



# **MARKSCHEME**

**November 1999**

**GEOGRAPHY**

**Higher Level**

**Paper 3**

## Notes On Individual Questions

## SECTION A : TOPOGRAPHIC MAPPING

1. (a) Calculate the average gradient of Hobland Road from the junction near Decoy Farm (497/013) to spot height 17m near Hobland Hall. *[3 marks]*
- The correct answer is  $13\text{m}/1.6\text{km} = 1:123$ . To obtain full marks the candidate would be required to show calculations resulting in an answer in the range of 1:115 to 1:130 (0.87% to 0.77%). If the correct answer is not obtained, marks should be awarded for evidence of accurate map measurement along a curved line and/or a clear explanation of the calculations required to obtain a gradient.
- (b) What map evidence is there to show that longshore drifting has occurred? *[2 marks]*
- Candidates would be expected to mention two facts: the spit on which Great Yarmouth is sited and the presence of groynes, particularly those in the south. While the stronger candidates would probably comment on the southerly direction of longshore drifting (and possibly give grid references for groynes), neither would be required to obtain full marks.
- (c) Which geographical conditions shown on the map might have led to the decline of Great Yarmouth as a fishing port? *[3 marks]*
- This is an open-ended question and any accurate assumptions based on map evidence should be rewarded. It would be expected that most candidates would refer to the river as the only possible location for a port in view of the shelter it provides and the presence of quays, but one that is now unsuitable for larger sea-going vessels because of the narrowness and the tidal nature of the river, and the possible danger from silting as a result of longshore drifting.
- (d) Draw a large sketch map of the area shown in the aerial photograph and on it mark:
- (i) the land use (residential, commercial, industrial and agricultural) *[5 marks]*
- In order to obtain full marks for the sketch map, it should be neatly and accurately drawn, clearly labelled or annotated and show the main communication lines and the river in the north-east corner as reference points. The residential area, lying to the east and north, and the industrial areas on either side of the A12(T) and in the south can be easily identified from both the map and the photo. The out-of-town shopping centre should be marked as commercial, with the remaining area west of the A12(T) identified as agricultural. An indication of scale should be given and, if necessary, a key. Maps less than half a page in size should not be given full marks.
- (ii) the grid references of the North-East and South-East corners *[2 marks]*
- [1 mark]* should be awarded for each correct grid reference (521 082 and 521 060 respectively), either as a six-figure grid reference or as one containing decimal places, but eastings should always be mentioned first. If the answer is accurate to within 200 metres, it should be regarded as correct.

- (e) **The large building in the centre of the aerial photograph shows an out-of-town shopping centre. Using the evidence shown on both the aerial photograph and the map, comment on the advantages and disadvantages of this location and site for such a shopping centre.**

*[5 marks]*

It is important that candidates comment only on map and photo evidence – this should not be regarded as a general question on the location of these functions. The strongest answers would be expected to contain reference to the availability of space (a 'green-field' site) for the extensive ground-level store and the accompanying car-parking, the easy access to main transport routes, both for the customers and the input of goods (and specifically mention the A12(T) and A1243 roads), and the proximity of a large residential population. Disadvantages that could be considered would be the possibly poorly drained site (very close to sea level and on the floodplain of the tidal Breydon Water), the incursion of commercial functions into agricultural land and the traffic congestion that it could cause at a major transport nodal point. It should be possible to award full marks to an answer that does not contain all the above points, but does show a good appreciation of the map and an understanding of the locational factors influencing such a function.

**SECTION B : THE NATURAL ENVIRONMENT**

2. (a) **Outline the main physical processes which are at work on hill slopes.** *[12 marks]*

The best answers and those deserving the most marks should attempt some classification of the processes involved: mass movements (slides, heaves and flows), particulate movement (rain splash, surface wash), followed by brief but accurate explanations of each. Elements such as slope angle, soil type, vegetation cover and precipitation and temperature regimes should then be addressed. However, candidates could also concentrate on only a selection of these processes and describe them in greater detail for full marks. Listing of the processes, without any explanation, should not gain more than *[4 marks]*.

- (b) **Explain the ways in which human activity may lead to slope failure.** *[8 marks]*

Answers deserving the most marks would be those where the candidates refer back to the processes covered in (a) and develop their responses in terms of human interference that would encourage slope failure. These could cover aspects such as changing the angle of slope, increasing the water content, reducing vegetation cover, road construction and the building of spoil heaps. Those candidates supporting their discussions with specific examples should gain extra credit. Weaker answers would simply provide a disorganised number of examples without quoting examples. Such answers should not gain more than *[4 marks]* as a maximum.

