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BEDOK VIEW SECONDARY SCHOOL PRELIMINARY EXAMINATION 2017

CANDIDATE
NAME

REGISTER
NUMBER

CLASS

GEOGRAPHY
Secondary Four Express
Paper 1

2236/01
18 August 2017
1 hour 40 minutes

Additional Materials: Answer Paper

1 Graph Paper

1:25 000 Map Extract is enclosed with this Question Paper.

READ THESE INSTRUCTIONS FIRST

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

Write in dark blue or black pen on both sides of the paper.

You may use a HB pencil for any diagrams or graphs.

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

Section A

Answer Question 1.

Section B

Answer **one** question.

Write all answers on the Answer Paper provided.

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.

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

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

For Examiner's use		
Section A		/ 25
Section B		/ 25
Total		/ 50
% / Grade		/

Setter: Miss Hafizah

Parent's / Guardian's Signature:

This document consists of 11 printed pages and 1 blank page.

Do not turn over the page until you are told to do so.

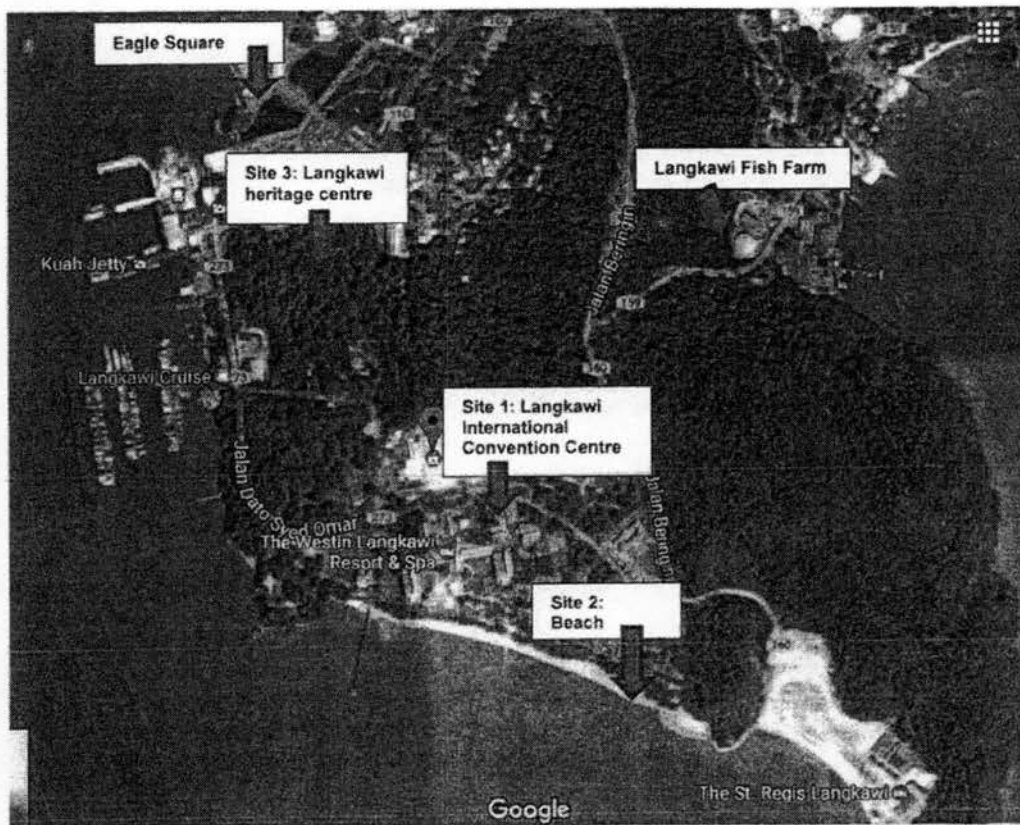
2

Section A

This question is compulsory.

- 1 A group of students went on a fieldwork to Langkawi which is an island located in Malaysia. Langkawi is a coastal area famous for its luxury coastal resorts and it had recently set up Langkawi International Convention Centre. The students wanted to conduct a coastal and tourism fieldwork at the place at Site 1, Site 2 and Site 3. Photograph A shows a satellite image of Langkawi Island.

Satellite image of Langkawi Island



Photograph A

Source: Google Map

The students would like to find out more about Meetings, Incentives, Conventions and Exhibitions (MICE) tourism and the different types of attractions in Langkawi.

The students decided to craft a hypothesis for their field investigation on MICE tourism in Langkawi. They decided on the following hypothesis :

MICE tourism is the most popular type of tourism amongst tourists who visit Langkawi.

To test this hypothesis, the students planned to conduct a questionnaire survey on one weekday afternoon. They positioned themselves at **Site 1** (outside the Convention Centre), **Site 2** (the beach) and **Site 3** (Langkawi heritage centre) as shown in Photograph A.

At each site, the students planned to interview 20 tourists using a random sampling method to find out the tourists' views about Langkawi's attractions for MICE and leisure tourism.

- (a) Comment on the choice to interview the tourists at the 3 sites and describe the advantages of adopting the sampling method. [4]
- (b) Study Fig. 1 which shows a visitor questionnaire designed by the students. This questionnaire is used by the students at all the 3 sites.

VISITOR QUESTIONNAIRE	
Dear Visitor, We are doing a survey as part of our Geography fieldwork and we would like to find the most popular type of activity in Langkawi. Your response will help us greatly in our investigation. The survey will only take 5 minutes. Thank you!	
Date	_____ March 2017
Gender	☐ Male ☐ Female
Income per month	☐ Less than \$2000 ☐ \$2000-\$4000 ☐ \$4000-\$6000 ☐ \$6000-\$8000
Which region are you from?	☐ Asia ☐ Middle East ☐ Europe ☐ Others ☐ America
How many times have you been to Langkawi?	☐ 1 st time ☐ 4 th time ☐ 2 nd time ☐ More than 4 times ☐ 3 rd time
Where do you visit in Langkawi?	☐ Sightseeing attractions (i.e. Eagle Square) ☐ Langkawi Heritage centre ☐ Langkawi Fish farms ☐ Beaches ☐ Langkawi International Convention Centre ☐ Others: _____
Why do you visit these places?	_____ _____ _____

Fig. 1

Assess the design of the questionnaire survey as shown in Fig. 1.

[3]

- (c) After conducting the questionnaire survey, the students tabulated the following data in Table 1.

Nature of Travel	Number of tourists
MICE	12
Heritage tourism	15
Honeypot	33
Total number of tourists = 60	

Table 1

Justify the conclusion that can be drawn from the information in Table 1 in response to the hypothesis tested and evaluate the reliability of the findings.

[4]

- (d) Besides using a questionnaire survey, describe another data collection method that the students can use to determine the popularity of tourism in Langkawi at the 3 sites.

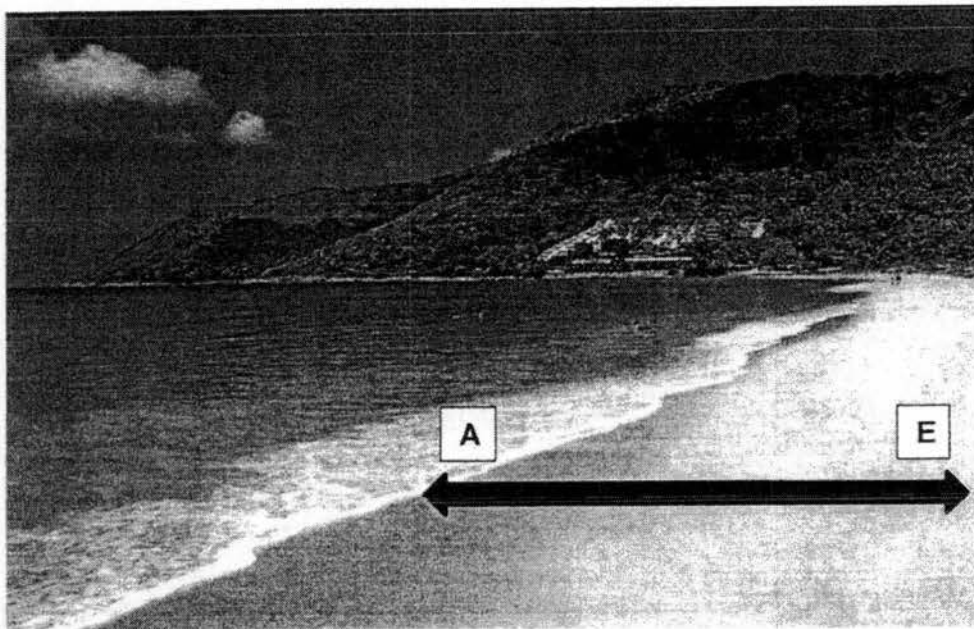
[4]

- (e) Some of the personal information in the questionnaire in Fig. 1 have not yet been used by the students in their fieldwork investigation.

Suggest a hypothesis for an investigation that the students could carry out linking the personal information to places of visit in Langkawi.

[1]

- (f) The students were also keen to find out about coastal processes at **Site 2** (the beach) in Photograph A. The group marked out a line of transect from points A to E as shown in Photograph B.



Photograph B

Source: <https://www.tripadvisor.com/TravelersChoice-Beaches-cTop-g2>

5

The students wanted to find out about the type of waves and the size of sediments that are found along the line of transect marked A to E on Photograph B.

The students collected samples of sediments along the transect A to E at a regular interval of 5 m. They measured the sediments collected at each point and compiled the data as shown in Table 2 below.

Distance along transect	A (0m)	B (5m)	C (10m)	D (15m)	E (20m)
Width of sediments in millimetres	13.4	11.1	10.9	14.2	9.0

Table 2

Describe how the results in Table 2 are collected. [3]

(g) Discuss how the students can determine the types of waves along the transect A to E. [2]

(h) With reference to Table 2, draw a scatter graph on the graph paper provided to represent the data and suggest a reason for the anomaly reading. [4]

6

Section B

Answer **one** question from this section.

- 2(a) Explain how geology of rocks and types of waves affect the rate of coastal erosion. [4]
- (b) Study Fig. 2 which shows the process of wave refraction as it approaches the coast.

Wave refraction along the coast

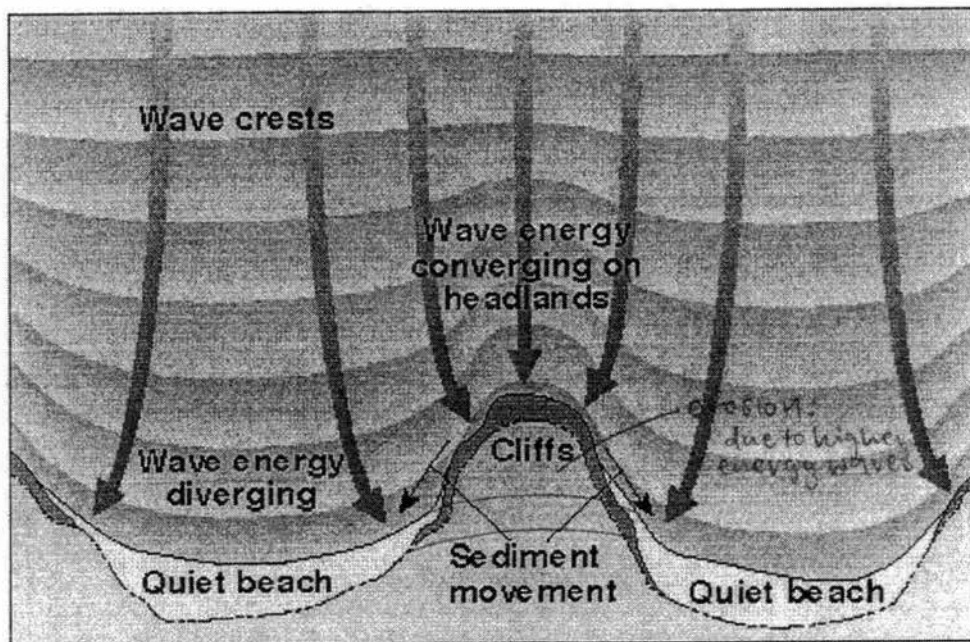


Fig. 2

Source: <http://www.mta.ca/~raiken/Courses/3361/3361-Coastal/Lectures/Lecture%20Summaries/Waves/waveref3.jpg>

Use Fig. 2 to predict how wave refraction may change the coastline. [4]

7

- (c) Fig. 3A shows the distribution of endangered coral reefs in the world. Fig. 3B shows a street map of Coral Bay, which is a popular snorkelling site.

