the world. [5]
- d "Physical damage from hurricanes is the most impactful to a country." Discuss this with reference to examples. [8]

Section B

Answer one question from this section.

3a Figure 3 shows the distribution of infant mortality rates in 2012.

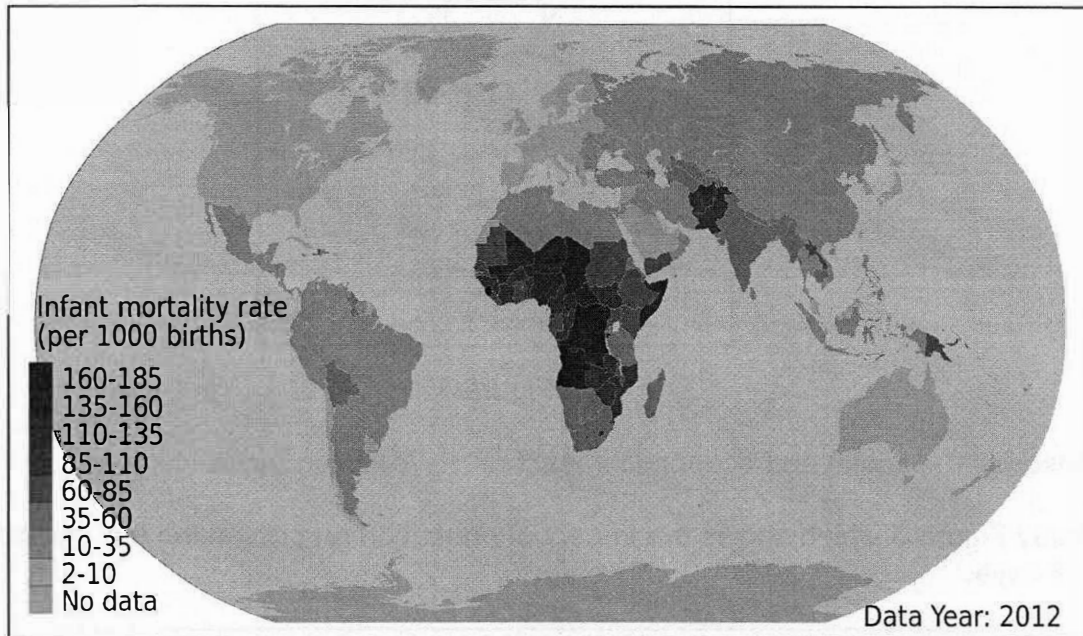


Figure 3

- i Describe the distribution of infant mortality rates in 2012 shown in Fig 3. [3]
- ii Explain how access to healthcare and drinking water affects infant mortality rates in developed and less developed countries. [5]

- b Figure 4 is an advertisement on children with HIV/AIDs.

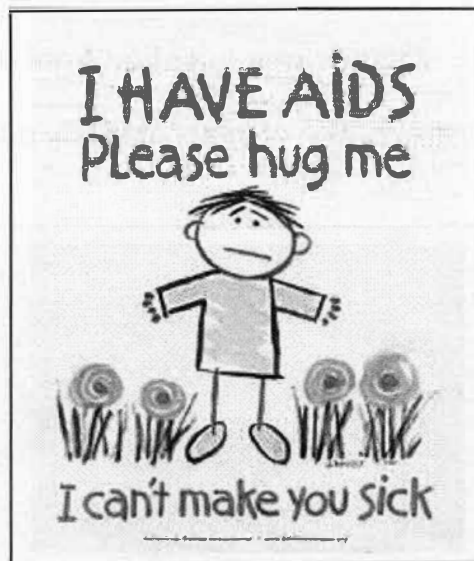


Figure 4

Describe the social and economic impact of HIV/AIDs on these children. [4]

- c Study Figure 5 which shows the impact of education on preventing the spread of HIV in Kenya.

