



Cambridge International AS & A Level

GEOGRAPHY

9696/11

Paper 1 Core Physical Geography

October/November 2022

1 hour 30 minutes

You must answer on the enclosed answer booklet.

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

INSTRUCTIONS

- Answer **four** questions in total:
 - Section A: answer **all** questions.
 - Section B: answer **one** question.
- 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.

INFORMATION

- 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.

Section A

Answer **all** questions in this section. All questions are worth 10 marks.

Hydrology and fluvial geomorphology

- 1 Table 1.1 shows the size of sediment in a river channel at three locations.
- (a) State the difference in percentage of the 10.01–100.00 mm sediment size between location X and location Y. [1]
 - (b) Compare the sediment sizes at the three locations shown in Table 1.1. [4]
 - (c) Explain why the sediment size in a river channel might vary at different locations. [5]

Atmosphere and weather

- 2 Fig. 2.1 shows methane emissions, by sector, in the USA in 2018.
Fig. 2.2 shows nitrous oxide emissions, by sector, in the USA in 2018.
- (a) State the difference in percentage of methane emissions between energy and waste shown in Fig. 2.1. [2]
 - (b) Compare the emission sources for methane and nitrous oxide as shown in Fig. 2.1 and Fig. 2.2. [4]
 - (c) Explain the role of greenhouse gases in global warming. [4]

Rocks and weathering

- 3 Fig. 3.1 shows the range of speeds of selected mass movements.
- (a) State the range of speeds for earthflow/mudflow. [1]
 - (b) Contrast the range of speeds of the mass movements shown in Fig. 3.1. [4]
 - (c) Explain why mass movements have different rates of movement. [5]

Section B

Answer **one** question from this section. All questions are worth 30 marks.

Hydrology and fluvial geomorphology

- 4 (a) (i) Describe the process of throughflow on slopes. [3]
- (ii) Explain how the type of vegetation affects the shape of a storm hydrograph. [4]
- (b) Explain the formation of river cliffs and point bars in a meandering river channel. [8]
- (c) With the aid of examples, assess the extent to which it is possible to reduce the impacts of river floods. [15]

Atmosphere and weather

- 5 (a) (i) Define the atmospheric terms *sublimation* and *radiation cooling*. [4]
- (ii) Describe the difference between sensible heat transfer and latent heat transfer. [3]
- (b) Describe and explain the global latitudinal pattern of radiation excesses and deficits. [8]
- (c) 'Convection is the main cause of precipitation.'
- With the aid of examples, how far do you agree with this statement? [15]

Rocks and weathering

- 6 (a) (i) Define the weathering terms *hydrolysis* and *pressure release (dilatation)*. [4]
- (ii) Briefly explain how a rock can be weathered by heating and cooling. [3]
- (b) Explain how the movement of tectonic plates leads to the formation of ocean trenches and ocean ridges. [8]
- (c) 'Water is the most important factor affecting the type and rate of weathering.'
- With the aid of examples, how far do you agree with this statement? [15]

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