Distribution of endangered coral reefs in the world

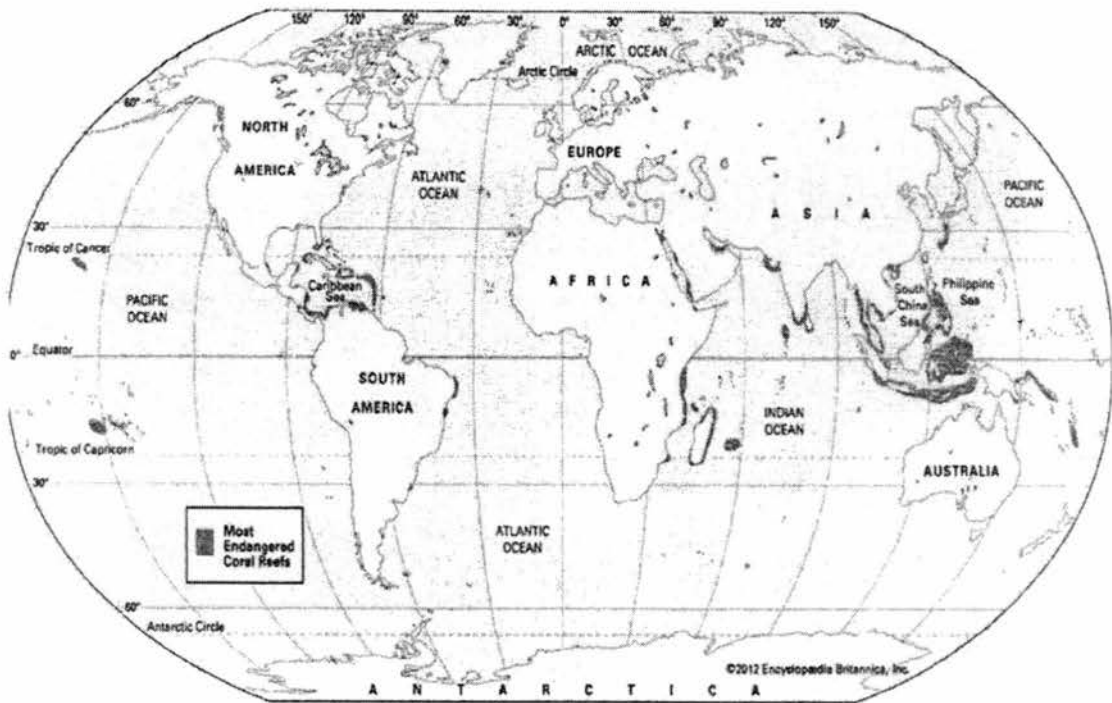


Fig. 3A

Source: <http://media1.britannica.com/eb-media/77/162777-004-874B2E46.gif>

Street map of Coral Bay

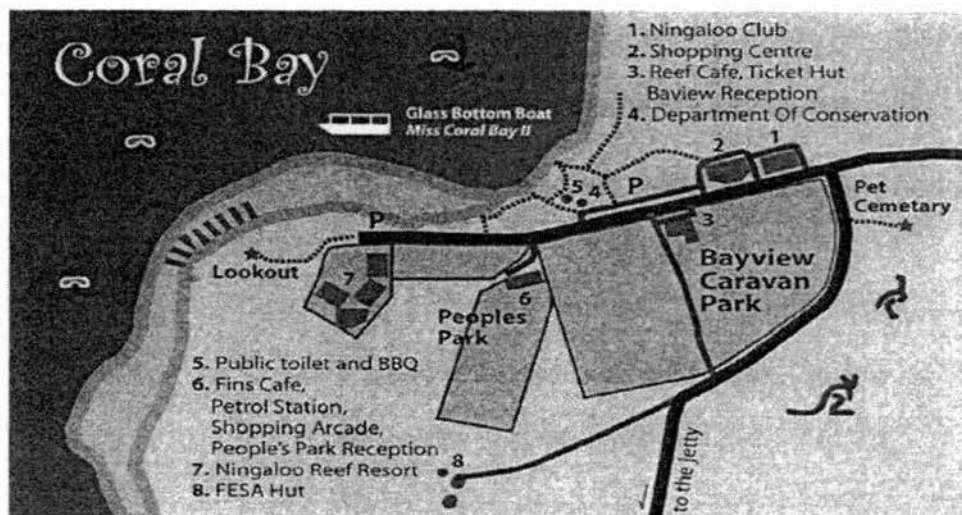


Fig. 3B

Source: http://www.ningaloo coast.com/yahoo_site_admin/assets/images/coralbag-mudmap-big.98124324_std.jpg

With reference to Fig. 3A and 3B, describe the distribution of endangered coral reefs in the world and explain why they are under threat.

[5]

- (d) Study Fig. 4 which shows a type of coastal protection measure.

Coastal protection measure

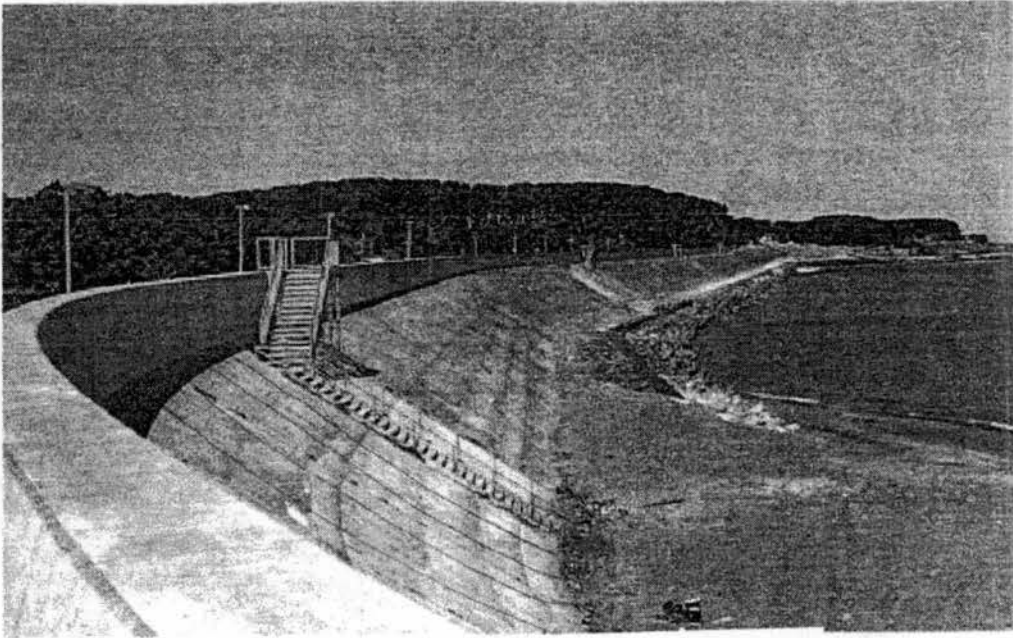


Fig. 4

Source: <http://gazettereview.com/wp-content/uploads/2015/03/.jpg>

Describe the type of coastal protection measure in Fig. 4 and assess its effectiveness in reducing the rate of coastal erosion.

[4]

- (e) 'Coastal deposition is responsible for major coastal landforms.'

To what extent is this statement true?

Support your answer with examples.

[8]

3(a) Study Fig. 5 which shows a sketch map of a cliff along a coastline.

Sketch map of a cliff along a coastline

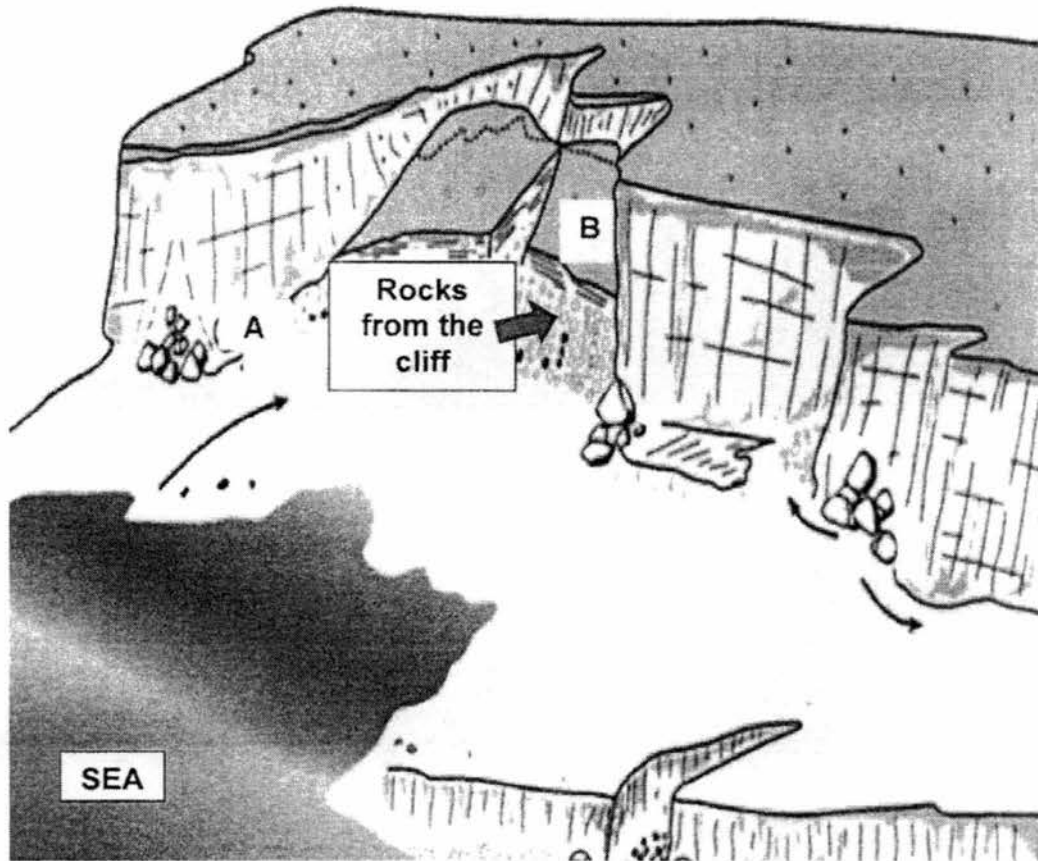


Fig. 5

Source: <http://jsedres.geoscienceworld.org/content/jsedres/82/4/260/F9.large.jpg>

Using Fig. 5, explain how erosional processes at A and B can form coastal landforms.

[4]

- (b) Study Fig. 6 which shows a cross section of the changing beach profile before and after a storm.

Cross section of the changing beach profile

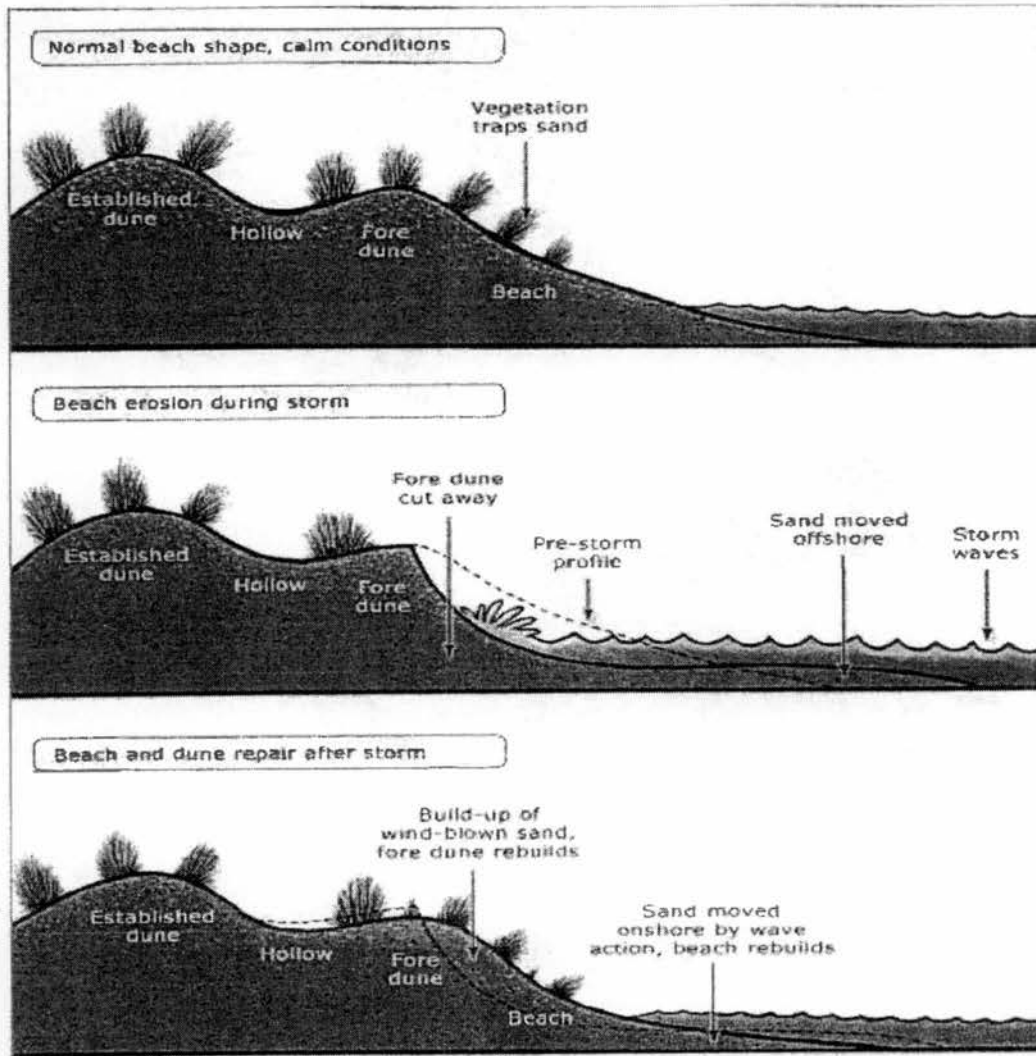


Fig. 6

Source: <https://s3.amazonaws.com/gs-geo-images/0e18e82a-ab7b-4f1d-aa8e-ef2cd1d8a379.jpg>

With reference to Fig. 6, show how the beach profile has evolved and outline how the beach materials are transported to rebuild the beach.

[5]

- (c) Study the topographical map extract of Mauritius. The scale is 1:25 000 and contours are shown in 10m intervals.

The location between Eastings 26 and 29 and Northings 94 and 98 is a major tourist area.

With reference to the topographical map, explain why people are attracted to the area.

[4]

- (d) With the aid of examples, assess the socio-cultural impact of tourism.

[4]

- (e) 'Affordable transportation is the main influence for the growth of global tourism.'

How far do you agree with this statement?

Support your answer using examples.

[8]

-End of paper-



BEDOK VIEW SECONDARY SCHOOL PRELIMINARY EXAMINATION 2017

CANDIDATE
NAME

REGISTER
NUMBER

CLASS

GEOGRAPHY
Secondary Four Express
Paper 2

2236/02
21 August 2017
1 hour 30 minutes

Additional Materials: Answer Paper

READ THESE INSTRUCTIONS FIRST

Write your index number and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a HB pencil for any diagrams or graphs.
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Section A

Answer **one** question.

Section B

Answer **one** question.

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

For Examiner's use		
Section A		/ 25
Section B		/ 25
Total		/ 50
% / Grade		/

Setter: Miss Hafizah

Parent's / Guardian's Signature:

This document consists of 11 printed pages and 1 blank page.

Do not turn over the page until you are told to do so.

2

Section A

Answer **one** question from this section.

- 1(a) Study Figs. 1A and 1B. Fig 1A shows the elevation map of Australia and Fig. 1B describes the relationship between air pressure and altitude.

