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# Geography

## Higher level

### Paper 1

Friday 4 November 2022 (afternoon)

45 minutes

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#### Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer the questions in one option.
- The accompanying **geography resource booklet** is required for this examination paper.
- The maximum mark for this examination paper is **[20 marks]**.

Option	Questions
Option A — Freshwater	1 – 2
Option B — Oceans and coastal margins	3 – 4
Option C — Extreme environments	5 – 6
Option D — Geophysical hazards	7 – 8
Option E — Leisure, tourism and sport	9 – 10
Option F — Food and health	11 – 12
Option G — Urban environments	13 – 14

Answer the questions in **one** option.

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 map on page 2 of the accompanying resource booklet.

The map shows the drought intensity in mainland USA for 16 June 2020.

- (a) Describe the distribution of areas of extreme drought shown on the map. [2]
- (b) Outline **one** economic impact of drought on agriculture. [2]
- (c) Explain **two** ways in which **local** communities could improve the sustainability of water use. [3 + 3]

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

**Either**

2. (a) Examine the reasons why the integrated management of water resources within drainage basins is becoming more important. [10]

**Or**

2. (b) To what extent are human factors more important than physical factors in increasing the risk of flooding in different places? [10]

**End of Option A**

**Option B — Oceans and coastal margins**

Answer the following question.

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

The graph shows changes in ocean temperature associated with El Niño and La Niña from 1950 to 2018.

- (a) (i) Identify the year in which the ocean temperatures were 2.5 °C above the average. [1]  
(ii) Estimate the range of temperature change between 1982/83 and 1989/90. [1]  
(b) Outline **one** way in which the oceanic conveyor belt causes nutrient transfer. [2]  
(c) Explain **one** positive **and one** negative impact of El Niño on different places. [3 + 3]

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

**Either**

4. (a) Examine how strategies to manage coastal flooding **or** erosion may result in conflicts that are difficult to resolve. [10]

**Or**

4. (b) To what extent can the geopolitical issues in oceans be resolved? [10]

**End of Option B**

**Option C — Extreme environments**

Answer the following question.

5. The diagram shows a cross section from west to east through the continent of Antarctica.

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- (a) (i) Estimate the thickness, in km, of the ice sheet at point **A**. [1]
- (ii) Estimate the width, in km, of the ice sheet, indicated by the distance between point **X** and point **Y**. [1]
- (b) Outline **one** challenge that remoteness causes for resource development in cold extreme environments. [2]
- (c) Explain how increasing tourism in cold extreme environments may lead to:
  - (i) **one** positive social **or** economic impact; [3]
  - (ii) **one** negative environmental impact. [3]

**(Option C continues on the following page)**

**(Option C continued)**

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

**Either**

6. (a) Examine the challenges of managing the impacts of global climate change on communities in hot, arid environments. [10]

**Or**

6. (b) To what extent are freeze-thaw processes the most important factor in the formation of periglacial landscape features? [10]

**End of Option C**

**Option D — Geophysical hazards**

Answer the following question.

7. The hazard event profile shows details of the Haiti earthquake of 2010 and the Christchurch (New Zealand) earthquake of 2011. The numbers reflect a score of relative severity for selected criteria about the two earthquakes, using a logarithmic scale.

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- (a) (i) State the score for the magnitude of the Haiti earthquake. [1]
- (ii) Identify the criterion in which there is a difference of 2 between the scores for the earthquakes. [1]
- (b) Outline **one** reason why people may underestimate the risk of a geophysical hazard occurring in their local area. [2]
- (c) Explain how human vulnerability to an earthquake hazard can be reduced by:
- (i) **one** pre-event strategy; [3]
- (ii) **one** post-event strategy. [3]

**(Option D continues on the following page)**

**(Option D continued)**

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

**Either**

8. (a) Examine the relationship between processes at contrasting plate margins and the characteristics of volcanoes. [10]

**Or**

8. (b) To what extent will the impacts associated with mass movement hazards in different places increase in the future? [10]

**End of Option D**



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**Option E — Leisure, tourism and sport**

Answer the following question.

