



MARKSCHEME

November 2000

GEOGRAPHY

Higher and Standard Level

Paper 1

Notes to Examiners

Paper 1 is concerned essentially with terminology, skills, and techniques. It consists of five questions, each worth *[8 marks]*, and the total mark for the paper is *[40 marks]*. This increased mark will be beneficial to candidates and markers alike, for it will allow the award of one mark for virtually every response given by a candidate. Note, however, that the mark out of forty will be scaled, as before, to produce an assessment weighting of 30% (SL) and 20% (HL).

Notes on individual questions

Question 1:

The diagram below shows the proportion of total population (i) aged 0–14 and (ii) aged 60 and over in Economically More Developed Regions (EMDRs) and Economically Less Developed Regions (ELDRs) between 1950–2050.

The question addresses the theme of population dynamics from the perspectives of age and demographic transition. Candidates are required to recognise patterns in the diagram: they are not expected to make calculations though some may choose to do so in order to elucidate points made.

- (a) **Describe the *main* changes in the proportion of younger and older people in ELDRs and EMDRs for the period 1950–2050.**

[3 marks]

The diagram shows an ageing world population. In more economically developed regions, the percentage of younger persons, after cresting in 1960, declines from 27 per cent in 1950 to approximately 15 per cent in 2050. A similar pattern appears around 1968 in the case of ELDRs. Candidates should receive *[1 mark]* for recognising both of these trends. Candidates are asked only to “describe”. Reference to proportion must involve some quantification in order to receive *[1 mark]*. A second mark *[1 mark]* may be awarded for explanation or other observations; for example, the fact that the change in economically less developed regions will be much more dramatic than in economically more developed ones. A third mark *[1 mark]* may be awarded for answers that quantify the changes.

- (b) **In what year does the proportion of older persons equal the proportion of younger persons in EMDRs?**

[1 mark]

Candidates should receive *[1 mark]* for indicating that the year is 1996, 1997 or 1998.

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Question 1 continued

- (c) **Explain how the diagram illustrates the *demographic transition model*.**

[4 marks]

As the numbers of older and younger persons reach equal proportions in economically more developed regions in 1998, so they are projected to do so in economically less developed ones in the year 2050, when each will represent 21 per cent of the total world population. For noting this parallel development, candidates should receive **[1 mark]**. A second mark **[1 mark]** should be awarded to candidates who discuss the similarity of pattern in terms of the demographic transition model and especially to those who speculate whether patterns beyond 2050 in less developed regions will follow those of more developed regions. An additional two marks maximum **[2 marks]** may be awarded for answers that recognise the different stages in the demographic transition model.

Credit may be given for mention of birth and death rates provided these rates are referenced in some way to stages of the demographic transition model.

As the question asks candidates to “explain”, their mere description of a demographic transition model would not merit the award of a mark.

Question 2:

The table below shows fuel consumption in an Economically Less Developed Country (ELDC).

- (a) **Using the information in the table complete the pie chart below to show this fuel consumption.**

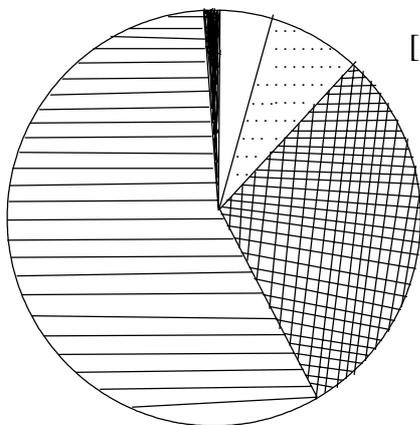
[3 marks]

This question ranges widely across the theme of economic growth and development, touching indicators, levels and problems and strategies.

Three steps are involved in transforming tabular data to circular form: calculation of percentages, multiplying the percentages by 3.6 to convert them to angles, and plotting those angles (ranked by size) on the circle. In this question 2(a) the percentages are already displayed in the table and the angles have been plotted on the circle.

The question requires candidates to associate the tabular data with the appropriate segment on the circle in clockwise direction from the top [**1 mark**]. A second mark [**1 mark**] should be awarded for suitable symbolisation and key. *Note: Candidates have the option of completing the pie chart without attaching any numerical values to the segments, or they may attach tonnage or percentage values as shown on the graph. These do not of themselves merit an additional mark. While symbolisation and key are required for the second mark, some candidates may have labelled the segments instead. If markers are satisfied that the labelling is accurate, neat, and conveys the information as effectively as symbol and key they may award the second mark.*

A third mark [**1 mark**] should be awarded for labelling which must include a title. The mark may be withheld where untidiness has impaired the effectiveness of the labelling.



[Note: the symbolisation and sequence in the key are suggestive]

- Coal
- Oil
- Natural Gas
- Hydro electricity
- Nuclear electricity

Fuel Consumption
1996

continued...