Elevation map of Australia

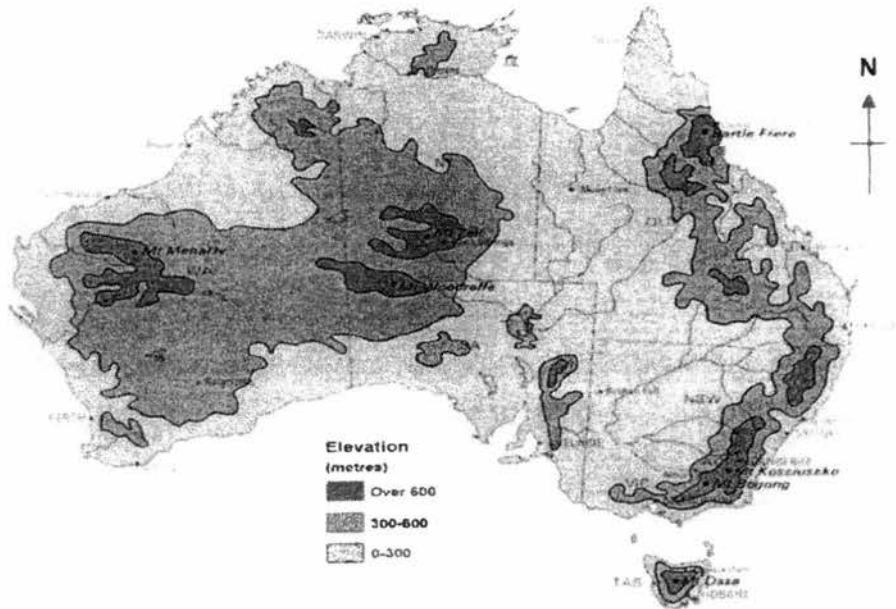


Fig. 1A

Source: <http://www.about-australia.com/geographic-features/>

Relationship between altitude and pressure

Altitude in meters	Pressure in millibars
0	1013.2
152	994.8
305	977.3
457	959.4
610	942.1

Fig. 1B

Source: https://www.edcousa.net/images/altitude_chart.png

With reference to Fig. 1A and 1B, describe the elevation in Australia and account for the difference in pressure at different locations.

[5]

- (b) Fig. 2 shows a regional wind system that brings rain to Central Asia.

Regional wind system in Central Asia

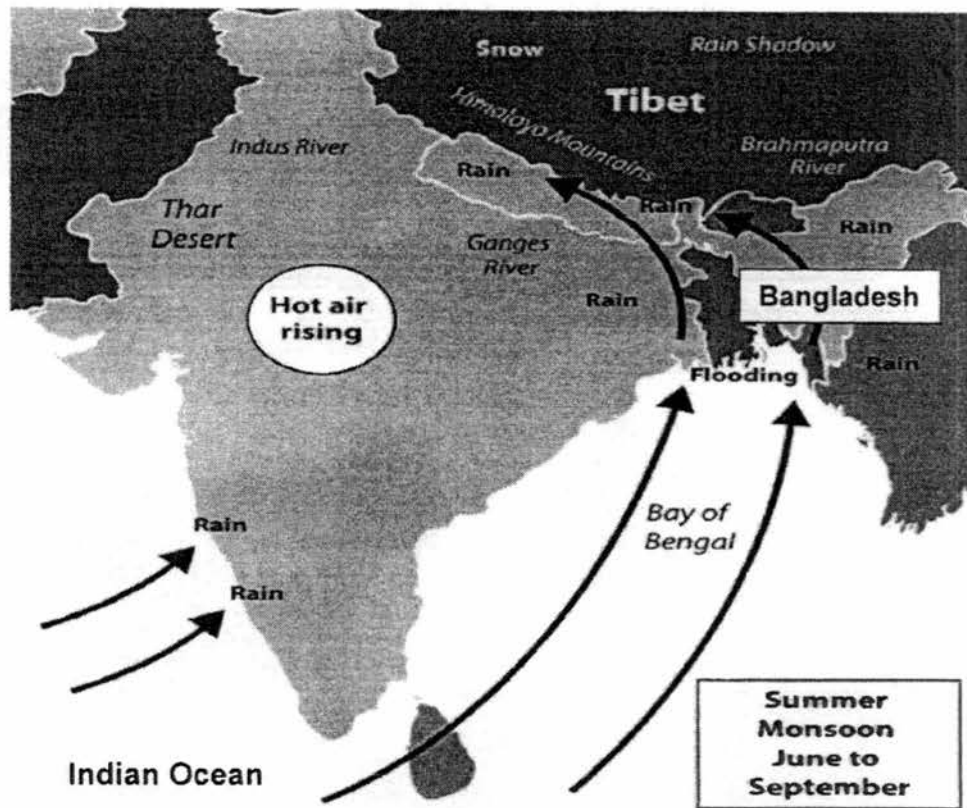


Fig. 2

Source: https://saylordotorg.github.io/text_world-regional-geography-people-places-and-globalization/section_12/0280af41915b1e636d329a04b52d6b32.jpg

Using Fig. 2, explain the occurrence of floods at Bangladesh.

[4]

- (c) With the use of examples, comment on the effectiveness of responses to climate change at the national level.

[4]

- (d) Study Fig. 3 which shows an infographic of human activities on the environment.

Human activities on the environment

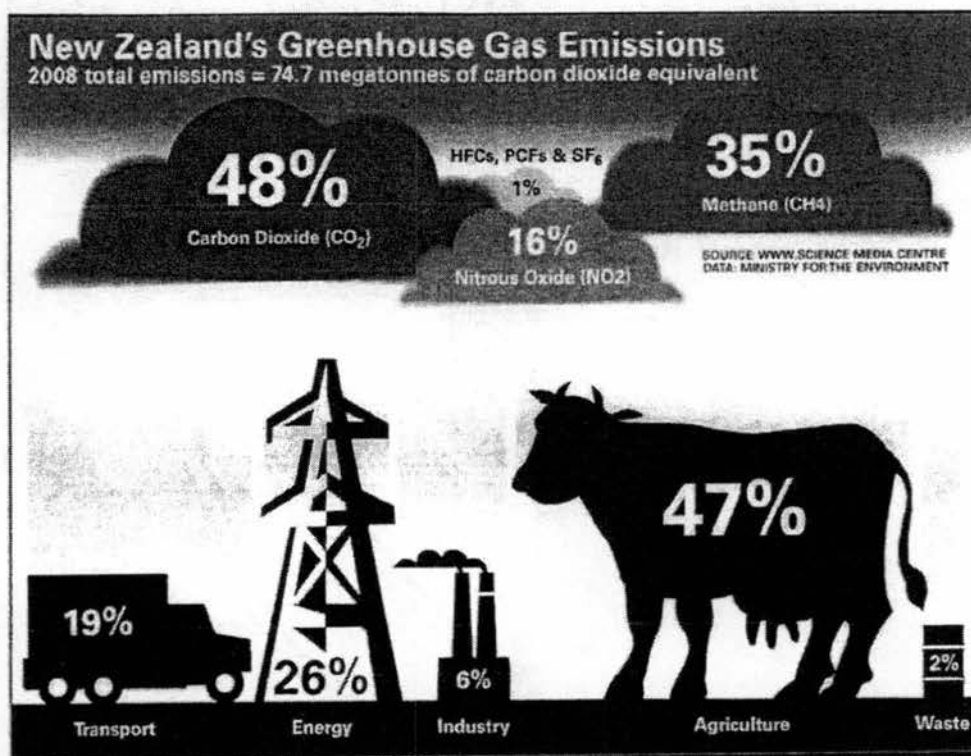


Fig. 3

Source:

http://www.fao.org/economic/ess/environment/ghg2014/en/?referrer=yahoo&category=beauty_food&include_utm=1

Using Fig. 3, explain how human activities contribute to the increase in global temperature.

[4]

- (e) 'The differential rate of heating of land and sea is responsible for the variation in temperature at different locations.'

Discuss the accuracy of the statement.

Use examples to support your answer.

[8]

2(a) Study Figs. 4A and 4B on Cyclone Sandy which hit United States of America in 2012.

Satellite image of Cyclone Sandy

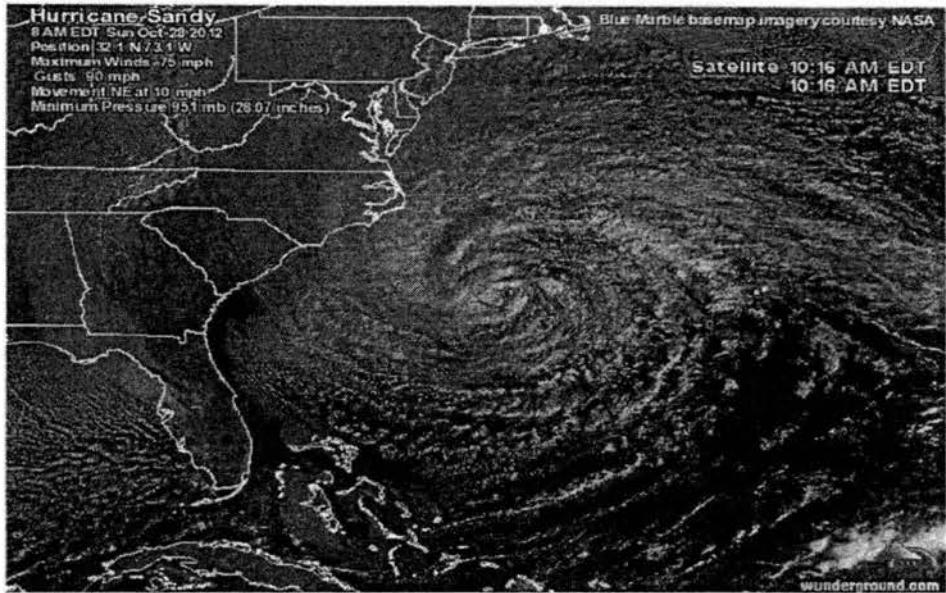


Fig. 4A

Source: http://icons.wxug.com/hurricane/2012/oct29_sat.jpg

Path taken by Cyclone Sandy

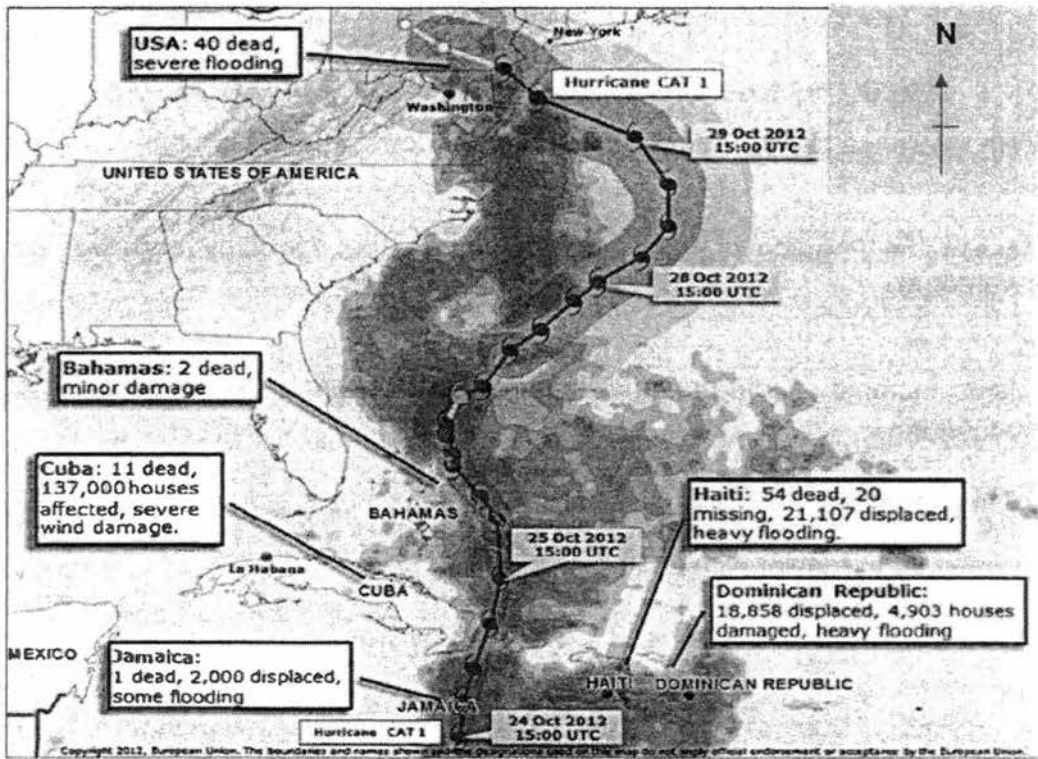


Fig. 4B

Source: <http://reliefweb.int/sites/reliefweb.int/files/resources/sandymap.pdf>

6

- (i) Using Fig. 4A and your own studies, describe the characteristics of Cyclone Sandy and outline the factors affecting its strength and spinning direction. [4]
- (ii) Using Fig. 4B, describe the path taken by Cyclone Sandy and discuss its damage. [5]
- (b) Fig. 5 shows a formation of tsunami.

Formation of a tsunami

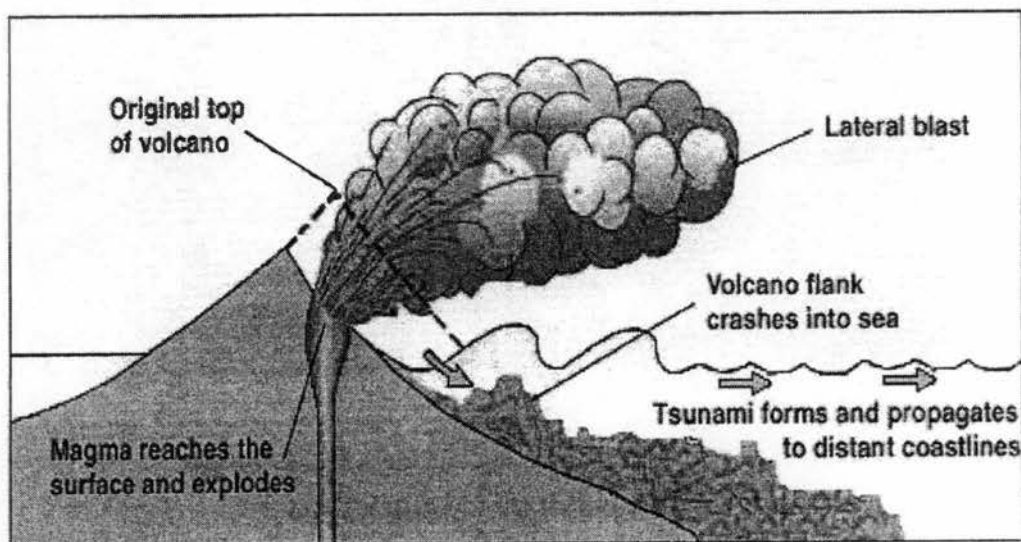


Fig. 5

Source: http://www.pdhone.com/courses/g207/g207content_files/image021.jpg

With reference to Fig. 5 only, account for the formation of tsunami. [4]

- (c) Assess the impacts of volcanic eruption on the economy and the local community. [4]
- (d) 'Major tectonic landforms and features are formed at convergent plate boundaries.'