9. Refer to the map on page 4 of the accompanying resource booklet.

The map shows part of the Grand Canyon National Park in the USA.

- (a) (i) State the direction of Las Vegas from Flagstaff. [1]
- (ii) Calculate the length, in km, of the Colorado River between point **A** and point **B**. [1]
- (b) Outline **one** factor that could lead to a decline of international tourism in a low-income country. [2]
- (c) Explain how unsustainable tourism growth in rural hotspots will result in:
  - (i) **one** environmental consequence; [3]
  - (ii) **one** social consequence. [3]

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

**Either**

10. (a) To what extent does tourism as a national development strategy bring economic **and** social benefits to destination countries? [10]

**Or**

10. (b) Examine the factors affecting the hierarchy of teams in **one** national sports league **and** the location of its supporters. [10]

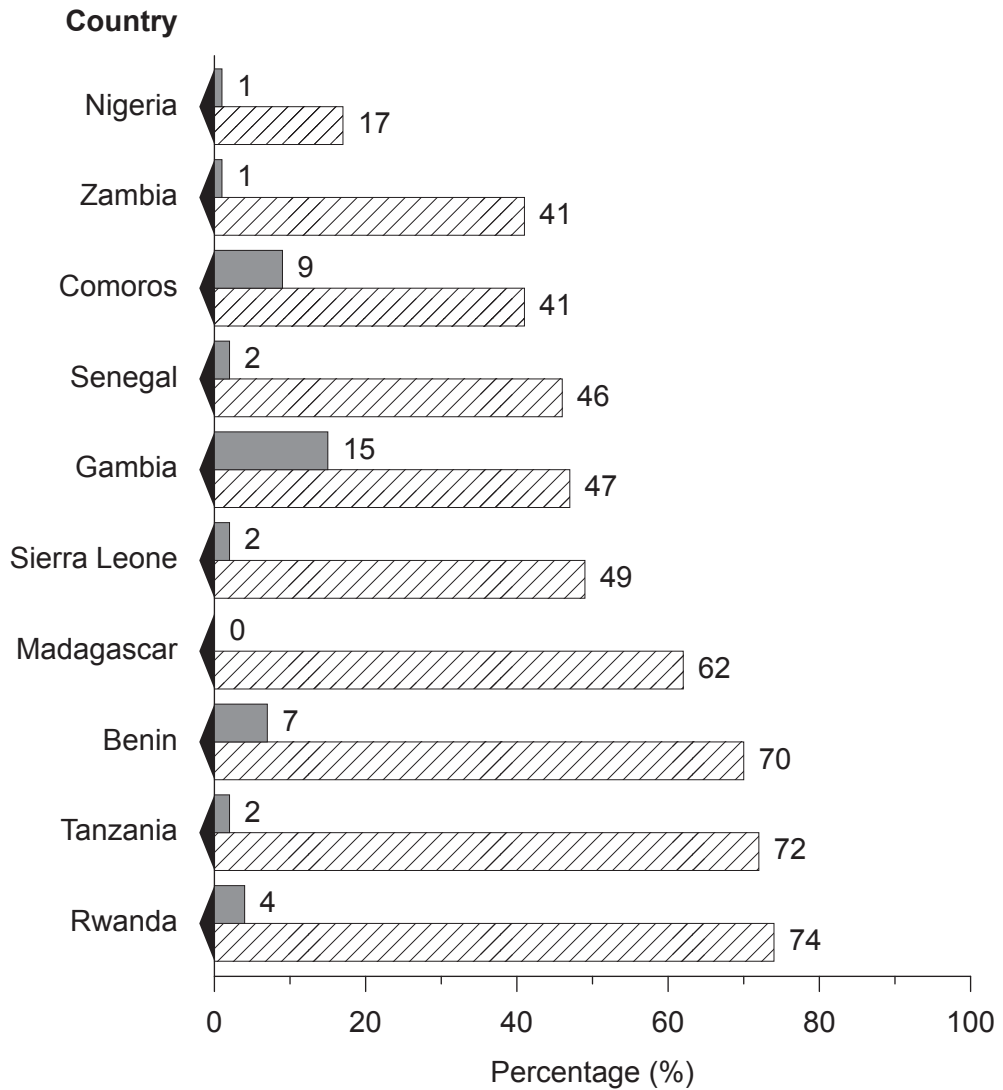
**End of Option E**

**Option F — Food and health**

Answer the following question.