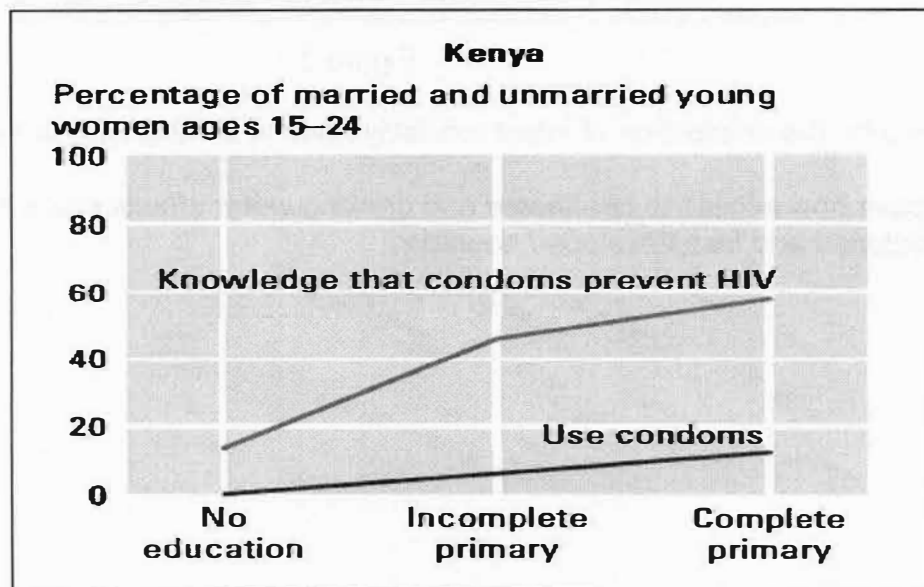


Figure 5

Using the figure, compare and explain the impact of education in preventing the spread of HIV in Kenya. [5]

- d “Managing the spread of infectious diseases require cooperation among different stakeholders.” [8]
Discuss this statement with reference to examples.

4a Figure 6 shows the extent of confirmed malaria cases in the world.