To what extent is the statement true?

Support your answer with examples.

[8]

7

Section B

Answer **one** question from this section.

- 3(a)** Study Fig. 6 which shows the calories consumed per capita per day in China and India from 1980 to 2013.

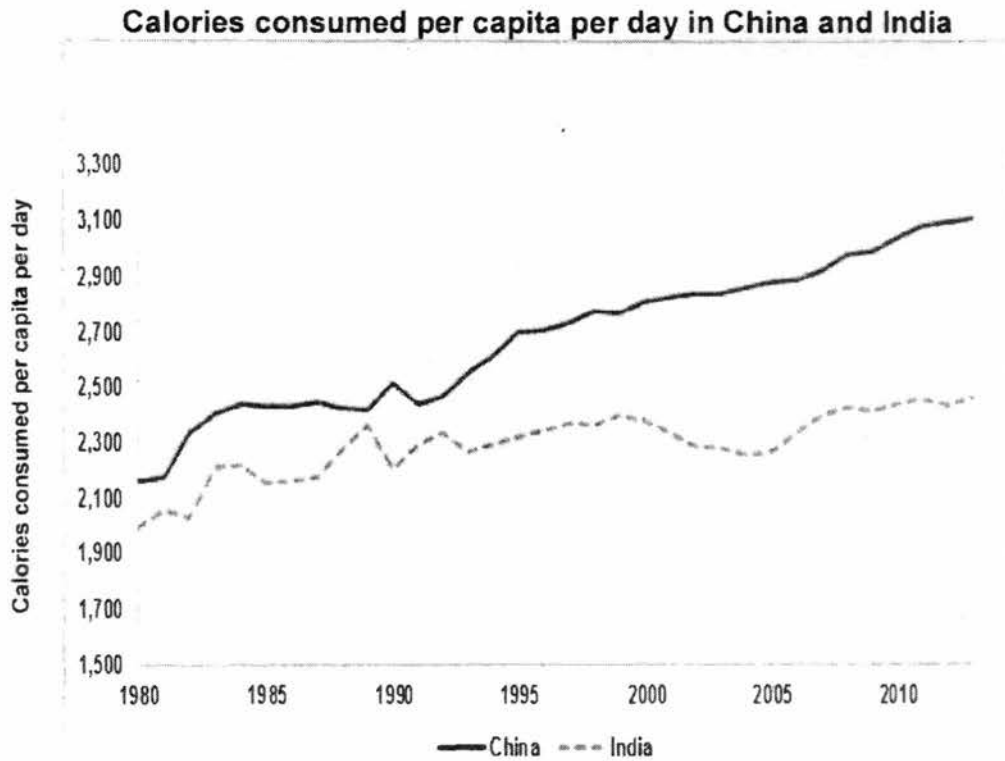


Fig. 6

Source: http://farmdocdaily.illinois.edu/2015/07/02/fdd07022015_fig3.jpg

Using Fig. 6, compare the changes in the calories between China and India from 1980 to 2013 and discuss the effects of malnutrition on developing countries.

[5]

- (b) Study Fig. 7 which shows the dominant soil stresses in the world.

Dominant soil stresses

Dominant soil stress	Global land area	
	Million km ²	% of total
Continuous moisture stress	36.5	27.9
Continuous low temperatures	21.8	16.7
Seasonal moisture stress	10.3	7.9
Low nutrient-holding capacity	7.8	6.0
Shallow soils	7.4	5.6
Excessive nutrient leaching	4.5	3.4
High aluminum	4.1	3.1
Low moisture and nutrient status	3.5	2.7
Low water-holding capacity	3.4	2.6
Other stresses	27.2	20.8
Few constraints	4.1	3.1
Total	130.6	100.0

Source: Eswaran et al. (various years).

Fig. 7

Source:

http://manoa.hawaii.edu/durp/files/2016/10/2014_Spring_Building_Resilient_Food_System.compressed.pdf

Using Fig. 7, explain how poor soil fertility and drainage can affect food production. [2]

- (c) Study Fig. 8 which shows an infographic of modern developments in farming.

Modern developments in farming

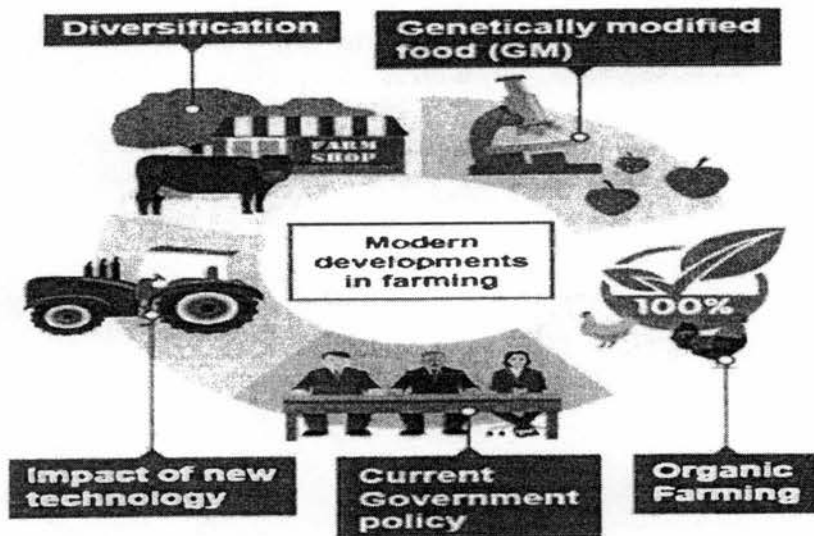


Fig. 8

Source: <https://bam.files.bbci.co.uk/bam/live/content/z79gkqt/small>

Using Fig. 8, show how modern developments in farming can boost food security. [5]

- (d) Using an example, discuss the successes and limitations of genetically modified food in tackling the issue of food shortage. [5]
- (e) 'The variation in food consumption patterns in different countries is mainly due to economic reasons.'

How far do you agree with this statement?

Support your answer using examples. [8]

- 4(a) Study Fig. 9 which shows the consumption of meat and fish in Europe.

Consumption of meat and fish in Europe

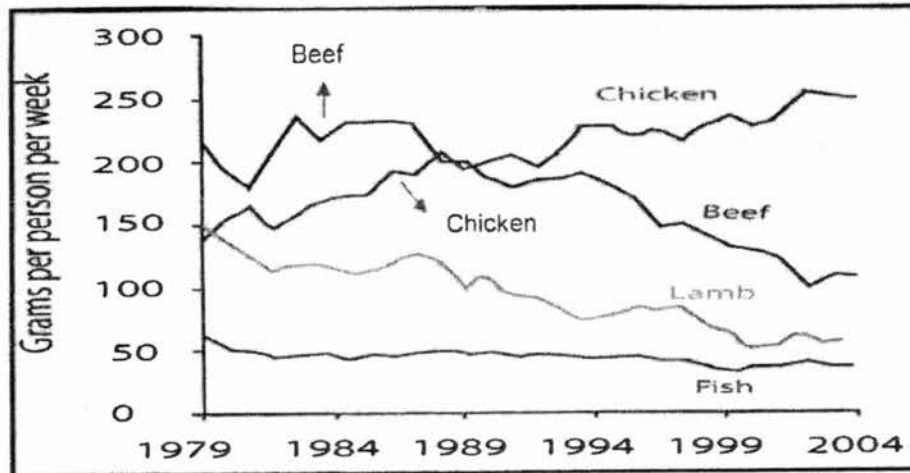


Fig. 9

Source: http://www.testbig.com/sites/default/files/Fish_and_meat_consumption.jpg

Using Fig. 9, compare the trends of chicken and beef between 1979 and 2004 and account for its patterns. [5]

- (b) Study Fig. 10 which shows the supply chain of a local food hub.

Supply chain of a local food hub



Fig. 10

Source: <http://3rqwhc1s0oq36ghi9103i28l.wpengine.netdna-cdn.com/wp-content/themes/local-food-hub-theme/images/how-it-works-graphic.png>

With reference to Fig. 10 and your own studies, explain how food security can be improved in a local community. [4]

- (c) Study Fig. 11 which shows the global spread of Zika virus.

Global spread of Zika virus

Zika across the world

Dates first detected

(Data published in Brazilian research journal Pesquisa FAPESP)

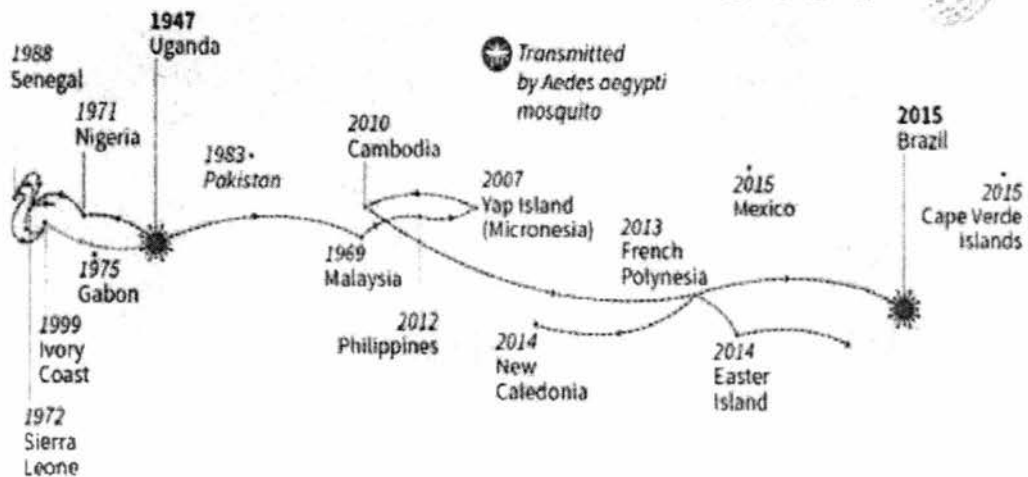


Fig. 11

Source: <https://pbs.twimg.com/media/CaHQFfrVAAAQ8Au.jpg>

With reference to Fig. 11 and your own studies, show how relocation diffusion causes the spread of the Zika virus and account for its spread. [3]

- (d) Using examples, evaluate the role of individuals and international organisations in managing the spread of diseases. [5]

- (e) 'Investment and access to healthcare plays the most important role in determining the health levels of a country.'

Discuss the accuracy of this statement.

Support your answer with examples. [8]

-End of paper-

BEDOK VIEW SECONDARY SCHOOL

PRELIMINARY EXAMINATION 2017 Answers

Section A

This question is compulsory.

- 1 A group of students went on a fieldwork to Langkawi which is an island located in Malaysia. Langkawi is a coastal area famous for its luxury coastal resorts and it had recently set up Langkawi International Convention Centre. The students wanted to conduct a coastal and tourism fieldwork at the place at Site 1, Site 2 and Site 3. Photograph A shows a satellite image of Langkawi Island.

The students would like to find out more about Meetings, Incentives, Conventions and Exhibitions (MICE) tourism and the different types of attractions in Langkawi.

The students decided to craft a hypothesis for their field investigation on MICE tourism in Langkawi. They decided on the following hypothesis :

MICE tourism is the most popular type of tourism amongst tourists who visit Langkawi.

To test this hypothesis, the students planned to conduct a questionnaire survey on one weekday afternoon. They positioned themselves at Site 1 (outside the Convention Centre), Site 2 (the beach) and Site 3 (Langkawi heritage centre) as shown in Photograph A. The investigation all the 3 sites are carried out concurrently at the same time.

At each site, the students planned to interview 20 tourists using random sampling method to find out the tourists' views about Langkawi's attractions for MICE and leisure tourism.

- (a) Comment on the choice to interview the tourists at the 3 sites and describe the advantages of adopting the sampling method. [4]

Award 2 marks for comment.

Award 2 marks for describe.

Comment:

- Interviewing the tourists at the 3 different sites allows for comparison of results at each site.
- However, there are 2 other sites i.e. Langkawi Fish Farm and Eagle Square, which are omitted from the fieldwork and this may affect the responses.

Describe:

- Random sampling method requires no regular or specific pattern and hence may be more convenient in carrying out the interview.
- Random sampling is the least biased of all sampling techniques as there is no subjectivity.
- Each member of the total population has an equal chance of being selected.

- (b) Study Fig. 1 which shows a visitor questionnaire designed by the students. This questionnaire is used by the students at all the 3 sites.

VISITOR QUESTIONNAIRE	
Dear Visitor, We are doing a survey as part of our Geography fieldwork and we would like to find the most popular type of activity in Langkawi. Your response will help us greatly in our investigation. The survey will only take 5 minutes. Thank you!	
Date	_____ March 2017
Gender	☐ Male ☐ Female
Income per month	☐ Less than \$2000 ☐ \$2000-\$4000 ☐ \$4000-\$6000 ☐ \$6000-\$8000
Which region are you from?	☐ Asia ☐ Middle East ☐ Europe ☐ Others ☐ America

How many times have you been to Langkawi?	☐ 1 st time ☐ 2 nd time ☐ 3 rd time ☐ 4 th time ☐ More than 4 times
Where do you visit in Langkawi?	☐ Sightseeing attractions (i.e. Eagle Square) ☐ Langkawi Heritage centre ☐ Langkawi Fish farms ☐ Beaches ☐ Langkawi International Convention Centre ☐ Others: _____
Why do you visit these places?	_____ _____ _____

Fig. 1

Assess the design of the questionnaire survey as shown in Fig. 1.