Question 2 continued

- (b) **Explain how the angle of the segment for oil on the pie chart was calculated from the figure given in the table.**

[1 mark]

Percentage values in the table are converted to circular values (out of 360 degrees) on the pie chart by a multiple of 3.6. Candidates should receive a mark [1 mark] for an answer of 3.6, for stating that the segment is 32 per cent of 360 degrees, or for showing the formula for calculation ($360 \times \frac{32}{100}$). The actual angle is not required for the correct answer.

- (c) **Explain how fuel consumption in an Economically More Developed Country (EMDC) would be different to that shown in the table for an ELDC.**

[3 marks]

The economically less developed country is India. Figures of world fuel consumption (from which the data for India were extracted) show a strong correlation between levels of economic development and *consumption* of oil and natural gas, with their combined total exceeding in most cases the consumption of coal. In India, however, the consumption of coal is almost twice that of oil (1.8) and one and a half times that of oil and natural gas. (In China, the consumption of coal is 3.9 times that of oil alone). This is not simply the result of local availability: outside the Middle East the major oil consuming nations are also oil importers, and the older industrial nations consume almost 50% of the oil produced, hence the link between their consumption and level of economic development.

A further notable difference is the amount of nuclear electricity consumed in the majority of EMDCs. In Japan it is 14%, in Western Europe almost 15%, and in Sweden 44%. Nuclear energy requires high levels of expensive technology.

While the amount of hydro-electricity consumed in a number of EMDCs is greater than in India, it is dependent upon environmental conditions, and its percentage is affected also by the amount of oil and gas consumed. Thus, while North America consumes more hydro-electricity than Western Europe, the amount is still only 2% of the total, whereas in Western Europe it is almost 3%.

Candidates should receive [3 marks] for making these or other plausible links in some way. In allocating the third mark [1 mark], examiners should note that the question requires candidates to *explain*.

- (d) **Name a fuel commonly used in ELDCs that is not shown in the table.**

[1 mark]

Candidates should receive a mark [1 mark] for any one of the following: fuelwood, dung, biogas, kerosene, seaweed, or another plausible type of fuel used in ELDCs.

Question 3:

The map shows climatic impacts of El Niño events, between October and March.

This question deals with the theme of human response to natural hazards. It is concerned particularly to reveal candidates' breadth of understanding of natural hazards, notably the possibility of *both losses and gains, risk*, and differing degrees of *vulnerability*.

- (a) **Refer to the map and select *two* of the three impacts shown in the key. For each impact name a specific place (at least a country or a region) where it occurs. For each place, describe a loss or benefit that each place has experienced as a result of El Niño.**

[2 marks]

Candidates are expected to name two specific places (at the level of at least a country or region) that are representative of the two impacts they have chosen. For each place they are asked simply to describe the impact in terms of a loss and/or benefit (gain) arising from the El Niño event. Two marks **[2 marks]** are available for this section of the question, one mark for each specific place and description. The place and description must be appropriate to each other for one mark **[1 mark]** to be awarded. However, in the case of a candidate providing a superior description of one case, while the other case does not merit the award of a mark, the mark may be transferred from that case to recognise the superior answer. Among the benefits that such a superior answer might cite would be the suppression of hurricanes and tornadoes in Florida, warmer water along the coast of California (normally an area of cool current) benefiting surfers and sports fishermen. While the latter gained from the northward migration of tropical fish that accompanied the warmer water, the cool-water Pacific salmon fishery further north was being adversely affected. Milder winter conditions in North America meant lower winter power bills for householders. In Australia there were improved conditions for the cotton harvest while other products were being harmed by drought. Other regions suffering loss through drought include northeast Brazil and southeast Africa, and the Indonesian archipelago where forest fires created an atmospheric hazard. Elsewhere, flooding and washouts produced loss of life and food production.

Some of these benefits and losses were in localities not shown on the map as experiencing climate impact. Nevertheless, they have been included in the markscheme to alert examiners to the possibility that candidates might cite such events in their answers after having learnt of them from teachers, the media, or personal experience.

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Question 3 continued

- (b) Explain why people live in hazardous environments, continually putting themselves at risk.**

[3 marks]

People may consciously place themselves at risk from natural hazards for a variety of reasons, notably, the unpredictability (and hence uncertainty) of an event, the lack of alternatives (for economic, political, or reasons associated with lack of knowledge), changing dangers (from natural processes or human-induced ones), optimistic perception, or simply cost versus benefit. Rather than require a specific number of reasons to be given by candidates, this section of the question allows the marker discretion in awarding up to **[3 marks]** for answers.