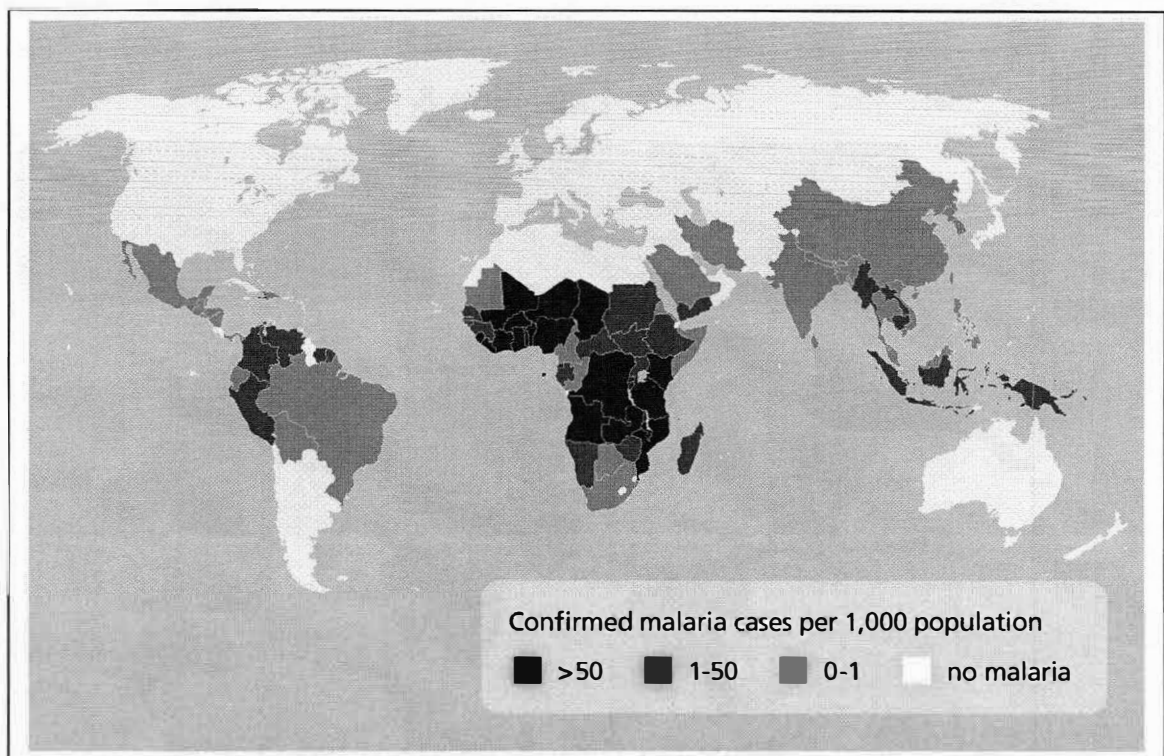


Figure 6

- i Describe the distribution of malaria cases shown in Fig 6. [3]
- ii Suggest how climate change and income levels may explain the prevalence of malaria in some parts of the world. [4]

- b Figure 7 shows how different countries view the labelling of genetically modified foods.

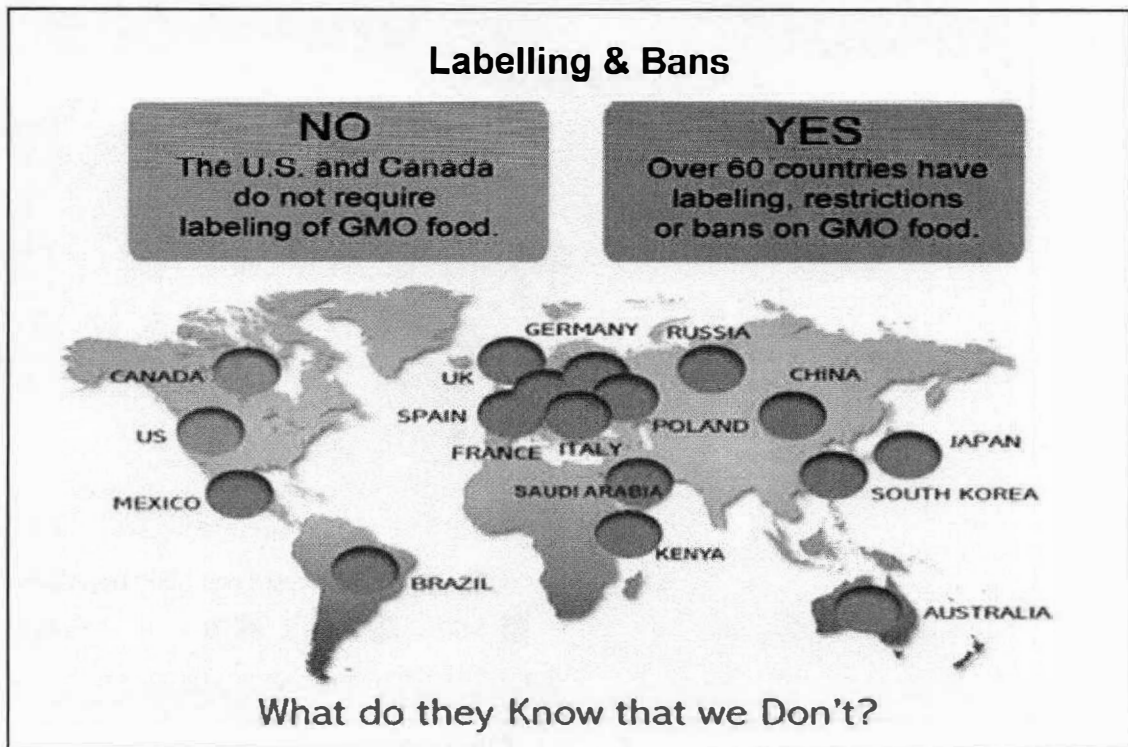


Figure 7

- Discuss why countries differ in their view that genetically modified foods should be labelled. [5]
- c How may inadequate food intake impact the economic development of a country? [5]
- d "International food aid programmes are the best measures in reducing food shortage." To what extent do you agree with this statement? Discuss with examples. [8]