[3]

Award 1 mark for each complete point.

Reserve 1 mark for at least one positive and negative aspect of the design.

Answers must comprise both positive and negative aspects of the design.

Positive:

- Most of the questions in the survey address the hypothesis to find out about the popularity of the type of tourism in Langkawi.
- The questionnaire survey comprises of both open and close ended questions which allow for qualitative and quantitative responses.
- Students provide options for 'Others' to take into account alternative answers.

Negative:

- Some of the questions are too personal and sensitive such as the amount of income per month.

- (c) After conducting the questionnaire survey, the students tabulated the following data in Table 1.

Nature of Travel	Number of tourists
MICE	12
Heritage tourism	15
Honeypot	33
Total number of tourists = 60	

Table 1

Justify the conclusion that can be drawn from the information in Table 1 in response to the hypothesis tested and evaluate the reliability of the findings. [4]

Award 2 marks each for justify and evaluate.

Justify:

- The hypothesis is not proven true, ie MICE tourism is not the most popular type of tourism amongst tourists who visit Langkawi.
- This is because only 12 out of 60 visitors visit Langkawi for MICE in comparison to 48 tourists who visit Langkawi for heritage and honeypot tourism.

Evaluate:

- The findings may not be reliable due to the frequency of the data collection. It was conducted only on one occasion i.e. one weekday afternoon.
- The findings are reliable as the data collection is done concurrently. Hence, the same time of investigation ensures that responses are collected fairly.

- (d) Besides using a questionnaire survey, describe another data collection method that the students can use to determine the popularity of tourism in Langkawi at the 3 sites. [4]

Award 1 mark for each point.

- To determine the popularity of tourism, the students can position themselves at the 3 sites on a similar day and time. They can choose a landmark or the entrance and exit at each site to carry out the investigation.
 - At each site, count the number of visitors entering or leaving the site.
 - Record the number of visitors in the recording sheet by using the tally method.
 - Tabulate the data collected to see which site has the highest or lowest number of visitors during the time of investigation.
- (e) Some of the personal information in the questionnaire in Fig. 1 have not yet been used by the students in their fieldwork investigation.

Suggest a hypothesis for an investigation that the students could carry out linking the personal information to places of visit in Langkawi. [1]

Award 1 mark for one correct point.

- "The higher the income of the visitors, the more likely they are to engage in MICE tourism".
- "The further the country of origin, the more likely they are to engage in heritage tourism".

- (f) The students were also keen to find out about coastal processes at **Site 2** (the beach) in Photograph A. The group marked out a line of transect from points A to E as shown in Photograph B.

The students wanted to find out about the type of waves and the size of sediments that are found along the line of transect marked A to E on Photograph B.

The students collected samples of sediments along the transect A to E at a regular interval of 5 m. They measured the sediments collected at each point and compiled the data as shown in Table 2 below.

Distance along transect	A (0m)	B (5m)	C (10m)	D (15m)	E (20m)
Width of sediments in millimetres	13.4	11.1	10.9	14.2	9.0

Table 2

Describe how the results in Table 2 are collected.
Award 1 mark for each point.

[3]

- Along the line of transect A to E, measure the distance of interval 5m starting from Point A near the sea by using the measuring tape and ranging poles.
- Indicate the 5 points i.e. A to E with the ranging poles using the systematic sampling method and collect 100g of the sediments at each point.
- Use the vernier caliper to measure the diameter of the sediments at each site by measuring the widest part (long axis) of the sediments. Record down the measurement. Take the average reading of the sediments at each point.

- (g) Discuss how the students can determine the types of waves along the transect A to E.

[2]

- Students can determine the types of waves by counting the wave frequency. This can be measured by timing the number of waves breaking on the shore in 1 minute. They can take the wave frequency at least three times and find the average wave frequency.

- A low wave frequency (e.g. 6-8 waves per minute) usually indicates constructive waves while a higher wave frequency (e.g. 12-14 waves per minute) usually indicates destructive waves.

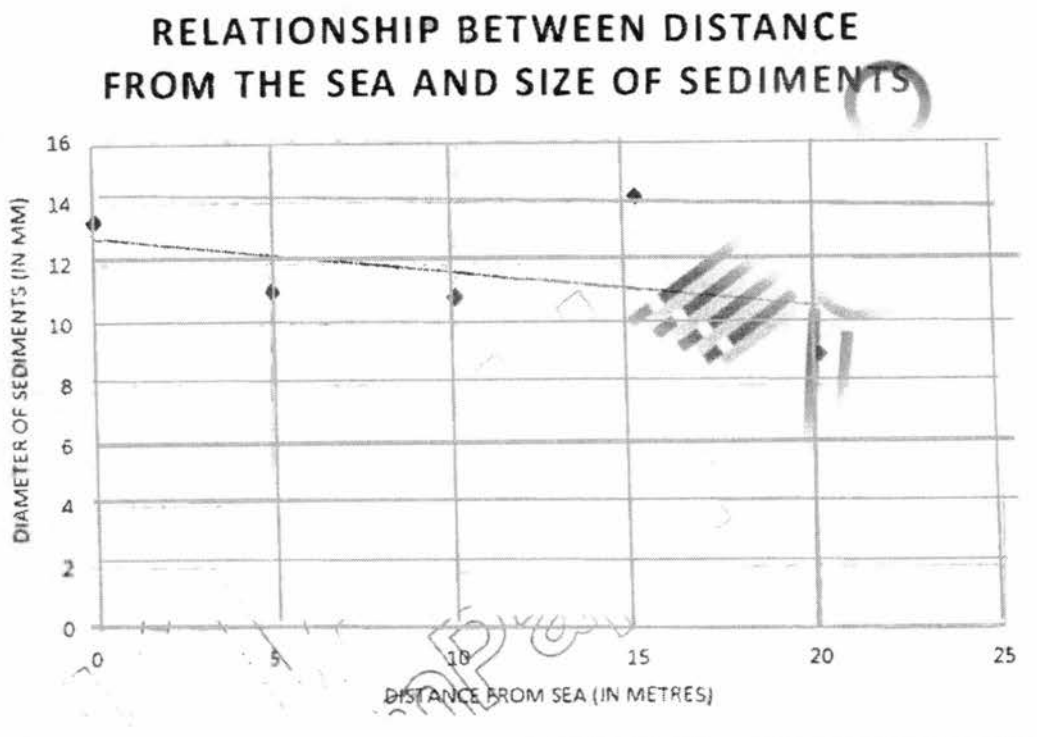
- (h) With reference to Table 2, draw a scatter graph on the graph paper provided to represent the data and suggest a reason for the anomaly reading. [4]

Award 1 mark for correct points plotted.

Award 1 mark for correct label of X and Y axis.

Award 1 mark for line of best fit.

Award 1 mark for suggest reason. Award any plausible answer.



Any one of the following reason:

- The anomaly reading is at Point D which is 15m away from the sea. It has the highest deviation of approximately 3.2mm higher than the line of best fit. This may be due to human interference in which beach activities may move the original sediments from the line of transect.
- The anomaly reading is at Point D which is 15m away from the sea. It has the highest deviation of approximately 3.2mm higher than the line of best fit. This may be due to the changes in tide lines where the coarser sediments are found at the high tide line.

Section B

Answer one question from this section.

- 2(a) Explain how geology of rocks and types of waves affect the rate of coastal erosion. [4]

Award 1 mark for each point.

Award max 2 marks for each i.e. geology and types of waves

- Rock composition determines the hardness of rocks and their resistance to erosion.
- Harder rocks will erode more slowly than softer rocks when they are being attacked by waves. Hence, the harder the rocks, the slower the rate of coastal erosion.
- Types of waves affects the rate of coastal erosion due to the wave energy and frequency.
- Destructive waves have a higher wave energy and higher wave frequency. Therefore, they have a higher ability to erode rocks through processes like hydraulic action and abrasion. Hence, the rate of coastal erosion is higher in a high energy environment.

- (b) Study Fig. 2 which shows the process of wave refraction as it approaches the coast.

Use Fig. 2 to predict how wave refraction may change the coastline.

[4]

Award 1 mark for each point.

Award max 3 marks if students do not make reference to the figure.

- Wave refraction may change the coastline by straightening it as waves approach the coast.
- When waves approach the coast, the wave energy tends to converge on the headlands, giving rise to increased wave height and greater erosive action.
- When waves approach the bays, wave energy diverge, giving rise to decreased wave height and reduced erosive action.
- Due to the difference in the wave energy at different parts of the coastline, the wave refraction in Fig. 2 will eventually straighten the coast as erosional and depositional processes are more dominant at headlands and bays respectively.

- (c) Fig. 3A shows the distribution of endangered coral reefs in the world. Fig. 3B shows a street map of Coral Bay, which is a popular snorkelling site.

With reference to Fig. 3A and 3B, describe the distribution of endangered coral reefs in the world and explain why they are under threat.

[5]

Award 2-3 marks for description.

Award 2-3 marks for explanation.

Distribution:

- They are largely found in the Philippine and South China Seas along the coastlines of the Southeast Asian region such as Indonesia and Malaysia.
- They are also located along the coastline of Eastern Africa, Madagascar in the Indian Ocean and islands in the Caribbean Sea.

Explain:

- Coral reefs are under threat due to coastal development. The expansion of coastal resorts such as Ningaloo Reef Resort at Coral Bay and the urban development such as shopping centres and cafes increase the likelihood of more waste being deposited into the sea. This may affect the growth of corals as they are suffocated by sediments.
- They are also under threat due to human recreational activities such as snorkelling. When people snorkel at Coral Bay, they may destroy the corals by trampling on them, affecting their growth.
- Tourism activities can also threaten their growth. Tourists' activities such as Glass Bottom Boat rides damage coral reefs when the boat anchors are thrown onto the sea floor.

(d) Study Fig. 4 which shows a type of coastal protection measure.

Describe the type of coastal protection measure in Fig. 4 and assess its effectiveness in reducing the rate of coastal erosion. [4]

Award 2 marks each for description and assess.

Reserve 1 mark each for success and limitation.

Describe:

- The seawall is parallel to the coast and is made up of concrete and hard rocks. There are also rocks accumulated at the bottom of the seawall.
- The wall is steep and has an approximately 45° angle.

Assess:

- Seawalls protect the coastline against wave attack by absorbing wave energy. Waves are reflected back into the sea and hence reduce the rate of coastal erosion.
- However, continuous wave action erodes materials at the base of the seawall. The powerful backwash of the reflected waves undermines the base of the seawall, making it less stable and may lead to the collapse of the seawall.

(e) 'Coastal deposition is responsible for major coastal landforms.'

To what extent is this statement true?

Support your answer with examples.

[8]

Level marking	What you need to achieve this level
Level 1 0-3 marks	At this level, answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer <i>Award 1 mark if student merely describes the definition of coastal deposition without addressing the question.</i> <i>Award 2 marks if student attempts to describe the definition of coastal deposition and lists some of the coastal landforms.</i> <i>Award 3 marks if student describes the definition of coastal deposition and links to the brief formation of the coastal landforms.</i>
Level 2 4-6 marks	Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer. <i>Award 4 marks if student clearly explains how coastal deposition forms ONE depositional landform i.e. beaches, spits and tombolos (with example).</i> <i>Award 5 marks if student clearly explains how coastal processes form TWO landforms i.e. depositional and/or erosional such as cliff and shore platform, headland and bay or cave, arch and stack (with examples).</i> <i>Award 6 marks if student clearly explains how coastal processes form THREE depositional and erosional landforms i.e. cliff and shore platform, headland and bay or cave, arch and stack, beaches, spits and tombolos (with at least 2 examples).</i> <i>Award max 4 marks if student explains all three factors but without examples.</i>
Level 3 7-8 marks	At this level, answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples of other evidence to support answers will be extensive. <i>Award 7 marks for L2-6 marks if student provides well-explained both coastal depositional and erosional landforms with examples for all and supported by a stand.</i> <i>Award 8 marks if student provides a well-evaluated conclusion, with good examples, by stating a strong stand based on the role of deposition vis-à-vis erosional processes and its landforms.</i>

Sample answer

I agree to a small extent that coastal deposition is responsible for some coastal landforms. However, there is another coastal process such as erosion which is also responsible for other coastal landforms.

Coastal deposition may occur when wave energy decreases or sediment weight is too heavy for the waves to carry. Hence, these sediments are deposited along the coast. Landforms such as beaches, spits and tombolos are found along depositional coasts. A spit is formed when there is an abrupt bend in the coastline and longshore drift continue to transport sediments in the original direction for some distance. The sediments are deposited in the sea after the bend where they will accumulate over time along the original direction of the coastline. This creates a ridge of sediments from the point where the coastline changes direction. When the spit continues to grow due to deposition and connects to a nearby mainland, a tombolo is formed, connecting the two existing islands. An example is a spit along Changi Beach in Singapore which continues to grow into the sea. A beach is also formed when sediments accumulate along a sheltered bay as the wave energy decreases, depositing loose sand, gravel and pebbles. An example of a sandy beach is Gold Coast beach along Brisbane coastline. Thus, coastal deposition is responsible for some of the coastal landforms.

However, coastal erosion also creates other landforms. Coastal erosion takes place in four main ways – hydraulic action, abrasion, attrition and solution. Each erosion process creates various landforms. Hydraulic action and abrasion erode a crack or joint on the rock surface and gradually enlarging the crack or joint to form a notch. The notch may be further deepened to produce a bigger hollow space called a cave. Further erosion by the waves eventually causes the roof of the cave to collapse to form a steep cliff. As the process of erosion continues, an overhanging cliff is formed. Eventually, the overhanging cliff will collapse and the materials will be deposited at the foot of the cliff. Some of the materials will be thrown against the base of the cliff, causing further erosion through abrasion. Over time, the cliff will retreat and a gently sloping platform appears at the base, forming a shore platform. An example is the White Dover cliff in United Kingdom, London which faces the Straits of Dover and France. Hence, coastal erosion creates cliffs and shore platforms.

