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Geography

Higher level

Paper 1

Friday 6 November 2020 (afternoon)

2 hours 15 minutes

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer the questions in three options.
- The accompanying **geography resource booklet** is required for this examination paper.
- The maximum mark for this examination paper is **[60 marks]**.

Option	Questions
Option A — Freshwater	1 – 2
Option B — Oceans and coastal margins	3 – 4
Option C — Extreme environments	5 – 6
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Option F — Food and health	11 – 12
Option G — Urban environments	13 – 14

Answer the questions in **three** options.

When relevant, answers should refer to case studies or examples, and where appropriate include well-drawn maps or diagrams.

Option A — Freshwater

Answer the following question.

1. Refer to the maps on page 2 of the accompanying resource booklet.

The maps show the growth of algae in a freshwater lake where eutrophication is occurring. Algae growth is caused by high levels of nutrients.

- (a) Identify **two** changes between 2003 and 2011 along the southern shore of the lake between Sandusky and Cleveland. [1+1]
- (b) Outline **one** environmental problem caused by eutrophication. [2]
- (c) Explain **one** human reason **and one** physical reason why some areas of a freshwater lake such as this experience high levels of eutrophication. [3+3]

Answer either part (a) or part (b).

Either

2. (a) Examine the role of local communities in the management of water resources. [10]

Or

2. (b) Examine the ways in which different physical factors can affect the characteristics of hydrographs. [10]

End of Option A

Option B — Oceans and coastal margins

Answer the following question.

3. Refer to the map on page 3 of the accompanying resource booklet.

The map shows land use changes that led to the loss of mangrove swamps in selected Southeast Asian countries in 2012.

- (a) (i) Identify the dominant land use that is replacing mangrove swamps on island **A**. [1]
(ii) Estimate the percentage of mangrove swamp loss caused by urban development **B**. [1]
- (b) Outline **one** physical factor necessary for the formation of a mangrove swamp. [2]
- (c) Explain **two** environmental consequences of the loss of mangrove swamps in coastal areas such as those shown on the map. [3+3]

Answer either part (a) or part (b).

Either

4. (a) Examine the role of sea level changes in the formation of relict cliffs and raised beaches. [10]

Or

4. (b) Examine the roles of different stakeholders in the management of **one** coastal margin affected by erosion **or** flooding. [10]

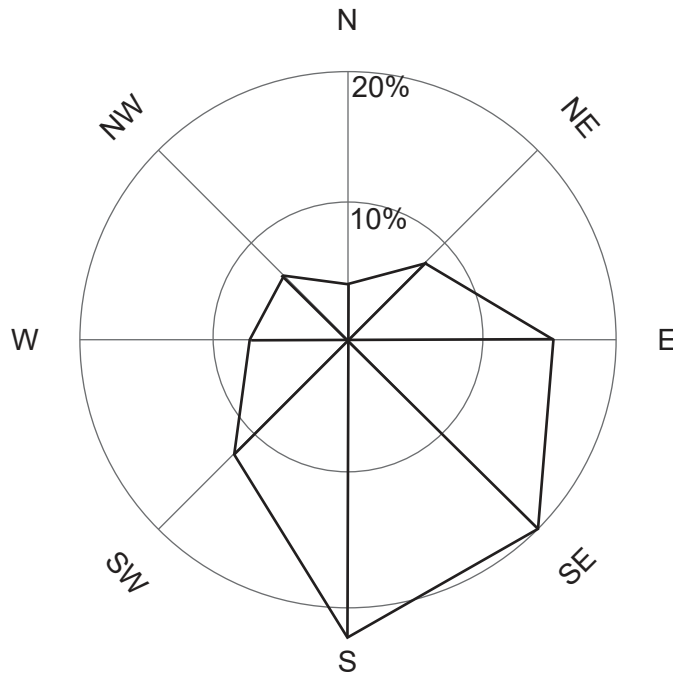
End of Option B

Turn over

Option C — Extreme environments

Answer the following question.

5. The radial diagram shows the facing direction for a sample of cirques/corries in a glaciated mountainous area.



Key:
Mean altitude:
South = 1500 m
North = 2200 m

- (a) (i) State the difference in mean altitude, in metres, for south-facing and north-facing corries. [1]
- (ii) Estimate the percentage of cirques/corries facing east. [1]
- (b) Outline **one** erosional process responsible for the formation of cirques/corries. [2]
- (c) Explain **two** consequences of a warming climate on ice distribution in a glaciated mountainous area such as this. [3+3]

(Option C continues on the following page)

(Option C continued)

Answer either part (a) or part (b).

Either

6. (a) Examine possible ways of managing the causes and consequences of desertification. [10]

Or

6. (b) Examine how competition over resources in **one or more** extreme environments has led to tension among stakeholders. [10]

End of Option C

Turn over

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Option D — Geophysical hazards

Answer the following question.

7. Refer to the map on pages 4 and 5 of the accompanying resource booklet.

The map shows Snæfellsjökull in Iceland. The scale of the map is 1:100 000 and the contour interval is 20 metres.

- (a) (i) Determine the difference in height between the spot heights at **A** and **B**. [1]
- (ii) Estimate the distance in kilometres between **A** and **B** on the map. [1]
- (b) Outline how **one** piece of map evidence indicates that this is a volcanic area. [2]
- (c) Explain how volcanic hazard vulnerability in an area such as this could be reduced using:
 - (i) GPS crater monitoring; [3]
 - (ii) lava diversions. [3]

Answer either part (a) or part (b).