3. **What types of information would a hydrologist need to collect about a drainage basin in order to manage the risk of flooding?** *[20 marks]*

The best answers would address data collection both upstream in the drainage basin (the nature, duration and type of precipitation, drainage time lags dependent on the shape of the basin, its slope, rock type and vegetation cover) and downstream (modification of the channel shape and course, floodplain development.) It is unlikely that all would be discussed, but this should not lead to penalising the candidate provided the answers are sufficiently detailed and cover most of the points. Again, the use of specific examples should gain extra credit. It is possible that some candidates could approach this question by using the flood hydrograph as a basis for discussion and this would be acceptable. If an answer should show no logical development and was little more than a listing of the types of data to be collected, the maximum mark awarded should not exceed *[10 marks]*.

4. **Outline the factors that are responsible for temperature variations on *either* a local or a continental scale.**

**[20 marks]**

If the approach to this question considers temperature variations at the continental scale, maximum marks could only be allocated if all of the following aspects are covered in the response: latitude, albedo, the greenhouse effect (CO<sub>2</sub>, cloud cover), land and water surfaces and ocean currents and the temporal variations resulting from seasonal changes. It is possible that altitude could be included as a factor. The answer should also give some indication of actual temperature values and name the continent. However, it is not expected that the mark allocation be proportional to the number of factors mentioned – it should be possible to award additional marks if any particular point is well covered. Description without explanation should not gain more than **[6 marks]** in total.

Similarly, the maximum mark for more local variations would have to include a discussion of all the following: altitude, aspect, cloud cover, day-night variations and seasonal variations, although this would depend on how many are relevant to the candidate's interpretation of "local scale". As with the previous part, it would also be necessary to give some quantification of temperatures, but again all elements need not necessarily carry the same number of marks. It is acceptable if candidates preferred to approach this question in terms of a micro-climate or the urban heat-island, but either would require evidence of detailed knowledge.

5. (a) **What do you understand by the term 'environmental pollution'?**

**[5 marks]**

Any explanation should mention the discharge of effluents and the damage or disruption it causes to both ecosystems and human health and quote examples to gain full marks.

- (b) **With reference to specific examples, describe how pollution may interfere with the natural functioning of an ecosystem.**

**[15 marks]**

A number of examples could be chosen, but all explanations should be accurate and pertinent, with the emphasis being placed on the effects of the pollution rather than the causes of it. Marks should be awarded for a clear appreciation of the disruption caused in an ecosystem, either by the introduction of the pollutant or by changing the flows within the ecosystem, and for reference to positive feedback. The best answers would be based on specific case studies and at least two should be discussed, although it would not be necessary for both to be examined in the same depth. Where the candidate responds in general terms with the answer lacking specific facts or detail, no more than half marks should be awarded.

**SECTION C : RESOURCES**

6. **Resource exploitation is a balance between environmental costs and economic benefits. With reference to *one* named resource, evaluate the relative geographical costs and benefits of its exploitation.**

*[20 marks]*

It is almost impossible to be prescriptive about the allocation of marks in a question of this nature because of the wide variety of approaches that a candidate could adopt and the different responses that could come from the resource the candidate has chosen. As a consequence, it is recommended that marks be awarded broadly on the following basis: a sound geographical knowledge of the resource, its distribution, exploitation, transmission/transport, use and its waste products (up to *[10 marks]*) and a logical development of the argument with the candidate showing an ability to reach a reasoned conclusion on the costs and benefits (up to a further *[10 marks]*). It could be that the balance between these two sets of marks needs to be adjusted in view of the particular approach taken, but this should never exceed *[3 marks]* either way. The use of specific examples to illustrate points should be favourably regarded.

7. **Resources are often classified as renewable or non-renewable. With reference to a specific region, examine the relative role of these two types of resources in its economic development.**

*[20 marks]*

It is expected that the candidate should start by briefly explaining what is meant by 'renewable' and 'non-renewable' resources, possibly quoting examples of specific resources that fall into these two categories (up to *[3 marks]*). Most of the remaining marks should be awarded for an analysis of the changing role of these two types of resources in the chosen region. It is probable that answers would attempt to show how, with economic development, resource utilisation changes from renewable to non-renewable as technology, exploration and capital become available, although alternative approaches could be sympathetically considered. A mere listing of the resources used throughout a region's development should not be given more than *[5 marks]*. The strongest answers should show a clear knowledge of the chosen region and include a consideration of future resource utilisation.

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