Coastal erosion also creates erosional landforms such as caves, arches and stacks. Within headlands, some rocks may be less resistant to erosion than other rocks. These parts of the headlands will be eroded more quickly by hydraulic action and abrasion. Waves attack lines of weaknesses at the base of the headland and undercut it. The continuous action of waves forms a cave. The energy of waves hitting both sides of the headland may eventually lead to caves being developed on each side of the headland. Further erosion may join caves together, leaving a bridge of rock known as an arch. After a period of time, the roof of the arch may collapse to form a stack, which is a pillar of rock in the sea left behind after an arch collapses. An example will be the arch in Port Campbell Australia and the stacks along the Twelve Apostles in Melbourne. Therefore, coastal erosion is also responsible for the other coastal landforms.

To conclude, I believe that coastal deposition play a role in the formation of coastal landforms such as beaches, spits and tombolos. However, coastal processes are not just limited to that. Coastal erosion also plays a significant role in shaping other coastal formation due to its dynamic processes of hydraulic action, abrasion, attrition and solution. Hence, due to the high energy environment along erosional coastlines, other landforms such as cliffs and shore platforms, headlands and bays and caves, arches and stacks are formed. All in all, I partially agree with the statement that coastal deposition plays a role in the formation of coastal landforms.

3(a) Study Fig. 5 which shows a sketch map of a cliff along a coastline.

Using Fig. 5, explain how erosional processes at A and B can form coastal landforms.

[4]

Award 2 marks each for A and B.

A:

- When waves hit the base of the headland at A, the waves trap air in the rock joints. The air is compressed by the oncoming waves, exerting pressure on the joints and eventually weakens the rock and causing them to shatter.
- The eroded rocks are hurled and scraped against the headland through abrasion. This weakens the surface and erosion continues to occur. This creates a small cave at the base of the headland.

B:

- Hydraulic action and abrasion continue to erode the rock surface at the base of the cliff, forming an overhanging cliff.
- The overhanging cliff will eventually collapse as the base is unstable and the materials will be deposited at the base of the cliff. The cliff will retreat inland and a gently sloping platform called shore platform is formed at the base of where the cliff used to be.

(b) Study Fig. 6 which shows a cross section of the changing beach profile before and after a storm.

With reference to Fig. 6 and your own studies, show how the beach profile has evolved and outline how the beach materials are transported to rebuild the beach.

[5]

Award max 3 marks for show.

Award max 2 marks for outline.

Show:

- In calm conditions, the beach profile is gentle with slight elevation of about 45° facing the coast. Vegetation can also be seen growing along the beach profile.
- During the storm, the strong waves hit the coast and erode the beach, causing the sand to move offshore. Beach profile becomes steep and almost vertical.
- After the storm, the beach is built from the build-up of wind-blown sand and movement of sand onshore. Beach profile is now gentle.

Outline:

- Beach materials are transported through the longshore drift and beach drift. When waves approach the coast at an angle, sediments move up the beach at an angle as swash and move perpendicularly down the beach as

- The longshore current which is parallel to the coast helps to move the sediments along the beach. Hence, the combined effect create longshore drift which rebuilds the sediments on the beach.

- (c) Study the topographical map extract of Mauritius. The scale is 1:25 000 and contours are shown in 10m intervals.

The location between Eastings 26 and 29 and Northings 94 and 98 is a major tourist area.

With reference to the topographical map, explain why people are attracted to the area.

[4]

Award 1 mark for each complete point.

Award max 3 marks if students do not make reference to the names of the landmarks.

- People are attracted to the scenic beauty of the area. It is located along the coastline of Trou D'eau Douce and there are beaches found near Pte Quatre Cocos where tourists can enjoy the scenic beauty. Hence, areas of natural scenic beauty attracts nature lovers.
- There are also major towns such as Lenferna and Victoria where supporting facilities such as accommodation ie, Hotel UC and village halls are provided for the tourists.
- The Crown Land Falmar Reserves also caters to tourists who want to engage in ecotourism where they visit protected nature spaces.
- There is also accessibility to the area as there are major roads connecting to different parts of the islands such as B26 and B59 roads, increasing the number of tourists coming to the area.

- (d) With the aid of examples, assess the socio-cultural impact of tourism.

[4]

Award 1 mark for each point.

Reserve 1 mark each for positive and negative impact.

Reserve 1 mark for examples.

- Tourism can bring about the preservation of culture and customs. This will make historical and cultural sites more attractive to tourism. Revenue generated from tourism can also be used to fund the preservation and restoration of the cultural sites.
- For instance, entrance fees to sites such as the Great Pyramids of Giza in Egypt and Angkor Wat in Siem Reap Cambodia have been used to directly fund conservation efforts.
- However, tourism can also cause dilution of culture and local customs. The identity, culture and values of a place can be lost when activities and places become commercialised to meet the demands and expectations of tourists when festivals and rituals are modified.
- Tourism can also cause an increase in crime rates. Tourists carry valuable items and hence may be vulnerable to pickpockets. This can affect the reputation of the place as visitors may be fearful of such incidents.

- (e) 'Affordable transportation is the main influence for the growth of global tourism.'

How far do you agree with this statement?

[8]

Support your answer using examples.

Level marking	What you need to achieve this level
Level 1 0-3 marks	At this level, answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer. <i>Award 1 mark if student merely describes the definition of affordable transportation without addressing the question.</i> <i>Award 2 marks if student attempts to describe affordable transportation as part of the development in technology.</i> <i>Award 3 marks if student describes and explains affordable transportation as part of the development in technology and how it influences the growth of tourism.</i>
Level 2 4-6 marks	Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer. <i>Award 4 marks if student describes and explains affordable transportation as part of the development in technology and how it influences the growth of tourism (with examples).</i> <i>Award 5 marks if student describes and explains another factor related to DEMAND and how it influences the growth of tourism (with examples).</i> <i>Award 6 marks if student describes and explains a third factor related to DESTINATION factor and how it influences the growth of tourism (with at least 2 examples).</i> <i>Award max 4 marks if student describes and explains all three factors but without examples.</i>
Level 3 7-8 marks	At this level, answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples of other evidence to support answers will be extensive. <i>Award 7 marks for L2-6 marks and link the ALL THREE factors (with examples) to the growth of tourism and provided a stand.</i> <i>Award 8 marks if student provides a well-evaluated conclusion, with good examples, by stating a stand with strong reasoning that accounts for it</i>

Sample essay

I agree that affordable transportation is the main influence for the growth of global tourism. The rise of budget airlines has made air transport affordable especially those from middle and low income-groups, to travel. The cheapened air fares can be attributed to smaller and more fuel-efficient aircrafts. These aircrafts such as Jetstar, Airasia and Tiger Airways typically fly mainly to short-haul destinations. Hence, this would definitely enable more people to travel internationally and more frequently. It also enables travellers to go to destinations not covered by major commercial airlines such as Bhutan, Pacific Islands, Northern Thailand and many other islands. This thus leads to the growth in global tourism.

However, destination factor can also influence the growth of global tourism. Destination factor refers to the infrastructure and services in tourists destinations that allow for more convenient and comfortable stays for tourists. The provision of attractions can offer something spectacular, unique and interesting for both domestic and international tourists. Such attractions can also attract tourists to make return trips to the country to spend their tourists' dollars. For instance, Dubai has become a major destination and stopover location between Europe and Asia. The Burj Al Arab and Palm Island's showcased a seven star luxury hotel on artificial islands. Thus, the promotions of attractions, natural or built, draw tourists to visit the country and boost the tourism industry.

Demand factors also affect the growth of tourism. They influence people's desire to purchase tourism-related goods and services. Disposable income is one of the reasons for the growth in tourism. Disposable income is the amount of income left after taxes have been paid. The growth in income has allowed people to spend more on travelling for leisure. Due to the rapid economic growth such as in China and India, the number of people in the middle income and high income groups has been steadily growing. Hence, having more disposable income, they have the ability to spend more on travel, boosting its growth.

In conclusion, I believe that the provision of affordable transportation through fuel-efficient aircrafts have revolutionized the way tourists travel. Without this effective and efficient mode of transport, tourists may not be able to reach such destinations. In addition, even if attractions are highly publicized, they may not be able to reach the areas if there is no accessibility of transportation. Moreover, when more people can afford to travel, travel eventually becomes a lifestyle and hence there will be a significant increase in tourist arrivals in various destinations. Hence, affordable transportation is the main influence for the growth of global tourism.

-End of paper-

2

Section A

Answer one question from this section.

- 1(a) Study Figs. 1A and 1B. Fig 1A shows the elevation map of Australia and Fig. 1B describes the relationship between air pressure and altitude.

With reference to Fig. 1A and 1B, describe the elevation in Australia and account for the difference in pressure at difference locations.

Award max 3 marks for description.

Award max 2 marks for account for.

Description:

- The elevation in Australia ranges from below sea level to above 600m. [5]
Areas that have high elevation of above 600m are generally found along the Northeast and Southeast coast of Australia where Mount Kosciuszko and Bartle Frere are found. It is also found at the Western coast where Mount Meharry is located.
- Areas with moderate elevation between 300 to 600m are largely found surrounding the areas with high elevation, particularly in Western and Central Australia. These areas are surrounding Mount Woodroffe, Mount Zeil and Mount Meharry.
- Areas with low elevation between 0m to 300m are generally found in Northern and Southern coast of Australia. These areas are also in some parts of Central Australia.

Account for:

- Air pressure decreases as altitude increases. For instance, when the altitude is 152m, the air pressure is 994.8m and when altitude rises to 610m, air pressure drops to 942.1m. This is because the air becomes less dense at higher altitudes.
- Gravity pulls air molecules towards the surface of the earth. Hence, air pressure is higher at sea level and lower at higher altitudes.

- (b) Fig. 2 shows a regional wind system that brings rain to Central Asia.

Using Fig. 2, explain the occurrence of floods at Bangladesh.

[4]

Award one mark for each point.

- Bangladesh experiences the Southwest monsoon between June to September when it is summer in the Northern Hemisphere.
- The hot air over Central Asia heats up, expands and rises, forming a region of low pressure over the area. During the same time, the Southern hemisphere is experiencing winter, creating an area of high pressure.

3

- Due to the difference in pressure, air from Southern Hemisphere moves to Central Asia. As the winds cross the Equator, Coriolis effect deflects the winds to the right, bringing Southwest monsoon winds across the Bay of Bengal to Central Asia and Bangladesh.
- The warm air picks up moisture as it travels over the Indian Ocean and brings heavy rain to Bangladesh, causing flooding.

- (c) With the use of examples, comment on the effectiveness of responses to climate change at the national level. [4]

Award 1 mark for each point.

Reserve 2 marks each for successes and limitations.

Reserve 1 mark for examples.

- The Singapore Green Plan aims to generate 60% of Singapore's energy needs using natural gas in 2012. Natural gas is a cleaner form of energy in comparison to coal because it produces less smoke. With the switch to natural gas as an energy source, there is **less reliance on coal** to produce electricity. This thus reduces the **amount of toxic by product gases** that are released into the atmosphere.
- However, natural gas requires complex treatment plants to process and pipelines to transport. These pipelines have high maintenance costs because they need to be laid underground and have to be checked regularly for leakage.
- Another national strategy is the Green Mark Scheme. The scheme aims to encourage more new 'green' buildings, which are energy-efficient. Buildings that are more energy-efficient use less energy to produce the same service. Some successes include the existing green buildings such as Plaza by the Park and National Library Building. They have reported energy savings of 15% to 35% compared to conventional buildings. This cuts down greenhouse gas emissions by reducing fossil fuels to generate electricity.
- However, these buildings are more costly because the construction materials are more expensive as such materials may include recycled metal.

- (d) Study Fig. 3 which shows an infographic of human activities on the environment.

Using Fig. 3, explain how human activities contribute to the increase in global temperature. [4]

Award 1 mark for each point.

Award max 3 marks if no reference is made to the figure ie, values.

- Transportation in urban areas (19% of the total greenhouse gas emission) in New Zealand contributes to the emission of greenhouse gases through its exhaust fumes. More fossil fuels are also burnt, emitting carbon dioxide.

greenhouse gas, traps heat in the atmosphere and leads to enhanced greenhouse effect, causing an increase in global temperature.

- The burning of fossil fuels for energy consumption in urban areas (26% of the total greenhouse gas emission) in New Zealand has resulted in an increased emission of nitrous oxide. These gases are released into the atmosphere and traps heat to cause enhanced greenhouse effect, causing an increase in global temperature.
- Industrial economic activities are also responsible for the increase in global temperature. This takes up 6% of the total greenhouse gas emission. Secondary industries such as manufacturing involve the burning of fossil fuels. Greenhouses gases are also released as by-products when goods are produced. Thus, these gases are released into the atmosphere and traps heat to cause enhanced greenhouse effect, causing an increase in global temperature.
- Agriculture takes up the largest percentage of 47% of the total greenhouse gas emission in New Zealand. Cattle farming contributes to greenhouse gas emissions because cattle release methane as waste gas, which account for 35% of methane released into the atmosphere. These gases trap heat to cause enhanced greenhouse effect, causing an increase in global temperature.

- (e) 'The differential rate of heating of land and sea is responsible for the variation in temperature at different locations.'

Discuss the accuracy of the statement.

Use examples to support your answer.

[8]

Level marking	What you need to achieve this level
Level 1 0-3 marks	At this level, answers will be generalised or with minimal support if any stand were given at all. Reasoning rather weak and expression may be unclear. A basic answer that has little development. <i>Award 1 mark if students briefly define the concept of differential rate of heating of land and sea.</i> <i>Award 2 marks if students briefly describe distance from the sea as a factor affecting temperature at different locations.</i> <i>Award a max of 3 marks if students provide description of distance from the sea and link to variation in temperature at different locations.</i>
Level 2 4-6 marks	Agreement or disagreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in at least one place in answer.

	<i>Award 4 marks if students are able to give a well-explained paragraph showing how distance from the sea can affect temperature at different locations (with specific example).</i> <i>Award 5 marks if students are able to provide a well-explained paragraph of another factor affecting temperature (ie, altitude, latitude or cloud cover) of different locations (with specific examples for both)</i> <i>Award 6 marks if students are able to provide a well-explained paragraph of the third factor affecting temperature (ie, altitude, latitude or cloud cover) of different locations (with at least 2 with examples)</i> <i>Award a max of 4 marks if students provided well-explained paragraphs of all three factors but there are no examples given.</i>
Level 3 7-8 marks	At this level answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. <i>Award 7 marks if students are able to hit L2/6 with all three examples.</i> <i>Award 8 marks if students are able to provide a logical conclusion that clearly shows their stand of evaluating the importance of the factors in influencing temperature at different locations.</i>

Sample essay

I agree with the statement to a small extent. Due to the difference in the rate of heating, maritime and continental effect affects the temperatures at different locations.

