INTERNATIONAL BACCALAUREATE
BACCALAURÉAT INTERNATIONAL
BACHILLERATO INTERNACIONAL

MARKSCHEME

November 2001

GEOGRAPHY

Higher Level

Paper 3

9 pages

Notes on individual questions

SECTION A — TOPOGRAPHICAL MAPPING

1. (a) (i) State the height of the surface of Lake Balaton in metres above sea level. ***[1 mark]***

Acceptable answers would be from 100 metres to 109 metres above sea level.

(ii) Estimate to the nearest square kilometre the area of the map covered by Lake Balaton. ***[1 mark]***

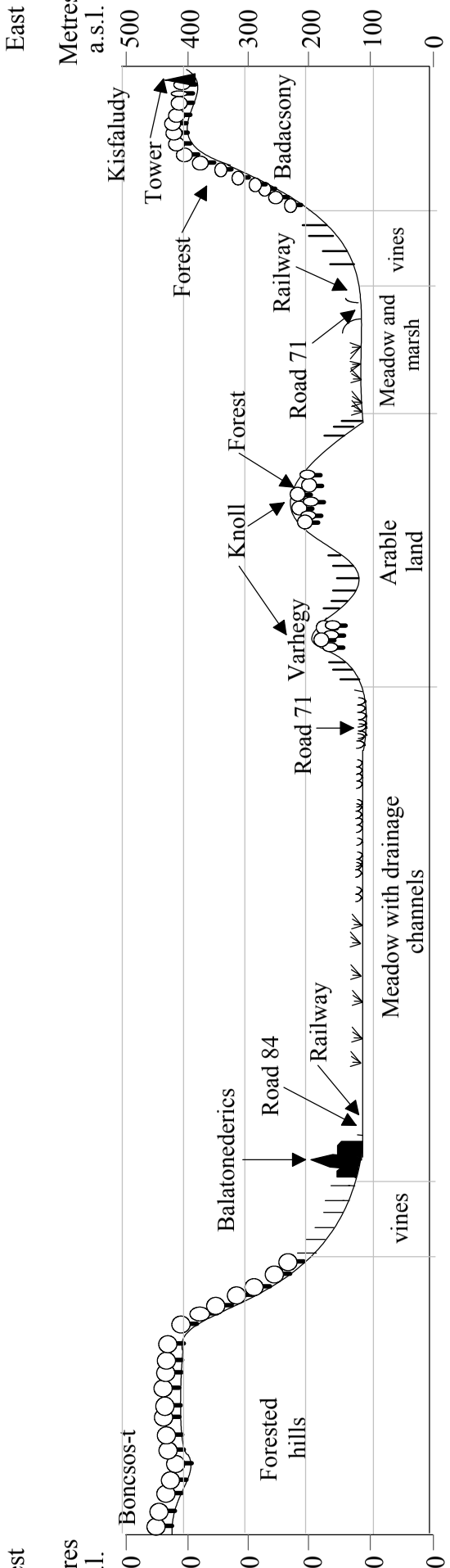
Accept answers between 24–26 square kilometres.

(b) Draw a sketch section from Boncsos-t (208471) to the observation tower at Kisfaludy (326466). Label your section to show the main physical and human features. ***[8 marks]***

See diagram on following page.

continued…

Question 1 (b) continued



Question 1 continued

(c) Describe and explain the pattern of land communications in relation to the relief. ***[6 marks]***

Answers might include some of the following points:

- the forested upland in SW of the map has very few roads other than minor roads that follow valleys such as that of the Kigyos-volgy, and some footpaths – slopes are too steep for the most part;
- the main road 84 runs along the eastern edge of the high ground found in the western part of the map (slightly higher ground to avoid floods and link dry point settlements);
- the main road 71 follows the coast avoiding high ground by following the contours, *e.g.* avoiding the hill Badacsony which it skirts to the south;
- there are very few roads in the flat area in the left centre of the map, probably due to the lack of settlements and poor drainage there (flood hazard);
- the minor roads seem to go around the knolls of the area and also join up each of these knolls where settlements occur on the slightly higher and therefore drier ground – examples of this should be quoted;
- the knolls are too steep for roads and have only tracks or paths on them;
- Tapolca seems to be the main transport node in the northern part of the map – minor roads converge on it from all directions;
- the road pattern is not very dense though the level of connectivity is relatively high;
- there is a railway line that runs along the SW coast and then across the lowland area and NE to Tapolca where it meets another line heading from the NW corner of the map avoiding the knoll near Kisapati to Badacsony-tördemic and then going to the south around the hill Badacsony and then along the coast to the eastern edge of the map – both lines avoid all areas of high ground to maintain an almost level gradient everywhere along their routes.