11. The graph shows the percentage of young children in selected sub-Saharan African countries who slept under mosquito nets in 2003 and 2016.

**Key:**



- (a) (i) Identify the **two** countries with the highest increase in children sleeping under mosquito nets between 2003 and 2016. [1]
- (ii) Identify the mode (modal) percentage for the figures for 2016. [1]
- (b) Outline **one** reason why maternal mortality rates are high in low-income countries. [2]
- (c) Explain **one** human factor **and** **one** physical factor affecting the diffusion (spread) of **one named** vector-borne disease. [3 + 3]

**(Option F continues on the following page)**

**(Option F continued)**

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

**Either**

12. (a) To what extent is a systems approach useful in comparing the sustainability of agriculture in different places? [10]

**Or**

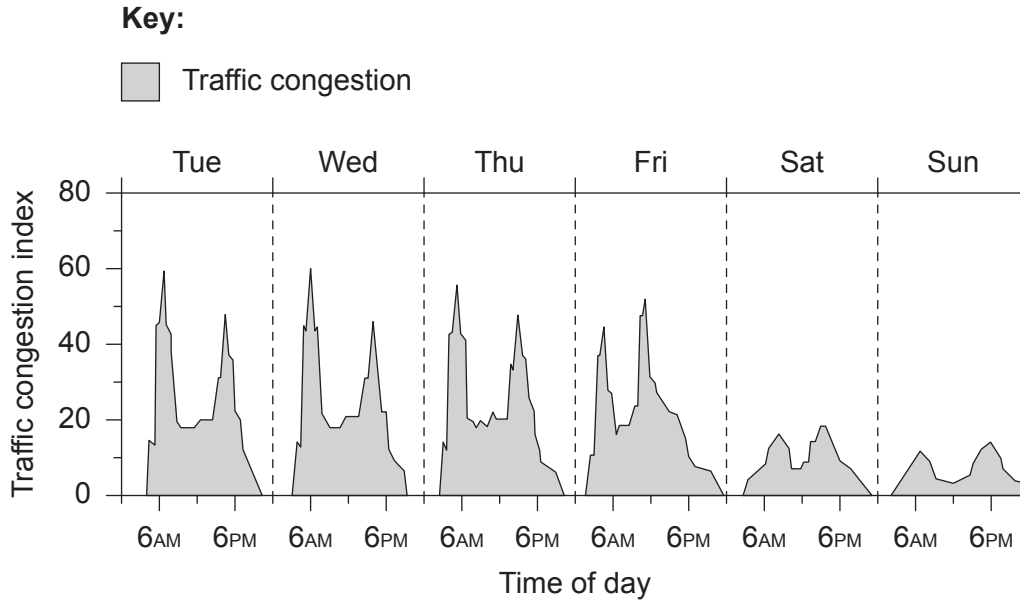
12. (b) Examine the roles of international organizations and non-governmental organizations (NGOs) in reducing food insecurity. [10]

**End of Option F**

**Option G — Urban environments**

Answer the following question.

13. The graph shows traffic congestion in a city in the Northern Hemisphere across a six-day period.



- (a) (i) State the time on Wednesday when the traffic congestion index was 60. [1]
- (ii) State the difference between the peaks of the traffic congestion index on Friday and Saturday. [1]
- (b) Outline **one** reason for high levels of crime in the socially deprived areas of cities. [2]
- (c) Explain **one** environmental impact **and one** social impact of reducing traffic in an urban area. [3 + 3]

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

**Either**

- 14. (a) To what extent has deindustrialization brought economic **and** social benefits to urban areas? [10]

**Or**

- 14. (b) Examine the effectiveness of strategies used to reduce urban ecological footprints. [10]

**End of Option G**

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**References:**

11. Adapted from *The Millennium Development Goals Report 2015*, by United Nations New York, © 2015 United Nations. Used with the permission of the United Nations.

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