The sea heats up and cools down more slowly than the land. The difference in the rate of heating and cooling of the sea and land affects temperature of coastal and inland areas. During summer, land heats up faster than the sea, causing cooler sea air to lower the temperature of coastal areas. During winter, the sea cools more slowly than the land. As the sea retains heat longer, the warm air over the sea increases the temperature of coastal areas. Thus, due to maritime effect, coastal areas experience cooler summer and warmer winters.

In inland areas, they are not influenced by the difference of heating of the land and sea. Hence, inland areas experience warmer summers and colder winters, leading to a large annual temperature range than coastal areas. For instance, the two cities in Alaska, Fairbanks and Anchorage experience different mean monthly temperatures. Fairbanks, which is a city further inland, experiences harsh winter and summer with a large annual range of temperature. Anchorage, a coastal city, experiences a cooler summer and warmer winters as the sea regulates the temperature. Thus, the differential rate of heating of land and sea arising from the distance from the sea contributes to the maritime and continental effect, leading to varying temperature at different locations.

However, there are other factors such as latitude that affect the variation in temperature at different locations. Latitudes are imaginary horizontal lines running from east to west around the earth and are measured in degrees. The temperature differs between places at lower latitudes and higher latitudes because the sun's rays strike various parts of the world at

The earth tilts at 23.5° on its own axis. As a result, the sun's rays strike at various angle at different parts of the earth. The angle of incidence is the angle at which the sun's rays reach the earth. When the angle of incidence is higher, the sun's rays are more concentrated on the area. The tilt of the earth also results in some places not receiving sunlight for months. For instance, as the angle of incidence is high at the area between Tropic of Cancer (23.5°N) and the Equator, heat from the sun is concentrated on a small area. This results in higher temperature at lower latitudes such as Indonesia and Malaysia in comparison to countries in the higher latitudes such as Russia and Sweden. Thus, latitude is also responsible for the varying temperature at different locations.

Altitude is another factor that affects the variation in temperature at different locations. Temperature decreases with altitude, which is the height of a place in relation to the sea level. Temperature generally decreases by 6.5°C with every 1000 metres increase in altitude. This is because the atmosphere is mostly heated by the earth's surface. The sun's solar energy enters the atmosphere and reaches the earth's surface in the form of shortwave radiation. About 45% of shortwave radiation is absorbed by the earth's surface, heating it up. The warm surface then emits heat in the form of longwave radiation. The higher up the atmosphere, the further it is from the surface of the heated ground. Temperature is therefore lower at the mountainous areas such as Genting Highlands in Malaysia in comparison to low-lying areas such as Kuala Lumpur in Malaysia. Thus, altitude is also responsible for the varying temperature at different locations.

In conclusion, I agree to a small extent that the differential rate of heating of land and sea is responsible for the variation in temperature at different locations. This is because there is an obvious variation of temperatures between coastal and inland areas. However, I believe that latitudes play a major role in affecting the temperature at different locations. This is because latitudes explain the main reason of the varying temperature across the global scale, affecting the climate of a location. It determines the baseli temperatures before other factors come into play. However, I also acknowledge that the other 2 factors, distance from the sea and altitudes also affect temperature between locations albeit at a local scale.

2(a) Study Figs. 4A and 4B on Cyclone Sandy which hit United States of America in 2012.

- (i) Using Fig. 4A and your own studies, describe the characteristics of Cyclone Sandy and outline the factors affecting its strength and spinning direction. [4]

Award max 2 marks for description.

Award max 2 marks for outline.

Description:

- Cyclone Sandy has thick thunderstorm clouds surrounding the eye of the cyclone. In the centre of the cyclone, there is an area of low central pressure known as the eye of the cyclone.
- It is characterised by its strong winds of 75mph and it spirals towards the eye of the cyclone.

Outline:

- The strength of a cyclone is affected by the high ocean surface temperature. When the temperature is above 26.5°C , the heat and

moisture from the ocean waters allow cyclones to be formed as hot air rises and latent heat is released to sustain the cyclone.

- The direction of a cyclone is also affected by Coriolis Effect as it helps to create the rotary motion of the cyclones. In the Northern hemisphere, the Coriolis effect deflects winds to the right, causing the cyclone to rotate in an anti-clockwise direction. In the Southern hemisphere, the Coriolis Effect deflects winds to the left, causing the cyclone to rotate in a clockwise direction.

- (ii) Using Fig. 4B, describe the path taken by Cyclone Sandy and discuss its damage. [5]

Award 2 marks for description.

Award 3 marks for discuss.

Describe:

- Cyclone Sandy started in the ocean near Jamaica and moves in the North direction towards Cuba and the Bahamas.
- It then changes the course of the direction towards the Northeast before moving in the Northwest direction and hitting the USA.

Discuss:

- Tropical cyclones can cause great damage to houses and properties of people living in the area. According to Fig. 4B, 4903 houses are damaged and 137,000 houses are affected in Dominican Republic and Cuba respectively.
- Lives may also be lost as people are trapped in their damaged houses or injured by the strong winds. According to Fig. 4B, 54 people have been reported dead in Haiti and 40 deaths in USA.
- Severe floods can cause destruction to farmlands and other infrastructure as the tropical cyclone causes damage to plants, cattle farms and other services. This will affect transportation networks and supply of food to the affected places.

- (b) Fig. 5 shows a formation of tsunami.

With reference to Fig. 5 only, account for the formation of tsunami. [4]

Award 1 mark for each point.

- Tsunami occurs due to an explosive volcanic eruption in the sea. When a volcano erupts, magma reaches the surface and explodes.
- The violent explosion causes the original top of the volcano to be unstable and the materials slide down into the sea.
- Some of the volcano flank crashes into the sea, causing these materials to plunge into the water.
- Tsunami is thus formed as large waves are generated from the explosion and the landslide causing these large waves of high heights to reach

- (c) Assess the impacts of volcanic eruption on the economy and the local community.

[4]

Award max 2 marks each for benefits and risks.

Allocate 2 marks each for economy and local community.

- One benefit of volcanic eruption is the availability of fertile soil. The lava and ash from volcanoes break down to form fertile soil. The fertile soil is rich in minerals which makes it favourable to agriculture. This will help to increase food supply for the local community.
- Volcanic areas are often popular tourist attractions. Volcanic areas offer a variety of activities for tourists to engage in. The scenic beauty of volcanic landscapes can attract tourists. Hence, such tourist activities can bring in income for the people living in the volcanic area and this can help to develop the country's economy.
- However, volcanic materials made up of pyroclasts, volcanic gases, ash and dust are being released during the eruption, leading to a widespread damage of infrastructure such as houses and transportation networks. With such damage, the economy will temporarily come to a standstill.
- Pyroclastic flow also cause loss of lives as the lava destroys everything in its path as it travels down the volcano.

- (d) 'Major tectonic landforms and features are formed at convergent plate boundaries.'

To what extent is the statement true?

Support your answer with examples.

[8]

Level marking	Description
Level 1 0-3 marks	At this level, answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer. <i>Award 1 mark if student states the three types of plate movements without any description.</i> <i>Award 2 marks if student provides some brief description of convergent plate movements.</i> <i>Award 3 marks if student provides well-explained paragraph on the tectonic landforms found at convergent plate boundary.</i>
Level 2 4-6 marks	Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer.

	<i>Award 4 marks if student provides well-explained paragraph on the tectonic landforms found at convergent plate boundary (with specific examples).</i> <i>Award 5 marks if student provides another well-explained paragraph on the tectonic landforms found at divergent plate boundary (with specific examples).</i> <i>Award 6 marks if student provides well-explained paragraphs of all three plate movements (convergent, divergent and transform) and its landforms (with at least 2 specific examples).</i> <i>Award max 4 marks if student provides well-explained paragraphs of all three plate movements (with no examples).</i>
Level 3 7-8 marks	At this level, answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples of other evidence to support answers will be extensive. <i>Award 7 marks if students are able to hit L2/6 and provide 3 examples.</i> <i>Award 8 marks if student is able to provide a logical conclusion that remains constant throughout the answer (Disagree/Agree to show extent with supporting evidence from two other plate movements).</i>

Sample essay

I agree to a large extent that major tectonic landforms are formed at convergent plate boundaries. There are three types of plate movements. Each type of plate movement at different plate boundaries will result in the formation of different types of features and landforms on the earth's crust. Convergent plate movements mainly forms tectonic landforms on the earth's crust.

At the convergent plate boundaries, convergent plate movement occurs when plates move towards each other. In oceanic-oceanic convergence, the denser oceanic plate subducts below the less dense oceanic plate. At this subduction zone, a depression called oceanic trench is formed and the subducted plate will be melted and rise as magma to form volcanoes. An example is the Marianas Trench and Marianas Island when Pacific Plate and Philippines plate collide. In continental-continental convergence, fold mountains may be formed as the crusts are compressed and folded upwards due to compressional force acting on the plates. An example will be the Himalayas, between Indian and Eurasian Plate. In oceanic-continental convergence, all the three landforms- trenches, volcanoes and fold Mountains may be formed due to the different densities of the plates.

However, there are also other tectonic landforms found along divergent plate boundaries. Divergent plate movement occurs when two plates move away from each other. Magma moves upward to the surface where it cools to form new oceanic crust along these plate boundaries. In oceanic-oceanic plate divergence, magma rises from the mantle to fill the gap between the plates as they move apart to create a ridge of new ocean floor known as mid-oceanic ridge. Volcanic islands may also be formed when magma solidifies and rise above sea level. An example is the Mid-Atlantic Ridge between North American Plate and Eurasian Plate. In continental-continental divergence, a rift valley is formed when the land in between the two continental plates sink due to tensional forces acting between them. An example is the East African Rift Valley.

There are also tectonic features along transform plate boundaries. Transform plate movement occurs when two plates slide past each other along transform plate boundaries. The movement results in the formation of a transform fault. In the process, tremendous stress builds up and is eventually released through the form of earthquakes. One feature along the transform plate boundary is the San Andreas Fault between the Pacific Plate and the North American Plate. When the two continental plates slide past each other, it creates a fault line in between the two plates.

Hence, we can see how different plate movements at different plate boundaries result in the formation of different features and landforms on the earth's crust due to its different densities and directions of plate movements. However, I agree that convergent plate movement creates more landforms and features but I acknowledge that there are also other forms of plate movements that are responsible for other tectonic landforms.

Section B

Answer one question from this section.

- 3(a) Study Fig. 6 which shows the calories consumed **per capita** per day in China and India from 1980 to 2013.

Using Fig. 6, compare the changes in the calories between China and India from 1980 to 2013 and discuss the effects of malnutrition on developing countries.

[5]

Award 3 marks for comparison.

Award 2 marks for discuss.

Comparison:

- Generally, China sees a higher calories consumed per capita per day in comparison to India. China shows an increase of 950 (3100-2150) calories consumed per capita per day while India sees an increase of 400 (2400-2000) calories consumed per capita per day. This shows that China increases 500 calories consumed per capita per day more than India from 1980 to 2013.
- Between 1980 and 1990, China shows an increase of 350 (2500-2150) calories consumed per capita per day while India shows an increase of 200 (2200-2000). This shows that China increases 150 calories consumed per capita per day more than India from 1980 to 1990.
- Between 1990 and 2013, China shows a rapid increase of 600 (3100-2500) calories consumed per capita per day while India shows an increase of 200 (2400-2200) calories consumed per capita per day. This shows that China increases by three times more calories consumed per capita per day than India from 1990 to 2013.

Discuss:

- Malnutrition can lead to adverse effects on the health of the people. With malnutrition, people in LDCs do not get sufficient amount of nutrients and hence may affect their developmental growth. The lack of nutrients can result in poor health conditions such as visual impairment or even deaths.

- Malnutrition can affect the country's economic development. When people suffer from malnutrition, they get sick easily, leading to loss of working days. Hence a lower income is generated and thus lowering the country's productivity.
- Obesity-related diseases may also demand more public health expenditure and governments would have to channel more funds to the health care system. This would reduce the amount of funds remaining for economic development.

(b) Study Fig.7 which shows the dominant soil stresses in the world.

Using Fig. 7, explain how poor soil fertility and drainage can affect food production. [2]

Award 1 mark for each point.

Award max 1 mark if no reference is made to the values.

- Poor soil fertility can reduce the amount of food production. When the soil is infertile, it lacks nutrients and minerals that are essential for crops to grow. Hence, crops may not grow well in such quality of soil, reducing its output. For instance, 4.5 million km² of global land area are experiencing excessive nutrient leaching and 3.5 million km² of global land area are experiencing low moisture and nutrient status.
- Soil drainage is also dependent on the ability to hold water in the soil. Improper soil drainage may hinder the growth of crops. When the soil is not properly drained, water will be too much or too little for crop production as plants require water to grow well. For instance, 2.6% of total global land area experiences low water-holding capacity. Hence, crop yield may be adversely affected.

(c) Study Fig. 8 which shows an infographic of modern developments in farming.

Using Fig. 8, show how modern developments in farming can boost food security. [5]

Award 1 mark for each point.

- Availability of new technology will affect food production and supply. Technological advances such as machineries, pesticides and high-yielding varieties seeds can increase productivity and supply, therefore improve food security.
- Food security can be increased by implementing agricultural policies. The government can channel resources into farmer's development and education or ensure food prices are stable to influence the intensity of food production and ensure accessibility of food.
- Diversifying sources of food also allows food supply to be readily available. Food supply is assured as the government increases the quantity and

- GM food also helps to stabilise crop yield as GM crops are made to be pests and weather resistant. Hence, less crops are destroyed to unfavourable weather conditions such as low rainfall and pests attacks, increasing food supply and boosting food security.
- Organic farming is also another modern development in farming as it provides an alternative food supply that are grown without the use of chemical fertilisers or growth hormones and hence increase health benefits. Thus this allow another option for people to consume food that are relatively safer, improving the food security.