Acknowledgement:

Figure 1: <http://www.thinglink.com/scene/624672780318670850>

Photograph A: <https://imgur.com/UYcQ6ty>

Photograph B: <http://teachers.sduhsd.net/hherms/herms/GEOLOGY/mtn-bldg/folds.jpg>

Figure 2: <http://imgur.com/hWhecY0t>

Figure 3: https://en.wikipedia.org/wiki/Infant_mortality

Figure 4: <https://ourworldindata.org/wp-content/uploads/2013/11report-20070.png>

Figure5: http://ahinternational.org/images/stories/content/about/aids_poster_rev2_sm_rgb.jpg

Figure6:

http://www.yourgenome.org/sites/default/files/illustrations/chart/malaria_distribution_map_2013_yourgenome.png

Figure 7: http://www.farmandfoodrights.org/files/6713/5785/9746/shapeimage_26.png

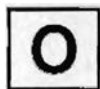
Table of Specs 2016 Prelims Pure Geog 2236 /02

Qn	AO1 + AO2	AO1 + AO3
1a		1
b	1	
ci		1
cii	1	
d	1	
2a		1
bii	1	
bii	1	
c		1
d	1	
3ai		1
aii	1	
b		1
c		1
d	1	
4ai		1
aii	1	
b		1
c	1	
d	1	



CHIJ ST JOSEPH'S CONVENT PRELIMINARY EXAMINATION

Answer Scheme



GEOGRAPHY

Paper 2

Secondary 4 Express



2236/02

Tuesday, 16 August 2016

1 hour 30 minutes

Section A

1	Figure 1 shows where volcanoes are located along the Ring of Fire.	
a	Describe the Ring of Fire and explain why it has a concentration of active volcanoes.	[5]
	Ring of Fire refers to the line / concentration of volcanoes found along the boundaries of the Pacific Plate in relation to other plates in movement.	2m
	1m	
	Stretches fm NZ, the sw Pacific, Indonesia, the Philippines, Japan, up to Kamchatka. Across to Alaska in N Am, down the Cascade Range on the west coast to Central Am and to the Andes. Accept western coast of N/S America. (Accept any 2 locations named to obtain 1m) 2m	3m
	Convergence /Subduction occur 1m as plates collide and denser oceanic plate subducts under the lighter continental or oceanic plate. 1m Magma rises through fractures to form volcanoes and active eruption is frequent. 1m	
b	Explain how convection currents move tectonic plates.	[4]
	- Convection currents are formed as magma is heated and cooled in a continuous process in the earth - Magma heated up by core and rises , and cools down as it moves away from heat source. - When magma reaches just below the crustal layer, it spreads outwards, dragging the plates above in a divergent movt. - As magma cools and become denser, A slab-pull force is created , dragging/pulling plates downward into the asthenosphere. - driving the magma further into the mantle where it is heated again and rise to repeat the cycle. (similar point as first; no need to repeat in scripts)	

- c Study photograph A which shows the before and after images of the eruption of Mt t Helens Washington USA.

i Describe the changes in the physical landscape of Mt St Helens before and after the eruption.

- The photo on the left is before eruption: cone or peak of volcano is symmetrical and snow-capped.
- Steep on top and broad and gentle once on the lower slopes of the volcano.
- Surrounding area is dark, showing dense vegetation.

- After eruption, a very large crater is shown with much of the original volcano destroyed .
- Parts of the volcano material has slumped on the slope of the volcano.
- The surrounding area shows more bare outcrop where the vegetation once was. Vegetation has been destroyed by the eruption.

