



**Section A**

Answer **all** questions in this section. All questions carry 10 marks.

**Hydrology and fluvial geomorphology**

- 1 Fig. 1.1 shows part of a drainage basin system.
- (a) Using Fig. 1.1, name:
- (i) output A [1]
  - (ii) flow B. [1]
- (b) With reference to Fig. 1.1, describe **two** types of below ground flow. [4]
- (c) Explain why channel flow may change over time. [4]

**Atmosphere and weather**

- 2 Fig. 2.1 shows a simplified diagram of one part of the energy budget over land.
- (a) Using Fig. 2.1:
- (i) calculate the value of energy at A in  $\text{W/m}^2$  [1]
  - (ii) name transfer B. [1]
- (b) With reference to Fig. 2.1, describe how solar radiation is absorbed. [4]
- (c) Explain why reflected solar radiation from clouds may vary over time. [4]

**Rocks and weathering**

- 3 Fig. 3.1 is a photograph which shows a slope that has been modified to reduce mass movement.
- (a) Identify **two** strategies used to increase the stability of the slope shown in Fig. 3.1. [2]
- (b) Describe how **one** strategy you identified in (a) can increase the stability of the slope. [3]
- (c) Explain how human activities may decrease the stability of a slope. [5]

**Section B**

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

**Hydrology and fluvial geomorphology**

- 4 (a) (i) Define the fluvial terms *helicoidal flow* and *saltation*. [4]
- (ii) Briefly explain how river bluffs are formed. [3]
- (b) Explain how a storm hydrograph is affected by the size and shape of a drainage basin. [8]
- (c) With the aid of examples, evaluate the effectiveness of flood forecasts **and** warnings in reducing the impacts of river flooding. [15]

**Atmosphere and weather**

- 5 (a) (i) Briefly explain the formation of hail. [3]
- (ii) Explain how the frontal uplift of air may cause precipitation. [4]
- (b) Explain the global latitudinal pattern of radiation. [8]
- (c) 'The causes of global warming are a result of physical factors.'
- With the aid of examples, how far do you agree? [15]

**Rocks and weathering**

- 6 (a) (i) Define the weathering terms *carbonation* and *hydrolysis*. [4]
- (ii) Briefly explain how rock can be weathered by heating and cooling. [3]
- (b) Explain how **two** factors affect the type **and** rate of weathering. [8]
- (c) With the aid of examples, assess the role of tectonic processes in determining the type of landforms at different plate boundaries. [15]

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