Not all of these points need to be mentioned in a good answer but candidates must mention both road and rail to gain full marks.

(d) Describe and explain the distribution of forests, meadows and vineyards in the area south of grid line 50. ***[4 marks]***

Answers might include some of the following points:

- the forest for the most part lies on the steeper slopes;
  - on the upper slopes of the knolls in the eastern half of the area
  - on the highlands to the south west above about 200 metres
  - these slopes are generally too steep for farming
- an exception is the rectangular area between Nemesvita and Hegymagas – possibly a small commercial plantation;
- the meadow land occurs on the flat area between Balatonederics, Szigliget, and Hegymagas, this is low and wet (many drainage channels) therefore ideal for pasture but too damp for crops – other meadow areas occur on the flat areas between the knolls in the eastern half of the map for the same reason – here too, numerous artificial channels indicate poor drainage;
- the vineyards are small in extent and are found on sloping ground around the bases of the knolls, predominantly on south facing sides for maximum insolation and along the edge of the forested higher ground in the SW corner of the area mainly between 120–200 metres where the land is better drained.

SECTION B — THE NATURAL ENVIRONMENT

2. With reference to *one* named example for *each* of the following, describe and explain how humans have attempted to control the processes of:

(a) erosion;

(b) deposition;

(c) mass movement on slopes. ***[20 marks]***

Since this answer involves considerable candidate choice, a precise allocation of marks is not possible. They should be allocated as ***[7 marks]*** for **(a)**, ***[7 marks]*** for **(b)** and ***[6 marks]*** for **(c)**. Markers should be flexible however, possibly awarding a very strong answer in one section with extra marks. Reasons for this should be stated on the candidate's paper. The candidates must name and locate their example to gain ***[1 mark]*** in each case. In each case the candidate should make it clear which processes are involved and indicate precisely the measures taken to control them.

For **(a)** suitable examples might include: erosion on the outside of a river bend, downward erosion by a stream, coastal erosion, removal of beach material during storms, gullying and soil erosion.

For **(b)** examples could include the blocking of river sections or their mouths with sediment forming spits and bars, the effects of longshore drift.

For **(c)** examples could include rotational slips, landslides, mudflows.

3. (a) Describe and explain the natural factors that cause the velocity (speed) of a river to vary. ***[12 marks]***

The following factors should be included:

- the gradient of the channel;
- the friction of the bed caused by the size and shape of the bedload;
- the efficiency of the channel shape (hydraulic radius and efficiency ratio);
- the discharge of the stream - how the volume of water affects the efficiency ratio.

Changes in velocity across the channel according to depth would also be relevant

(b) With the aid of a labelled graph, explain how changes in velocity affect a river's ability to transport its load. ***[8 marks]***

Candidates should briefly explain how changes in the velocity affect the rivers competence to carry or deposit particles of different sizes. This should be explained in terms of changes in the energy available once friction has been overcome. A graph similar to the Hjulstrøm Diagram would present an ideal answer, relating velocity to pick up and deposition of particles of different sizes.

4. Select *one* climate type from list A and *one* from list B.

List A	List B
Hot Desert	**Sub-polar (Tundra)**
Tropical Continental (Savanna)	**Mediterranean**
Tropical Monsoon	**Mid-latitude Continental**

In *each* case:

(a) Name *one* area of the world where the climate occurs. ***[1 + 1 mark]***

Answers must be specific, *e.g.* for Hot Desert – citing 'Africa' should be awarded no marks. Candidates should be able to name the area precisely to gain a mark – *e.g.* for the Mediterranean climate, Central Chile or California or SW Australia are acceptable answers.

