



**GEOGRAPHY**

**9696/21**

Paper 2 Advanced Physical Options

**May/June 2012**

**1 hour 30 minutes**

Additional Materials: Answer Booklet/Paper

\* 1 0 5 8 6 3 3 1 2 3 \*

**READ THESE INSTRUCTIONS FIRST**

- If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
- Write your Centre number, candidate number and name on all the work you hand in.
- Write in dark blue or black pen.
- You may use a soft pencil for any diagrams, graphs or rough working.
- Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **two** questions only. Each question answered **must** be from a different topic.  
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.  
You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.  
All the Figures and the Photographs referred to in the questions are contained in the Insert.

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.

This document consists of **3** printed pages, **1** blank page and **1** Insert.



### Tropical environments

Only **one** question may be answered from this topic.

- 1 (a) Describe how, and explain why, the soil profile characteristics of savanna soils differ from those of tropical rainforest soils. [10]
- (b) For **one** tropical ecosystem, explain the extent to which soil fertility can be affected by:
- (i) exploitation of the ecosystem;
- (ii) sustainable management of the ecosystem. [15]
- 2 (a) Fig. 1 is a cross section diagram of a granite inselberg in a tropical region.
- Explain how processes of weathering and erosion have operated in stages to produce a granite inselberg in a tropical area, such as that shown in Fig. 1. [10]
- (b) Describe the changes in the structure of vegetation in moving across areas from tropical rain forest to dry savanna. For **one** tropical ecosystem, explain the extent to which the nature of the vegetation is a response to the climate. [15]

### Coastal environments

Only **one** question may be answered from this topic.

- 3 (a) With the aid of diagrams, explain how rock type, structure and marine and sub-aerial processes can account for different types of cliff profile (cross section form). [10]
- (b) Explain how physical processes and human activities can lead to rapid changes in beaches and coastal sand dunes. How and with what success can management strategies limit those changes which threaten the coastal environment? [15]
- 4 (a) Photographs A and B show two types of coral reef.
- Outline the conditions necessary for the growth of coral reefs and, with reference to **one** theory, explain how a *coral atoll* may develop from fringing and barrier reefs such as those shown in Photographs A and B. [10]
- (b) With reference to a stretch, or stretches of coast, explain how management of one area may create more problems than are solved. How may such problems be managed? [15]

### Hazardous environments

Only **one** question may be answered from this topic.

- 5 (a) Explain how and where tornadoes may develop and describe the extent to which tornadoes are hazardous. [10]
- (b) Explain the nature and causes of **two** types of hazardous mass movements on slopes. How effective are measures which may be taken to reduce the hazardous impact of **one** of them? [15]
- 6 (a) Fig. 2 shows the potential hazards from an eruption of a volcano.  
Describe the nature of **three** of the hazards shown and explain the extent to which each may prove to be hazardous. [10]
- (b) Describe the types of hazard that can result from a major earthquake event. Evaluate the effectiveness of measures to reduce the hazardous impact of earthquakes. [15]

### Arid and semi-arid environments

Only **one** question may be answered from this topic.

- 7 (a) Outline the distribution of the large areas of hot deserts in the world and explain the factors that account for that distribution. [10]
- (b) Explain the environmental factors restricting sustainable management in **either** an arid **or** a semi-arid area and evaluate any attempted solutions. [15]
- 8 (a) Fig. 3 shows landforms of a mountainous hot desert landscape.  
Identify **three** of the landforms indicated by letters and explain their formation. [10]
- (b) Explain the low biomass productivity of arid and semi-arid environments and describe nutrient cycling in **one** of the environments. How have plants and animals adapted to the harsh conditions of such environments? [15]

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*Copyright Acknowledgements:*

Question 4 Photographs A and B  
Question 6 Fig. 2

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<http://en.wikipedia.org/wiki/File:Types-of-volcano-hazards-vsgs.gif>.

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