- (c) Explain why some people in hazardous environments are more vulnerable to risk than others.**

[3 marks]

Vulnerability takes a variety of forms and degrees. It refers not only to the event but to the ability to recover from it. Vulnerability is not the same as poverty, however; for instance, middle class homes may actually be more vulnerable to earthquake than flimsy shanty town dwellings. Vulnerability is conditioned by the level of technology, social organisation (with community, local, and national support), health (especially age), income and social class. There is also a sense in which the increasing vulnerability of people accounts for the increasing impact of hazards: on this point candidates might comment further on the interaction of human systems and natural processes. Markers are free to award a maximum of **[3 marks]** for answers that go beyond a basic response and address the above and lesser known aspects.

Question 4:

The table shows world cereal production imports and consumption in Economically Less Developed Countries (ELDCs) and Economically More Developed Countries (EMDCs).

Dealing with the theme of agriculture and world food supply, this question allows candidates a range of possibilities for responding.

- (a) **Using the data in the table, on the grid opposite construct *compound bar graphs* to show the production, importation and per person food use or consumption of cereals in ELDCs and EMDCs for the years 1992-93 and 1996-97.**

[5 marks]

Candidates may choose to group their compound graphs by (i) year; (ii) production, imports and per person use; or (iii) (more likely) by developing and developed countries. Whichever the format, candidates may receive *[1 mark]* for each of the following: labelling (including X and Y axes), title, key (including effectiveness of symbolisation), accuracy of plot, and overall neatness/effect. One mark *[1 mark]* may be withheld in cases of untidy work.

Note that the question refers to graphs in the plural. Candidates should be eligible for the maximum of *[5 marks]* if they produced compound bar graphs in any of the following configurations: (a) six single columns, the first three being for 1992-93 and the second for 1996-97. Each column would be for production, importation, or consumption and must show within it the proportional values of ELDCs and EMDCs from that category. (b) three columns (production, importation, and consumption) subdivided on the x-axis into 1992-93 and 1996-97 and on y-axis to show the proportional values of ELDCs and EMDCs. (c) two columns (1992-93 and 1996-97) subdivided along the x axis into production importation, and consumption, and along the y-axis into ELDCs and EMDCs. In deciding the case of other configurations, examiners should note that marks depend on the proportional values for ELDCs and EMDCs being displayed in the three categories from the two specific years.

Candidates who draw simple bar graphs have not answered the question but may receive up to *[2 marks]* for simple bar graphs that demonstrate accuracy, appropriate labelling, and title with key including effective symbolisation: neatness is essential. Graphs that have simply been labelled, rather than given symbols, with key, may well be less effective, and examiners should mark them accordingly.

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Question 4 continued

- (b) **Using data in the table and the compound bar graphs, describe *one* of the following:**

Either

- (i) **the problem of, and successes in, total cereal food *supply* in ELDCs.**

Or

- (ii) **differences between EMDCs and ELDCs in world *production* of cereals.**

[3 marks]

Candidates have two choices for responding to the data they have plotted. Those choosing:

(i) need to show an understanding that supply is not simply a matter of production. They may refer to the fact that developing countries have consistently improved their output, while reducing their imports and still managing a modest increase in their per capita use of cereals in spite of growing populations.

(ii) have an opportunity to compare production in developing and developed countries. They may note a substantial growth in output forecast in 1996/97 but that output otherwise fluctuated. Candidates may base their comments on data for both production and imports. Those who explain, rather than describe differences between EMDCs and ELDCs are still eligible to receive up to *[3 marks]*.

Markers should be flexible in recognising candidates' efforts in this question. The total of *[3 marks]* should be awarded for answers that address the data and then interpret the data in the context of one of the two choices available to them (noted above). Plausible and well-argued answers should receive full marks.

Question 5:

The diagram shows urban housing density in an Economically More Developed Country (EMDC).

