

MARKSCHEME

May 2002

GEOGRAPHY

Higher Level

Paper 3

Notes on individual questions

SECTION A — TOPOGRAPHICAL MAPPING

1. (a) **Draw a large sketch map of the area shown in the map extract to show the major landform features.** *[7 marks]*

To receive full marks, the sketch map should be accurate within the limits of time imposed by an examination, it should cover the area shown on the map extract, and should include some indication of approximate scale and clear labelling. It should also include an accurate indication of major landform features, which will probably include the caldera to the south-east of Christchurch, the flat land to the south-west of Christchurch, the two large braided streams and smaller meandering streams and the hills in the north-west of the map extract and could include the major spit and lagoon. As a general rule, each of these four landform features should be awarded *[1 mark]*, with the other *[3 marks]* being available for presentation, labelling and showing details such as scale. To receive full marks, symbols used on the map should be unambiguous, through the use of a key (legend), by clear labelling or by using conventional symbols.

- (b) **Describe and explain the pattern of roads in the area shown.** *[5 marks]*

The pattern of roads is strongly influenced by the landforms in the area. This is shown by both the lower density and less well developed state of roads in the upland areas compared with the flatter plain *[1 mark]*, and by the routes taken by roads, which tend to follow the ridges and valleys on the caldera and are interrupted by several rivers *[1 mark]*. Main roads focus on the large settlement of Christchurch *[1 mark]*. There is a higher density of roads near the towns (especially Christchurch) due to the higher population densities in those areas and the need to access services in the towns *[1 mark]*. The remaining mark should be awarded where candidates develop any of the points already noted (such as, for example, the triangular pattern giving way to a more rectangular pattern further away from Christchurch).

- (c) **For the photograph:**

- (i) **name and briefly describe the places shown in the photograph;**
 (ii) **estimate the compass direction in which the camera is pointing.** *[3 marks]*

(i) This photograph shows the Rakaia River, a braided stream (either name or identification of feature for *[1 mark]*), flowing across the flat agricultural area known as the Canterbury Plain towards the ocean, with the town of Rakaia on the right-hand (southern) bank. For any one of these points award *[1 mark]*.

- (ii) South-east *[1 mark]*.

- (d) Referring to the map extract, discuss the advantages and disadvantages of Christchurch's location.

[5 marks]

Christchurch is located on the flat land of the Canterbury Plains, near the coastline *[1 mark]*. Advantages of the location would include factors such as flat land for low building costs and future expansion, reliable water supply, proximity to beaches, proximity to farming areas to support the town's economy, spectacular volcanic scenery nearby that also supports tourism, and nearby Lyttelton Harbour for trade *[3 marks]*. Disadvantages of the location are few, with the main disadvantage probably being some susceptibility to flooding but can also include: the site is restricted by hills to the south, the river to the north and sea to the east which allows expansion only to the west and wetness of the site (around the Styx River), and the name "Marshland" could be indicative of this *[1 mark]*.

SECTION B — THE NATURAL ENVIRONMENT

2. Name *one* atmospheric hazard, explain the causes of this hazard, and describe ways in which damage from this hazard can be minimized. *[20 marks]*

This question falls naturally into two parts - the formation of the hazard selected and human responses to this hazard. Each part of the question does not necessarily need to be dealt with in equal depth, and an excellent response in one part may be used to compensate for minor inadequacies in the other. Hazards selected might include hurricanes / typhoons / tropical cyclones, tornadoes, droughts, as well as atmospheric hazards that interface with other parts of the environment, such as floods, which could also be considered a lithospheric hazard. The hazard selected should be described in terms of the conditions and processes leading to its formation. Diagrams will often be particularly helpful here, and if relevant and accurate, they should be rewarded. The second part of the question should deal with forecasting, preventative measures such as education and building codes, short-term and longer-term post-event responses, and perhaps tertiary sector measures such as insurance. Marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, using relevant examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.

3. Refer to the map extract on the previous page and select examples of *either two coastal landforms shown on the map or two river landforms shown on the map. Identify the two landforms selected and describe the processes that have led to their formation.* *[20 marks]*

The focus of this question is the processes that generally influence the development of **either** coastal **or** river landforms. In the case of either landform type chosen, the focus of the response will probably be the relative importance of erosion and deposition. Suitable river landforms visible on the map include braided streams, a waterfall, meandering streams, and associated features that may be assumed such as point bars and undercut banks. A digitate delta (birds-foot delta) is visible in Lake Ellesmere, and this may be regarded as either a river or a coastal landform. Other coastal landforms visible on the map include cliffs, spits, barriers, beaches and sand dunes (sandhills). Candidates' responses will vary according to the two particular landform examples selected. Responses that discuss more than two landforms should have only the best two counted. Candidates who discuss one river and one coastal landform may not be awarded more than *[15 marks]*, and responses that talk in generalizations without reference to at least two distinctive landforms may not be awarded more than *[8 marks]*. Within these parameters, marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, with evidence provided from a variety of sources and using illustrative examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.