Either

8. (a) Examine how social **and** economic strategies may reduce people's vulnerability to earthquake hazard events. [10]

Or

8. (b) Evaluate pre-event strategies **and** post-event strategies for the management of mass movement hazards. [10]

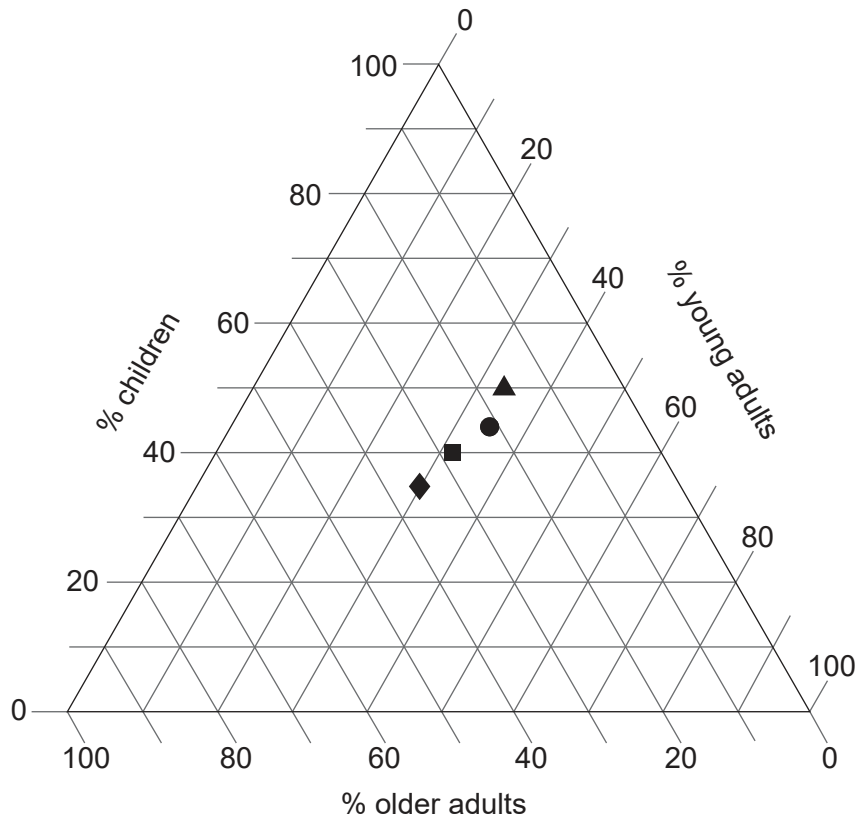
End of Option D

Turn over

Option E — Leisure, tourism and sport

Answer the following question.

9. The triangular graph shows changes over time in the percentage of US citizens, from three different age groups, who play basketball.



Key:
 ◆ 1988
 ■ 1998
 ● 2008
 ▲ 2018

- (a) (i) Estimate the percentage of older adults playing basketball in 2008. [1]
- (ii) Identify the year in which 50% of children played basketball. [1]
- (b) Outline **one** factor that can influence the location of a sports stadium. [2]
- (c) Explain why participation in basketball or other sports might increase over time for:
 - (i) women; [3]
 - (ii) low-income groups. [3]

(Option E continues on the following page)

(Option E continued)

Answer either part (a) or part (b).

Either

10. (a) Examine ways of managing the negative impacts of tourism’s rapid growth in some urban environments. [10]

Or

10. (b) Examine the advantages **and** disadvantages of the site used for **one or more** festivals. [10]

End of Option E

Turn over

Option F — Food and health

Answer the following question.

11. Refer to the map on page 6 of the accompanying resource booklet.

The map shows selected African countries suffering from severe food insecurity in 2017.

(a) Estimate the area of the country of Nigeria, in km². Show your working. [2]

(b) Outline **one** of the main components of the food security index. [2]

(c) Explain **two human** factors that may have led to high food insecurity in countries such as those shown. [3+3]

Answer either part (a) or part (b).

Either

12. (a) Examine ways in which people’s dietary choices are sometimes influenced by different types of transnational corporation (TNC). [10]

Or

12. (b) Examine the role of diffusion and barriers in the spread of disease. [10]

End of Option F

Option G — Urban environments

Answer the following question.

13. Refer to the diagram on page 7 of the accompanying resource booklet.

The diagram shows a planned model of a superblock, part of an initiative to create sustainable smart cities.

- (a) (i) Identify **two** types of vehicle allowed within the superblock model. [1]
- (ii) Determine the number of residents living in each superblock (as enclosed by the marked roads). [1]
- (b) Outline **one** way in which the superblock model could modify the microclimate of an urban area. [2]
- (c) Explain **two** ways in which technologies can be used by urban planners to manage smart cities such as this more sustainably. [3+3]

Answer either part (a) or part (b).

Either

14. (a) Examine the costs **and** benefits of urban redevelopment for different groups of stakeholders. [10]

Or

14. (b) Examine the influence of economic **and** political factors on the location of low-quality residential areas in cities. [10]

End of Option G

References:

Option C Courtesy of the U.S. Geological Survey.

Option E Seth Kadish. The Racial Demographics of Athletes in the USA [Vizual Statistix]. July 12, 2013. Available at: <https://vizual-statistix.tumblr.com/post/55288766902/this-ternary-plot-shows-the-racial-breakdown-of> [Accessed 6 November 2019]. Source adapted.