2m for each of description of the before and after (Any 2 points from each segment) [4]

- ii Discuss, with examples, the environmental risks and economic benefits of living in volcanic regions. [4]

Risks :

Environmental - destruction by volcanic materials

Pollution of waterways

Landslides

Effects on weather

Economic benefits:

Tourism

Agriculture

Geothermal heating

Relevant examples should be given to support points.

- d "Short term responses are not as effective as long term mitigation measures in managing the effects of earthquakes."
To what extent do you agree to this statement? Discuss with suitable examples.

Why is there the need to manage effects of earthquakes.

L1 1-3m	List of mitigation measures. Differentiates between short term responses and long term measures. States stand wrt above statement: agree or disagree / small or big extent. Some general statements on either ST responses or LT measures without analysis. Examples may be lacking or are place name examples only.
L2 4-6m	Differentiates betw ST response and LT measures. Discusses at least one ST responses : effectiveness and limitation Discussion must be balanced and given examples to support. Discusses at least one LT measure : balanced in analysis of effectiveness and limitations.

[8]

- L3 7-8m Differentiates betw ST response and LT measures.
Discusses **at least one/two** ST responses : effectiveness and limitation
Discussion must be balanced and given examples to support.
Discusses **at least one/two** LT measure : balanced in analysis of effectiveness and limitations.
Concluding analysis

Total points of discussion should be 3 in a combination of both ST responses and LT measures.

- 2a Photograph B shows the features of a landform found in the Himalayan range.

Describe the features of this landform and suggest how tectonic processes resulted in its formation. [4]

- Snow-capped mountain peaks with **rock layers bent** (and exposed)/ rock layers are **folded / layers that have many folds**
- Some parts show **fractures or fault** across the folds

Tectonic processes:

- Folding process due to **compressional forces / buckle and fold** along convergent boundary such as Himalayan range.
- Rock layers are compressed and **folded up** to form **syncline and anticline** (In addition, forces may fracture rocks and faultlines develop, breaking folds.)

** 2m for each aspect of question

- bi Suggest why Singapore experiences much convectional rain. [4]
- Singapore located very close to the equator /Areas in the tropics are more prone to intense heating of the land
 - High angle of incidence so Sun's rays concentrated on smaller area
 - Low elevation of land also ensures that higher temps are experienced,
 - In addition, large amounts of moisture available from surrounding seas.

- ii Explain the formation of convectional rain. [4]
- Land intensely heated up resulting in unstable air, expands and rise and cools.
 - **At dew point temp, RH is 100%, air is saturated.**
 - **With further cooling, condensation** occurs in **presence of condensation nuclei** forming (Cumulonimbus) Clouds
 - When droplets are too heavy to remain suspended in the atmosphere, it results in Heavy rain with thunder and lightning

- c Figure 2 shows the percentage of carbon dioxide emissions in the world.

Explain the difference in carbon dioxide emissions by the richest and the poorest people in the world. [5]

- Describe using data : 50% of the poorest emit only 10% of CO₂ while the richest 10% emit 50% of the total CO₂ (1m)
- Explain why: Poorest countries have low econ devp and are more agrarian based such as farming, forestry, fishing using **low technology that does not emit high levels of greenhouse gases.**

- More reliant on available natural resources from environment.
- Has less disposable income thus less demands for more consumer goods and services / consumerism low
- In richest countries which are mostly developed countries/ advanced developing eg NIEs, with greater econ devp through industrialization, greater disposable income, more demand of goods and services.
- More industries set up with greater emissions. Furthermore, with more transport network and accessibility, more exhaust fumes add to the emission levels.

- d "Physical damage from hurricanes is the most impactful to a country." Discuss this with reference to examples. [8]

- L1 1-3m List of impact
States stand wrt above statement: agree or disagree / small or big extent.
Some general statements about physical damage from hurricanes without analysis.
Examples may be lacking or are place name examples only.

- L2 4-6m Discusses **at least one** physical damage : extent and examples to support.
Discusses **at least one** other damage (econ or social) extent and example.