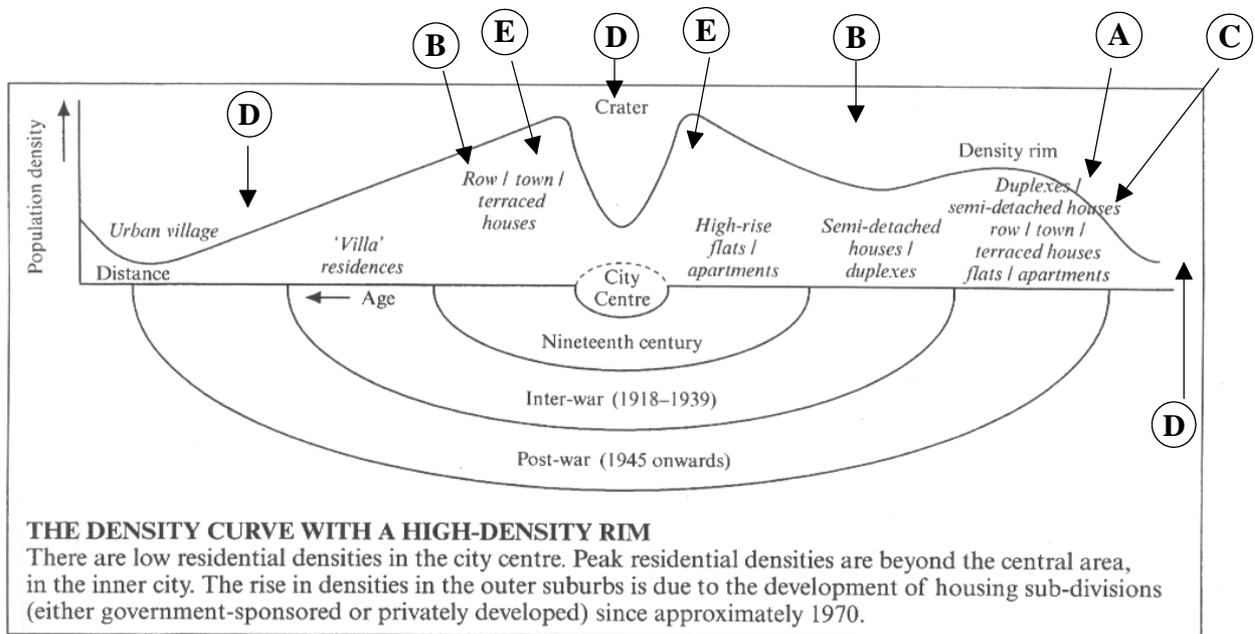
This question on the theme of Urban Environments requires candidates to associate certain features of the urban landscape with a diagram of urban housing density.

(a) **Indicate on the diagram, with the appropriate letters (A – E), the most likely location of the following:**

- A A modern industrial park**
- B An area undergoing gentrification**
- C A major regional mall (mini CBD)**
- D An area of locational disadvantage**
- E An area undergoing renovation for multi-purpose land use**

[5 marks]

A mark [1 mark] should be awarded for each of five letter symbols appropriately placed on the diagram. As with the interpretation of an aerial photograph, there may be a variety of locations that can either be associated directly or by inference with a particular form of land use. Markers should be ready to recognise this and give credit accordingly.



Source: Garrett Nagle and Kris Spencer, *Advanced Geography through Diagrams* (OUP, 1998)

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Question 5 continued

In particular, while gentrification (“B”) is commonly associated with inner city row/town/terraced houses, so too is “E”; and in some cities gentrification is affecting semi-detached houses/duplexes on the outer-edge of inner city areas. A major regional mall (“C”) is indicated on the diagram beside an area of higher density and near an industrial park; it is not to be assumed that a similar mall would be located on the left-hand side near the low-density urban village. Locational disadvantage (“D”) is an outcome of rapid urban spread. Financing the required infrastructure (schools, hospitals, roads, water and sewerage, and public transport) places a heavy burden on government and thus the provision of these services usually lags behind demand. Lower income groups drawn to the periphery by cheaper housing, may suffer also the stigma of living in a poorly serviced area. Nevertheless, students might consider the infrastructure of some inner city areas so deficient as to make them “locationally disadvantaged”. They would indeed meet some of the criteria outlined in the markscheme and students should receive credit accordingly.

- (A) In general, a modern industrial park would most likely be found on the outskirts, near the density rim, where it has easy access to transportation and available labour.
- (B) an area undergoing gentrification would commonly be found close to the centre and in the vicinity of terraced houses (in particular).
- (C) a major regional mall or mini CBD would, like a new industrial park, be found on the periphery.
- (D) An area of locational disadvantage is usually the outcome of the rapid spread of a city. Because financing the required infrastructure (schools, hospitals, roads, water, sewerage, and transport) places a heavy financial burden on government or public authorities, services in these areas may lag well behind demand. Areas of locational disadvantage, therefore, are associated with the urban periphery.
- (E) An area undergoing renovation for multi-purpose land use might well be found closer to the centre of the city, where nineteenth century warehouses and office buildings, some of them in former dockland areas increasingly are being converted for shops, offices, and apartments.

continued...

Question 5 continued

- (b) **Compare the extent to which this diagram would or would not be different from one for a city in an Economically Less Developed Country (ELDC). You may *either* describe this in writing below *or* draw an annotated diagram in the appropriate space over the page.**

[3 marks]

When the density curve is considered, differences between cities in EMDCs and ELDCs may be viewed in a different light. Both, for example, are likely to have on their outskirts areas of locational disadvantage (commonly called shanty towns or squatter settlements in cities of the developing world). Both are now likely to have expensive high-rise flats or apartments closer to the centre of the city – especially now that buildings in the older inner areas are being converted for multipurpose use. Markers may award up to **[3 marks]** for plausible attempts by candidates to recognise similarities and/or differences between the two types of cities.