4. **Draw a full-page, well-labelled diagram that shows the operation of the water cycle. On the same diagram, add at least five ways in which humans can affect the natural operation of the water cycle. Select *one* of these human impacts, and discuss its significance in specific areas that you have studied.** [20 marks]

There are two parts to this question, each of which is worth approximately [10 marks], although an outstanding response to one part of the question may compensate for some shortcomings in the response to the other part, and some flexibility may be shown in awarding the total number of marks [20 marks] available. The first part of the question asks candidates to describe the operation of the water cycle by drawing a full-page, well-labelled diagram, and then adding at least five human impacts. It is expected that to receive full marks candidates will correctly name most of the stores (such as groundwater, surface water, vegetation, *etc.*) and flows (such as precipitation, ground flow, surface flow, evapotranspiration, *etc.*). The second part of the question requires candidates to apply this general understanding to some actual examples, focussing on the impact of one human influenced factor on the natural operations of the water cycle. Candidates who fail to relate their discussion to actual examples should be awarded no more than [5 marks]. With the exception of these points, marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, with evidence provided from a variety of sources and using illustrative examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.

5. Discuss the ways in which humans have caused stress on some specific ecosystems, and evaluate the effectiveness of management strategies in controlling those stresses. [20 marks]

All ecosystems are potentially subject to human-induced stress, but some ecosystems are more resilient than others. The focus of this question is on the stresses experienced by two or more ecosystems, and the effectiveness of management strategies in aggravating, controlling or reducing this stress. These two facets of the question are worth approximately equal marks. In general, stress is caused in ecosystems when they are approaching their “limiting factor”, although candidates may refer to this concept using other terminologies. All ecosystems have a particular limiting factor that controls their stability. For instance, a desert area may have sufficient solar radiation and soil nutrients to sustain abundant plant life, but water would be the limiting factor, and therefore human actions that aggravate this limiting factor would cause stress. A sub-polar area may have sufficient water and nutrients, but lack of incoming solar radiation limits plant growth, which in turn limits the numbers of all other organisms in the ecosystem. Limiting factors may not only be a minimum levels - it may be an excess of water, or heat, or nutrients, and so on. For example, if a farmer releases an overflow of fertilizer nutrients into a stream, the excess of nutrients can kill many organisms and disrupt the ecosystem quite severely. The scales of the specific examples required by the question are not specified, but an example which is either too large or too small to demonstrate an understanding of the processes that make them vulnerable to stress will carry its own penalty. It is important that candidates’ answers focus on the stresses experienced by ecosystems as a result of human impact; responses which do not do so or which describe ecosystems in general may not be awarded more than **[14 marks]**, and then only for an outstanding response which fully analyses the complex and inter-related processes of change which occur within ecosystems. The forces leading to ecosystem stress must be human in origin, although it is recognized that natural forces will usually also play a part in this stress. With the exception of the cutoff mentioned above, marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, with evidence provided from a variety of sources and using illustrative examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.

SECTION C — RESOURCES

- 6. Discuss the consequences of the uneven distribution of natural resources. In your answer, refer to at least *two* different natural resources as examples. [20 marks]**

The focus of this question is the uneven distribution of natural resources and the (usually) negative consequences of this uneven distribution. The consequences may be economic (such as trade or the loss of national income to import a scarce resource), political (conflicts over resource scarcity), developmental (such as when a country's development is hindered by lack of resources) or physical (such as environmental damage caused by over-exploitation). Responses will vary according to the two or more natural resources selected as examples. Where no specific natural resources are used to illustrate the response, no more than a maximum of **/8 marks/** may be awarded. Apart from this cutoff, marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, with evidence provided from a variety of sources and using illustrative examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.

7. With reference to *two* environmental issues, explain why an understanding of natural processes is necessary for effective management and sustainable outcomes. [20 marks]

The focus of this question is the different management strategies required to address two environmental issues, such as acid rain, possible global warming, air pollution, land degradation, flooding, water pollution, sedimentation and waste disposal. Responses to this question will vary considerably according to the two environmental issues selected by the candidate, but management strategies may include government legislation, direct action by the masses, international agreements and/or co-operation, corporate sponsorship, physical actions of various types, factory closures, tree planting and recycling among others. Two or more environmental issues must be discussed, and where this is not done award no more than a maximum of [10 marks] may be awarded. Candidates' responses must be linked with the concept of sustainability, and where this is not done or is misunderstood, a maximum of [14 marks] may be awarded. Given these points, marks should be awarded on the following basis:

A mark between 18 and 20 inclusive should be awarded for an excellent response which shows clear reasoning and which gives explicit factual information, where the arguments are developed in a logical manner, with evidence provided from a variety of sources and using illustrative examples to support the arguments.

A mark between 14 and 17 inclusive should be awarded for an above average response which is consistent, factually correct, explanatory and which attempts to justify its generalizations.

A mark between 8 and 13 inclusive should be awarded for a satisfactory response which is somewhat descriptive but relevant to the question, where there is some use of factual data and which shows limited reasoning. The conclusions should be consistent with the reasoning presented.

A mark between 4 and 7 inclusive should be awarded for a weak response which is somewhat vague and which uses little factual data to support generalizations. The conclusions are inconsistent with the data or no conclusions are drawn.

A mark between 0 and 3 inclusive should be awarded for a very weak response which misses the point of the question, has an absence of factual data, contains much irrelevant material, and is incoherent or incomprehensible.