(d) Using an example, discuss the successes and limitations of genetically modified food in tackling the issue of food shortage.

[5]

Award 1 mark for each point.

Reserve 1 mark for example.

Successes:

- Genetically modified (GM) crops have higher yield than non-GM crops due to the modification of the seeds. This helps farmers to increase the food productivity as there is higher output, minimising the issue of food shortage.
- The use of biotechnology has also enabled food to be produced in areas previously considered unsuitable for agriculture. Crop yield is stabilised as GM crops are more resistant to extreme weather conditions, increasing food productivity.

Limitations:

- GM food crops are expensive and so not all farmers can afford to invest in GM food. Hence, this may lead to the dominance of agribusinesses. The latter is more financially-equipped and is able to afford the high capital investment. Small-scale farmers and LDCs will not be able to afford the GM seeds due to the high price. Hence, food productivity will remain low in LDCs.
- Many consumers are wary of consuming GM food due to the potential health risks associated with them. As a result, GM food is small as the demand for them is low.
- GM food crops are mainly used to increase yield of selected food crops and not staple food. This is also due to the rise in demand for biofuels for the running of the economy in DCs. Hence, GM crops do not effectively meet the demand for food consumption in LDCs.
- For instance, only corn, soya bean and canola uses GM biotechnology but it is limited to other crops that are important in Sub-Saharan Africa such as cassava and banana.

(e) 'The variation in food consumption patterns in different countries is mainly due to economic reasons.'

How far do you agree with this statement?

Support your answer using examples.

[8]

Level marking	Description
Level 1 1-3 marks	At this level, answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer. <i>Award 1 mark if student is able to define economic reasons in variation of food consumption.</i> <i>Award 2 marks if student is able to briefly describe economic reasons in variation of food consumption.</i> <i>Award 3 marks if student is able to explain the economic factor that can cause food consumption patterns to vary in different countries.</i>
Level 2 4-6 marks	Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer. <i>Award 4 marks if student is able to clearly explain one economic factor that can cause food consumption patterns to vary in different countries (with examples)</i> <i>Award 5 marks if student is able to clearly explain another factor (ie, political or socio-cultural) that can cause food consumption patterns to vary in different countries (with examples).</i> <i>Award 6 marks if student is able to clearly explain two other factors (ie, political and socio-cultural) that can cause food consumption patterns to vary in different countries (with at least 2 examples).</i> <i>Award max 4 marks if student is able to clearly explain the economic factor that can cause food consumption patterns to vary in different countries, but with no examples.</i>
Level 3 7-8 marks	At this level, answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples of other evidence to support answers will be extensive. <i>Award 7 marks if students are able to hit L2/6 with 3 examples and provide a conclusion to support their stand.</i> <i>Award 8 marks if students are able to provide a logical conclusion that clearly shows their stand of evaluating the factors that can cause food consumption patterns to vary in different countries.</i>

Sample essay

I agree that the variation in food consumption patterns in different countries is mainly due to economic reasons.

Economic factors can cause food consumption patterns to vary in different countries, particularly between LDCs and DCs. Rising income results in higher disposable income in

every US \$1 increase in income only 20% of increased income is spent on food. In contrast, in LDCs such as Democratic Republic of the Congo, up to 60% of the increased income goes to spending on food. When people have more disposable income, they have more purchasing power to consume a larger amount and variety of food. Often, this means consuming more meat and less cereal as they are able to afford such food. With higher disposable income in DCs, the quality of diets also tends to increase due to consumption of organic food and olive oil which have certain health benefits. Thus, economic reason largely affects the consumption patterns in different countries.

Another reason for the variation in food consumption is socio-cultural reasons. Modern society's emphasis on convenience has led to the emergence of many fast food outlets throughout DCs. Due to such convenience and affordable pricing, more people opt to dine at these outlets. However, there are also health concerns linked to the consumption of fast food. These concerns arise from the large amounts of oil, processed meats and chemicals used to prepare fast food. Due to the increasing awareness of the harmful effects of consuming fast food, people in DCs are trying to move away from their high levels of consumption of fast food. However, the fast rate of globalisation has made it possible for fast food chains to set up restaurants in many LDCs such as India. In 1991, when India opened up its economy to foreign investors, many fast food chains such as McDonald's and Pizza Hut were established. Hence, this results in a higher consumption of fast food in LDCs, leading to a higher consumption of fats.

Political reasons are another cause for the variation in food consumption patterns in different countries. Governments can influence the stability of food supply and food safety in their countries. Therefore, food consumption varies between DCs and LDCs. Governments may take action either by increasing food production or increasing food imports. As DCs have financial capacity, they are able to improve farming technology and increase the use of agricultural land by opening new areas for agriculture. This in turn will increase the crop yield and ensure that the food supply of the country is met. LDCs, on the other hand, may not be financially capable and hence they may have a lower ability to increase food supply due to the lack of access to farming technology. Moreover, when there is a civil war or natural disasters, LDCs may be not as well equipped to recover from the loss of croplands for their food supply and hence, food consumption will be adversely affected when such situations occur. Therefore, political reasons will affect the variation in food consumption patterns in different countries as governments play a big role in ensuring that food supply remains stable.

In conclusion, I agree that economic reasons are mainly the cause of variation in food consumption patterns in different countries. Economic reasons such as disposable income will directly affect the affordability of certain food groups and the access to other non-staple food. With a higher disposable income, people have a greater purchasing power to consume. Socio-cultural reasons, in comparison, play a smaller role as it is largely based on the individual preferences and they may choose to consume fast food or otherwise despite its availability. Political reasons such as civil strife and natural disasters, are temporary and hence may not affect the food consumption pattern in the long run. Thus, I believe that economic reasons are the main cause of variation in food consumption patterns in different countries, particularly in DCs and LDCs.

4(a) Study Fig. 9 which shows the consumption of meat and fish in Europe.

Using Fig. 9, compare the trends of chicken and beef between 1979 and 2004 and account for its patterns.

[5]

Award max 3 marks for comparison.

Award max 2 marks for account for.

Comparison:

- Generally, the consumption of chicken in Europe shows an increase of 115 (255-140) grams per person per week but the consumption of beef in Europe shows a decline of 110 (220-110) grams per person per week from 1979 to 2004.
- Between 1979 and 1989, the consumption of chicken rises significantly by 50 (190-140) grams per person per week but the consumption of beef shows a slight decrease by 15 (215-200) grams per person per week. Thus, consumption of chicken shows a greater change of 35 grams per person per week in comparison to consumption of beef.
- Between 1989 and 2004, the consumption of chicken continues to rise drastically by 60 (250-190) grams per person per week but the consumption of beef shows a sharp decrease by 90 (200-110) grams per person per week.

Account for:

- The rise in the consumption of chicken is due to a higher disposable income in Europe. This allows people to have a higher purchasing power to buy more chicken as a source of protein. Hence, the consumption of chicken rises as people can afford to consume such meat.
- However, the decline in consumption pattern of beef is probably due to health awareness. In DCs such as Europe, people may prefer to consume less red meat and fast food as they are more conscious of their health.

(b) Study Fig. 10 which shows the supply chain of a local food hub.

With reference to Fig. 10 and your own studies, explain how food security can be improved in a local community. [4]

Award 1 mark for each point.

- Food security can be improved through the establishment of the local food hub. Local partner farms made up of small family farms and specialty producers produce local crops for the consumption of the local community.
- The local farm sourced food is then distributed through local partner distributors, institutions and retailers. Food is then sold at supermarkets and food outlets for consumers to purchase.
- The local food hub also engages community partners consisting of non-profits, hunger and food access organisations and schools to increase awareness of food production and food security as they are the agent of change.
- At the same time, public knowledge on local food security is shared to all segments of the community to spread general knowledge on food production and consumption.

With reference to Fig. 11 and your own studies, show how relocation diffusion causes the spread of the Zika virus and account for its spread.

{3}

Award max 2 marks for show and account for.

Reserve 1 mark for show and account for.

Show how:

- Relocation diffusion is responsible for the spread of Zika virus as it spreads the disease to a location outside its current geographic range. It originated from Uganda and Brazil in 1947 and Brazil in 2015 respectively before spreading to other parts of the world.
- The spread of Zika virus occurs when there is movement of peoples from one location to another, spreading the disease to islands of French Polynesia and Southeast Asian region such as Malaysia, Philippines and Cambodia.

Account for:

- The development of modern transportation has helped in spread of the Zika virus. It allows people to move, relocate and migrate from one place to another faster, increasing the rate and frequency of spread.
- Tourism also contributes to the spread of the virus. As many people travel due to an increased in disposable income, they may be in contact with the virus at the host country and unknowingly spread the disease back in the home country upon their return.

- (d) Using examples, evaluate the role of individuals and international organisations in managing the spread of diseases.

{5}

Award 1 mark for each complete point.

Reserve 1 mark for examples.

Successes and limitations of each role must be considered.

- Individuals can manage the spread of diseases by exercising social responsibility. By being constantly aware of the conditions that encourage the spread of diseases, it allows individuals to take precautionary measures.
- However, not all individuals are aware of such diseases due to low literacy rate and may be involved in risk-taking behaviours that could make a person more likely to contract the disease.
- International organisations are also important in managing the spread of diseases. Being a larger body of organisation, the programmes of education, prevention and treatment have a wider scope of impact as they have the resources to carry out these programmes.
- For instance, the UNAIDS support helped to ensure the successful agreement between the government of Kenya and the Global Fund for the implementation of its Round 10 grants of US\$483 million.
- However, despite the widespread commitment to help curb the spread of diseases, cooperation and execution of strategies from the government prove to be challenging. Thus, the outcome is not satisfactory.

- (e) 'Investment and access to healthcare plays the most important role in determining the health levels of a country.'

Discuss the accuracy of this statement.

Support your answer with examples.

[8]

Level marking	Description
Level 1 0-3 marks	At this level, answers will be generalized or with minimal support if any given at all. Reasoning is rather weak and expression may be unclear. A basic answer that has little development. Answers lack examples or other evidence, or it is so sketchy that it adds little support to the answer. <i>Award 1 mark if student is able to define investment and access to healthcare.</i> <i>Award 2 marks if student is able to briefly describe investment and access to healthcare and link to health levels.</i> <i>Award 3 marks if student is able to explain investment and access to healthcare and show clear links to health levels.</i>
Level 2 4-6 marks	Disagreement or agreement will be supported by appropriate detail. Or, both agreement and disagreement are considered, but support is patchy so that the answer is not full. Good reasoning and logic in parts of the answer with good expression in places. Some examples or other evidence will be presented to support answers in at least one place in the answer. <i>Award 4 marks if student is able to explain investment and access to healthcare and show clear links to health levels (with examples).</i> <i>Award 5 marks if student is able to explain another factor (i.e. social or environmental) and show clear links to health levels (with examples).</i> <i>Award 6 marks if student is able to explain another factor (is, social and environmental) and show clear links to health levels (with at least 2 examples).</i> <i>Award max 4 marks if student is able to explain investment and access to healthcare and show clear links to health levels (without examples).</i>
Level 3 7-8 marks	At this level, answers will be comprehensive and supported by sound knowledge. Both agreement and disagreement are considered and well supported. Reasoning is clear and logical with good expression of language. Examples of other evidence to support answers will be extensive. <i>Award 7 marks if students are able to hit L2/6 with three examples.</i> <i>Award 8 marks if students are able to provide a logical conclusion that clearly shows their stand of evaluating the factors that determines the health levels of a country.</i>

I agree to a large extent that investment and access to healthcare plays the most important role in determining the health levels of a country. Investment in healthcare refers to resources devoted by governments, businesses or individuals for the purposes of addressing the health and medical needs of a population. Health services refer to organisations and facilities to maintain and improve health. Hence, access to health services refers to the people's ability to obtain the services of these organisations. Investment in healthcare includes the money used to train and hire doctors and nurses, purchase medicine and medical equipment and investment in new drugs. The amount and quality of healthcare obtained depends on its accessibility, availability and affordability. For instance, DCs generally have a good level of healthcare with a high doctor-patient and bed-patient ratio. Singapore has 18 doctors and 31 hospital beds for every 10000 people in comparison to LDCs such as Bangladesh with only 3 doctors and 4 hospital beds for every 10000 people. Hence, investment and access to healthcare plays the most important role in determining the health levels of a country. This is especially evident in DCs and LDCs.

There are also other factors that determines the health levels of a country. Social factor is one of them. The level of education affects the health levels of a country. People who are educated are more likely to be informed on how to lead a healthy lifestyle. They also generally earn higher incomes that give them greater access to quality medical treatment, food and living conditions. In addition, children who receive formal schooling are more likely to learn about healthcare and nutrition. Of the 60.7 million primary school-age children who were out of school worldwide in 2012, 30.6 million of them were from Sub-Saharan Africa. In comparison to North America and Western Europe, only 1.3 million were out of school. This shows that there is lower access to education in LDCs as compared to DCs and this in turn will affect their level of awareness to make informed decisions about healthy diet and lifestyle, affecting the overall health levels of the population in the country.

Another factor is environmental factor. The access to safe drinking water for domestic purposes such as drinking, cooking and personal hygiene affects the level of health of a country. The lack of access to safe drinking water can cause the spread of waterborne diseases such as cholera and lead poisoning. Water that is not stored safely also encourages breeding grounds for mosquitoes which spread diseases. In 2010, 89% of the world's population have access to safe drinking water. 99% of them live in DCs while 86% of them live in LDCs. Hence, with the lack of access to safe drinking water, people will be easily affected by waterborne diseases.

In conclusion, I agree to a large extent that investment and access to healthcare plays the most important role in determining the health levels of a country. This is because investment and access to healthcare is necessary to prevent health from further deteriorating which can lead to deaths. While I acknowledge that there are other important factors that play a role in determining the health levels of a country such as environment and social factors, without investment and access to healthcare, health issues arising from social and environmental factors cannot be addressed.

-End of paper-



BEDOK VIEW SECONDARY SCHOOL PRELIMINARY EXAMINATION 2017

CANDIDATE
NAME

REGISTER
NUMBER

CLASS

GEOGRAPHY
Secondary Four Express
Paper 2

2236/02
21 August 2017
1 hour 30 minutes

MARK SCHEME