- L3 7-8m Discusses **at least one/two** physical damage :
Discusses **at least one/two** other damage :

Examples should be specific to the damage discussed.
Concluding analysis

Total points of discussion should be 3 in a combination of different damages caused by hurricanes.

Section B

3a	Figure 3 shows the distribution of infant mortality rates in 2012.	
i	Describe the distribution of infant mortality rates in 2012. - Concentration of high IMR in Africa esp SSA countries - High rates of 85 to 185 per 1000 births, with highest rates in Somalia, Chad, Angola. / The other areas with high rates of about 135-160 per 1000 births are Pakistan and Afghanistan. - Low IMR from 10-60 per 1000 births in Asia, South America, Southern Africa - Very low IMR below 10 per 1000 births evident in the more developed countries in Europe, North America (USA & Canada), Japan and Australia Credit 1m for data quoted with unit per 1000 births. ** students must make ref to adjectives of comparisons eg low, high	[3]
ii	Explain how access to healthcare and drinking water affect infant mortality rates in developed and less developed countries. - access to healthcare and drinking water have direct impact on the health of people esp infants who are vulnerable to diseases. ** infant mortality rates refer to the number of infants who die before they turn a year old - LDCs esp those in Sub Saharan Africa lack many basic amenities as poverty and political conflict leave many people here without proper healthcare services. For example : The doctor-patient ratio is about 1 to 10000 on an average, / hospitals are very far away / Medication is also not so readily available esp if people cannot afford to buy them. - Drinking water supply can be contaminated as sanitation facilities are not widespread nor well maintained. People who consume such water fall ill with cholera and dysentery, and infants may die easily. - In DCs, the situation is reversed as many of such countries have high econ devp where infrastructure and amenities are provided for and well maintained. - Healthcare access with specialist medical personnel, hospital or clinics and medication readily available to all. - In addition, education and higher income earned make healthcare and clean drinking water easily available. ** can also accept if the approach to answer is from perspective of how having access to healthcare etc can be a positive impact.	[5]

b	Figure 4 is an advertisement on children with HIV/AIDs .	
	Describe the social and economic impact of HIV/AIDs on these children. - Social stigma - Lack of education opportunities: Orphans do not have opportunities to go to school and the lack of awareness may increase spread of the disease. - Short life expectancy if no medication is available to orphans Economic: - Govt and carers of these orphans are in deep poverty with high medical costs and extra living expenses - Also, these orphans remain poor as they are without education and do not contribute to the economy. They do not earn enough to support themselves. - In addition, they become main care givers to their siblings but are not able to afford basic necessities. - As a result, some are forced into prostitution or recruited as child soldiers by rebel/ terrorist groups in conflict with the government. ** answers need to show the approach of how having HIV/AIDs will affect the children. Answers cannot be generalized to show impact on the economy by AIDs carriers. Target group here is the children.	[4] } 2m } 2m
c	Study figure 5 which shows the impact of education on preventing the spread of HIV/AIDs in Kenya.	
	Using the figure, compare and explain the impact of education in preventing the spread of HIV. Compare point by point across the 2 aspects shown: - An increase in education / those who complete primary schooling show an increase in knowledge that condoms prevent HIV + data - Also with the increase in years of education, there is also an increase in the use of condoms + data - Yet condom use remain low regardless of years of education + data. OR - those who had no education did not use condoms despite about 15% of them having knowledge of how condoms prevented HIV spread. - Close to about 50% of women with incomplete primary schooling had knowledge of the use of condoms but less than 10% used condoms. 60% of those who had completed primary education were knowledgeable about condoms but only about 15% of them were using condoms. Up to 2m given for a complete comparison with data: students must encode data into their description. Explain: - Generally education raises awareness of preventing the spread of HIV with more knowledge of the virus and the use of condoms. - However having only primary schooling does not raise enough of awareness to protect themselves and prevent the HIV from spreading rapidly. - Despite education, the lack of accessibility to purchase / obtain condoms - Education may not have a great impact when poor economic status may force women into vice trades to survive. Thus even with knowledge of	[5]

condoms, many may not actually use them to prevent the virus.

