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**GEOGRAPHY**

**9696/21**

Paper 2 Advanced Physical Options

**May/June 2016**

**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) Describe the Intertropical Convergence Zone (ITCZ) and explain its seasonal movements and associated climate. [10]
- (b) For **either** a tropical rainforest **or** a savanna ecosystem, describe the impact of human activities on vegetation and assess how vegetation may be managed sustainably. [15]
- 2 (a) Describe and explain how the processes of weathering and erosion lead to the development of landforms in limestone (tropical karst). [10]
- (b) Fig. 1 shows an annotated Gersmehl diagram for a tropical rainforest.

Describe the flows and stores of nutrients shown in Fig. 1. Explain the similarities and differences in the size of the stores between tropical rainforest and savanna ecosystems. [15]

### Coastal environments

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

- 3 (a) With the aid of diagrams, describe the characteristics and explain the formation of offshore bars, spits and tombolos. [10]
- (b) Fig. 2 shows threats from ocean acidification and climate change and possible impacts on coral reefs.
- Using Fig. 2, describe the causes and results of sea level rise on coral reefs. To what extent are changes to coral reefs the result of climate change? [15]
- 4 (a) With the aid of diagrams, describe the morphology (shape) of coastal dunes and salt marshes and explain how they are formed. [10]
- (b) Using a stretch or stretches of coastline you have studied, describe some of the problems associated with sustainable coastal management strategies. Evaluate the effectiveness of these management strategies. [15]

### Hazardous environments

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

- 5 (a) Photograph A shows some effects of tropical storm (cyclone) Sidr in Bangladesh in November 2007.
- Describe how tropical storms (cyclones) develop and explain how they become hazardous in some coastal areas. [10]
- (b) For any **one** hazardous environment, explain the management strategies that can be used to reduce the effects of the hazards. Assess the effectiveness of these management strategies. [15]
- 6 (a) Draw an annotated diagram to describe the main characteristics of a volcano. Explain **two** different types of eruption and their products. [10]
- (b) Describe how mass movements can be monitored. Assess the possible effects of **one** type of mass movement on lives and property. [15]

### Arid and semi-arid environments

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

- 7 (a) Fig. 3 shows climate graphs for hot arid and semi-arid environments.
- Describe and explain the seasonal variations in rainfall and temperature shown in Fig. 3A and Fig. 3B. [10]
- (b) Explain the weathering processes that operate in hot arid and semi-arid environments. Assess the results of chemical weathering on rocks compared to the results of physical weathering. [15]
- 8 (a) Describe the processes of erosion and deposition by water in hot arid environments and explain how these processes lead to the development of **one** erosional landform and **one** depositional landform. [10]
- (b) Outline the process of soil degradation. Assess the extent to which human factors influence soil degradation in semi-arid environments. [15]

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