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**GEOGRAPHY**

**9696/22**

Paper 2 Advanced Physical Options

**May/June 2017**

**1 hour 30 minutes**

No Additional Materials are required.

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**READ THESE INSTRUCTIONS FIRST**

An answer booklet is provided inside this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional answer paper ask the invigilator for a continuation booklet.

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 Photograph referred to in the questions are contained in the Insert.

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

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This document consists of **3** printed pages, **1** blank page and **2** Inserts.

## Tropical environments

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

- 1 (a) For a savanna ecosystem, describe the structure of vegetation and explain how the nutrients are cycled. [10]
- (b) Fig. 1 shows the atmospheric circulation pattern over the Amazon rainforest, South America.
- Assess the role of air masses and the ITCZ in the formation of a humid tropical climate, such as that of the Amazon rainforest, as shown in Fig. 1. [15]
- 2 (a) For any **one** named tropical ecosystem, describe the characteristics of its soil profile and associated plant community. [10]
- (b) Describe the problems of sustainable management within **either** a tropical rainforest ecosystem **or** a savanna ecosystem. Evaluate attempted solutions to the problems you have described. [15]

## Coastal environments

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

- 3 (a) Explain the importance of rock type, structure and erosional history on the evolution of cliff profiles. [10]
- (b) Fig. 2 shows risk of damage and threats to the world's coral reefs.
- Using Fig. 2, explain the threats to coral reefs. Assess some possible management strategies to minimise these threats to coral reefs. [15]
- 4 (a) Compare the characteristics of constructive and destructive waves. Explain the effects of waves on the development of beach profiles (cross section). [10]
- (b) To what extent do human activities impact on different coastal landforms? [15]

### Hazardous environments

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

- 5 (a) Describe the global distribution of tropical storms (cyclones) and explain the factors causing their development. [10]
- (b) With the aid of diagrams, describe the characteristics of convergent and conservative plate margins. To what extent are the hazards different at convergent and conservative plate margins? [15]
- 6 (a) Fig. 3 shows tsunami height above average sea level after the Chilean earthquake, September 2015.
- Explain which areas may be most at risk from the hazardous effects of tsunami, such as the one shown in Fig. 3. [10]
- (b) Explain the techniques used to monitor volcanoes. Assess the extent to which prediction can reduce the hazardous effects of volcanic eruptions. [15]

### Arid and semi-arid environments

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

- 7 (a) Describe the distribution of hot arid environments and explain the main causes of aridity. [10]
- (b) Photograph A shows a stream and some desert landforms in the Canyon de Chelly, Arizona, USA.
- Discuss the role of episodic rainfall in the development of desert landforms such as those shown in Photograph A. [15]
- 8 (a) Describe and explain the main characteristics of soils in **both** arid and semi-arid environments. [10]
- (b) Using an example, evaluate ways in which **either** arid **or** semi-arid areas can be developed sustainably. [15]

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