



9696/31

October/November 2023

1 hour 30 minutes

1 6 0 8 5 5 7 9 9 6 *

You will need: Answer booklet (enclosed)
Insert (enclosed)

- Answer **four** questions in total:
Answer questions from **two** options.
For **each** option, follow the instructions inside on which questions to answer.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- 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.

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [].
- The insert contains all the resources referred to in the questions.

This document has **4** pages. Any blank pages are indicated.

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Answer questions from **two** different options.

Tropical environments

If answering this option, answer Question 1 and **either** Question 2 **or** Question 3.

- 1** Fig. 1.1 is a photograph which shows the vegetation of a humid tropical (rainforest) ecosystem.
- (a) Describe the main characteristics of the vegetation shown in Fig. 1.1. [4]
- (b) Explain **two** of the characteristics of the vegetation you described in (a). [6]
- 2** Evaluate the role of deep weathering in the development of characteristic granite landforms of tropical environments. [20]
- 3** Using a case study of **one** tropical ecosystem, assess the relative significance of the problems of its sustainable management. [20]

Coastal environments

If answering this option, answer Question 4 and **either** Question 5 **or** Question 6.

- 4** Fig. 4.1 shows the impacts of extreme weather events on coastal erosion in Kosrae State, Micronesia, Pacific Ocean.
- (a) Describe the distribution of the impacts of extreme weather events on coastal erosion shown in Fig. 4.1. [4]
- (b) Explain **two** factors that might influence rates of erosion along coastlines. [6]
- 5** Assess the extent to which management strategies can reduce threats to coral reefs. [20]
- 6** 'Sea-level rise affects coastal depositional landforms more than coastal erosional landforms.'
- How far do you agree with this view? [20]

Hazardous environments

If answering this option, answer Question 7 and **either** Question 8 **or** Question 9.

- 7 Fig. 7.1 shows the recurrence intervals and impacts for selected natural hazards.
- (a) Compare the relationships between recurrence intervals and impacts for the natural hazards as shown in Fig. 7.1. [3]
 - (b) Explain why volcanoes can have greater impacts than earthquakes. [7]
- 8 Assess the view that high winds are the most significant hazard of large-scale atmospheric disturbances. [20]
- 9 To what extent is it difficult to prepare for mass movement hazards? [20]

Hot arid and semi-arid environments

If answering this option, answer Question 10 and **either** Question 11 **or** Question 12.

- 10 Fig. 10.1 shows the influence of sand supply, wind and vegetation on the type of sand dune.
- (a) Describe the general relationship between sand supply, wind and vegetation and the type of sand dune shown in Fig. 10.1. [4]
 - (b) Explain the formation of sand dunes. [6]
- 11 To what extent are plants in hot arid and semi-arid environments adapted to physical and physiological drought rather than extreme temperatures? [20]
- 12 Using a case study of **either** a hot arid **or** a semi-arid environment, evaluate solutions to the problems of its sustainable management. [20]

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