Up to 3m for explanation of the influence of education

- d "Managing the spread of infectious diseases require cooperation among different stakeholders." [8]
Discuss this statement with reference to examples.

L1 1-3m Why the need to manage spread of infectious diseases
List of diff stakeholders to cooperate.
States stand wrt above statement: agree or disagree / small or big extent.
Some general statements how stakeholders can manage spread without analysis.
Discusses **at least one** stakeholder group briefly with Examples lacking or are place name examples only.

L2 4-6m Discusses **at least 2** stakeholder groups : their effectiveness and limitations of strategies analysed and examples to support.

L3 7-8m Discusses **at least 3** stakeholder groups : their effectiveness and limitations of strategies analysed and examples to support.
Examples should be specific to the groups discussed.
Concluding analysis.

Total points of discussion should be 3 in a combination of different damages caused by hurricanes.

- 4a Figure 6 shows the extent of confirmed malaria cases in the world.

- i Describe the distribution of malaria cases shown in Fig 6. [3]

Uneven spread with high concentration in some parts of the world
High risk areas in Sub Saharan Africa, northern part of South America, South Asia including India and South East Asia Laos, Cambodia, Indonesia
Areas with limited to no risk are mainly DCs and NIEs

1m for data

- ii Suggest how climate change and income levels may explain the prevalence of malaria in some parts of the world. [4]

Climate Change: Changes in temp, rf and RH will create favourable conditions for mosquito breeding
Increase in temp shorten devp time of life cycle of mosquitoes and parasites in mosquito so infections become more prevalent
Changes in rf may increase pools of stagnant water that breed mosquitoes
Higher RH increases survival of mosquitoes and spread of malaria increases.

Income levels

Poverty impact lives of those living in malaria prone area. Without income, many continue to live in overcrowded areas with poor hygiene and sanitation. These areas are conducive for mosquito breeding and spread of malaria is higher. Poverty also mean poor or lack of accessibility to medical services and supplies. Those infected face delay in treatment or have no money to buy the ACT pills to clear the infection. Malaria continues to be prevalent in these areas with high levels of poverty.

- b Figure 7 shows how different countries view the labelling of genetically modified foods.

Discuss why countries differ in their view that genetically modified foods should be labelled. [5]

Define GMO 1m

Countries that require labelling: 2m for any one well discussed answer

- human health risks
- Loss of bio diversity

USA and Canada do not require labelling: 2m
Labelling means consumers have a choice to choose betw GMO or non-GMO related products.

- Reasons include fear of consumer rejection of GMO related products because of high capital investment in pdn costs.
- May impact investments into agri-business and food industry
- Decline in profits

** to answer this qn, one needs to understand the advantages and disadvantages of GMO and its impact on society.

- c How may inadequate food intake impact the economic development of a country? [5]

Inadequate food intake may result in malnutrition and starvation. (this may apply to certain groups of people in BOTH DC and LDCs).

Economic impact include:

Lower productivity
Increase in healthcare expenditure
Long term debts

- d "International food aid programmes are the best measures in reducing food shortage." To what extent do you agree with this statement? [8]

L1 1-3m Why reducing food shortage is imp
List of diff programmes available including international food aid programme.
States stand wrt above statement: agree or disagree / small or big extent.
Some general statements how international food aid programmes / other measures can reduce food shortage without analysis.
Discusses **one international food aid programme** (WFP or GAFSP) briefly with Examples lacking or are place name examples only.

	L2 4-6m	Discusses <u>at least 1 other strategy</u> : their effectiveness and limitations of strategies analysed and examples to support.	
	L3 7-8m	Discusses <u>at least 2more strategies</u> : their effectiveness and limitations of strategies analysed and examples to support. Examples should be specific to the groups discussed. Concluding analysis. Total points of discussion should be 3 in a combination	