(b) Explain the main characteristics of the climate. ***[9 + 9 marks]***

The main characteristics of any climate should refer to:
- seasonal temperature variations;
- range of temperature;
- rainfall totals;
- seasonal distribution of rainfall;
- special features such as local winds where relevant.

Each of the above should be explained.
The best answers might include sketch climate graphs and diagrams to show the main influences on the climate.
Precise figures for temperature and rainfall are not necessary for a good answer but should be representative enough to show that the candidate has a sound grasp of the nature of the climate.

5. With reference to *one* biome that you have studied.

(a) Name the biome and state *one* area of the world in which it is located. ***[1 mark]***

The biome should be correctly named and precisely located. If only the name of the biome is given, then no mark should be awarded.

(b) Describe and explain the main characteristics of the biome. ***[12 marks]***

Although the answer depends on candidate choice, a good understanding of the climatic background in terms of seasonal variations in rainfall, temperature and evapotranspiration should be demonstrated. Furthermore an understanding of how the climate, vegetation and soils interrelate should be shown. Good answers will include a description of the structure of the resulting vegetation and a simple outline of the major soil-forming processes and the soil profile should be given. Reference to the role of mineral cycling should also be included.

(c) Outline the ways in which agricultural activities have affected the stability of the biome in this area. ***[7 marks]***

The agricultural activities must relate to the area mentioned in **(a)**.
Most agricultural activities will adversely affect the stability of the biome.
Candidates should relate this in terms of the effects of clearance for farming on the structure of the vegetation and the soil. In many cases the natural vegetation will have been totally removed and candidates should state how the nutrient cycling system has been modified. Candidates may indicate that in some areas the farming system has not totally changed the biome as with some forms of shifting cultivation, where the natural vegetation is allowed to periodically reestablish itself and this would also be relevant to a good answer.

6. Many geographers believe that the development of sustainable energy resources is the only way to meet future energy demands.
With reference to at least *three* types of sustainable energy resources, explain why doubts still exist about their ability to provide large amounts of power at low cost. ***[20 marks]***

Candidates should show that they understand the term 'sustainable energy resource'. Answers should refer to specific sustainable energy sources. General answers that do not do this should not gain more than half marks. The phrase 'large amounts of power' implies that the source will be used to generate electricity for mass consumption, though this need not be the case. Answers that refer to the large scale use of numerous small power generating systems are equally acceptable. For each energy resource stated, that candidate should critically examine its applicability in terms of its potential generating capacity. Factors examined should include costs, applicability in terms of technology required and the reliability of the power source for regular energy production. Credit should be given where candidates point out advantages of an energy resource, even though the question stresses the doubt factor. The level of economic development (and therefore availability of capital) should also be considered when assessing the viability of an energy resource.

7. The increasing demand for resources has led to resource extraction in areas with adverse (difficult) physical conditions.
With reference to *one* such area:

(a) Name and locate the area and the type of resource being extracted. ***[2 marks]***

A precise geographical location is necessary. A whole region such as the Middle East, or in some cases a whole country such as Brazil or the USA is not accurate enough. Where the country is very small *e.g.* Kuwait, then the name of the country is enough to be awarded ***[1 mark]***. The other mark should be awarded for correctly naming the resource being exploited there.

(b) Describe why conditions in this area are difficult for resource extraction. ***[7 marks]***

Answers will vary according to the area chosen but the physical difficulties should relate to the problems they engender for the extraction of the resource and not be just a general account of adverse physical conditions in the area. Such general answers should not score above half marks. Difficulties due to poor accessibility should be accepted here.

(c) Explain how technological innovations have helped to overcome the adverse physical conditions. ***[6 marks]***

Again the answer must refer to the area mentioned in **(a)** and the technological innovations should relate directly to the obstacles to be overcome in that area. General answers that do not refer to the chosen area should be restricted to half marks. A very good description of only one such innovation could be awarded full marks.

(d) Describe the effects caused by resource exploitation on the natural environment of the area. ***[5 marks]***

Once more the answer needs to be specific to the area mentioned in **(a)**. The environmental problems may refer to the degradation of the physical landscape, the vegetation, soils, animal life, atmosphere or the scenic value of the area. Specific details must be given as to the way(s) in which the exploitation of the resource has affected at least one of these. General answers that do not refer to the chosen area should be restricted to half marks.