

CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Level

MARK SCHEME for the June 2002 question papers

9696 GEOGRAPHY

9696/1	Paper 1 (Core), maximum mark 100
9696/2	Paper 2 (Physical), maximum mark 50
9696/3	Paper 3, maximum mark 50

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

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Mark Scheme 9696 Paper 1 Core Geography June 2002

Q.1 (a) Only a description is required i.e. the higher flood peak with steep rising and recession limbs of river y. Lag time to both rainfall peaks is shorter. River x has slower response to rainfall with reduced peaks and gentler rising and recession limbs. Lag time is c 4 hours longer. Any 4 substantive differences for the marks.

Answers should use measurements for full marks

(4)

(b) The flashier response of river y is related to its catchment area characteristics i.e. pasture and arable as against woodland in X. Some explanation of the nature of interception and its impact upon quickflow is required. Arable and pasture allow less interception, quicker saturation and hence greater overland and throughflow to the channel. Some may notice the lower numbers of tributaries in X allowing more direct discharge to be recorded at a gauging station. Latter point is not required for full marks.

(6)

Q.2. (a) Similarities from the semi – permanent features i.e. the equatorial low pressure or the sub tropical highs. Differences are provided by the seasonal migration of pressure belts or the high pressure that develops over continental land masses in winter in contrast with the low pressure over warm mid latitude oceans.

Only one of each is required for the marks

(4)

(b) The semi – permanent features (similarities) are the result of the global distribution of insolation and the resulting pressure cells that develop (eg sub tropical highs etc). No great detail of hadley cells etc is required.

The differences are due to the seasonal movement of the overhead sun i.e. insolation bringing about seasonal shifts in pressure belts or the juxta position of oceanic and continental land masses and their differential heating properties.

Explanations should be appropriate to the selection made in (a).

(6)

Q.3 (a) Jointing patterns are essentially rectilinear which allows weathering to occur along these lines of weakness. The result is block disintegration which are further reduced in situ in the regolith to core stones but retain the original general structural position of the mass of rock. Regolith depth increases in the weathered areas.

(4)

(b) As the weathering is sub surface and developed in hard crystalline rocks, then the resultant processes are going to be chemical. Acidulated water plus organic acids will

attack along joints allowing greater ingress and larger surface area of attack. Brief descriptions of appropriate processes are required i.e. hydrolysis or oxidation. Carbonation is possible in appropriate rocks but solution and hydration unlikely. A universal coverage of all chemical processes is not required.

Frost shattering acceptable, but only as one process (1 mark).

(6)

4 The relationship between the fertility of women aged 40-49 and their level of education, for Jordan and Mexico in 1990, is shown in Fig. 4A. The countries' locations are shown on Fig. 4B.

(a) (i) State simply the relationship shown between fertility and education level.

As education increases (goes up), fertility decreases (goes down) or fertility decreases as education increases 1 *Inverse relationship acceptable*
[Watch that 'as' is linked to education as the independent variable].

(ii) For Mexico, state the actual variation in the average number of children born to women aged 40-49.

Actual variation (range) can be expressed, 3.1 to 7.5, 7.5 to 3.1 or 4.4 children (1)

(iii) Which level of education has the greatest difference in the number of children between the two countries? Support your answer with data from Fig. 4A.

Secondary 1

Some evidence of calculation of the differentials needed for second mark:
no education: 1.3, primary 1.9, secondary 2, more than secondary 0.9 1

4

(b) Using located examples, discuss two factors other than education which may affect fertility rate significantly.

A number of factors are valid here, credit 3 two different factors from,

government population policy/population campaigns
cultural factors promoting modernisation or resistance to change
eg religious belief
race/ethnicity eg minority groups in a population
economic development/occupational status/economic aspiration
any other valid factor.

For each 3 marks, reserve 1 for the located example(s).

6

Total: 10

5 The world's largest urban agglomerations, by population size, in 1980, 1990 and 2000, are listed in Table 1.

(a) Compare the changing size and rank of Paris and Sao Paulo.

In size, Paris remains the same in 1980 and 1990 at 8.5 million **1**

but Sao Paulo grows very fast (nearly doubles) from 12.1 million in 1980 to a projected 22.1 million in 2000 **1**

In position Paris falls from 11th (1980) to bottom/joint 18th (1990) and off the table in 2000 to a lower position **1**

but Sao Paulo rises from 4th (1980) to 3rd (1990) to 2nd (2000) **1**

must contain an element of comparison of both the rank and the population **4**

(b) To what extent does the demographic transition model help us to understand the rapid growth of India's urban agglomerations shown in Table 1?

India's cities increase in number and size and rise in position in the table.

The demographic transition model is useful in that,

- it describes the movements in BR, DR and NIR over time and provides a framework for understanding so that India can be plotted/identified as a Stage 3 country with falling DR and high but falling BR (allow Stage 2 and falling DR but high BR)
- other valid points.

For the discussion of usefulness credit single ideas **1** and developed points **2** For a wholly positive answer max **4**

Its limitations are significant,

- it is descriptive, not explanatory
- different cities may be at different positions of BR/DR, although a country is usually plotted on the DTM, cf rise of Delhi
- it does not give information on other relevant demographic topics, eg
 - gains and losses from migration (reserve **1**)
 - population structure.

- information about India's social/economic/political/environmental context is needed eg population policy, local factors affecting cities
- other valid points.

For the discussion of limitations credit single ideas **1** and developed points **2** For a wholly negative answer max **4**

Section B

Q.6. (a) (i) Turbulent flow is irregular eddying type of flow associated with channel roughness or rapids. Helicoidal flow is a corkscrew flow within the downstream flow of a river. It moves from inside to outside banks of a meander.

Both could be effectively shown by labelled diagrams.

(4)

(ii) Candidates can chose between abrasion – the dragging of angular fragments along the channel floor; hydraulic erosion - opening up of joints etc by pressure of water; chemical erosion (solution) action of acidulated water on limestones or chalk.

(3)

(b) (i) Diagrams should show raised channel level, levees, sediment accumulation on flood plain and bluffs.

(4)

(ii) Flood plains are developed where a river experiences overbank flow leading to the accretion of sediment on the flood plain. The coarser material is deposited first leading to levees. Meander migration can also lead to accumulation of gravels and development of bluffs.

(4)

(c) Level 3

Human activities can be seen in terms of construction on flood plains associated with artificial levees and other flood defences (e.g. channel straightening) . There will also be a realisation that other activities within the catchment can affect flood plains (eg dams as in Aswan, land use changes increasing run off).

(10 –8)

Level 2

Attention will be focussed on the flood plain and canal itself and will mainly revolve around hard engineering solutions to flood control. Even so there will be some reference to effects on the flood plain.

(7 –5)

Level 1

Seen as an opportunity to write about flooding and attempts at its control. for a pass some reference, albeit vague, should be made to flood plain circumstances.

(4-1)

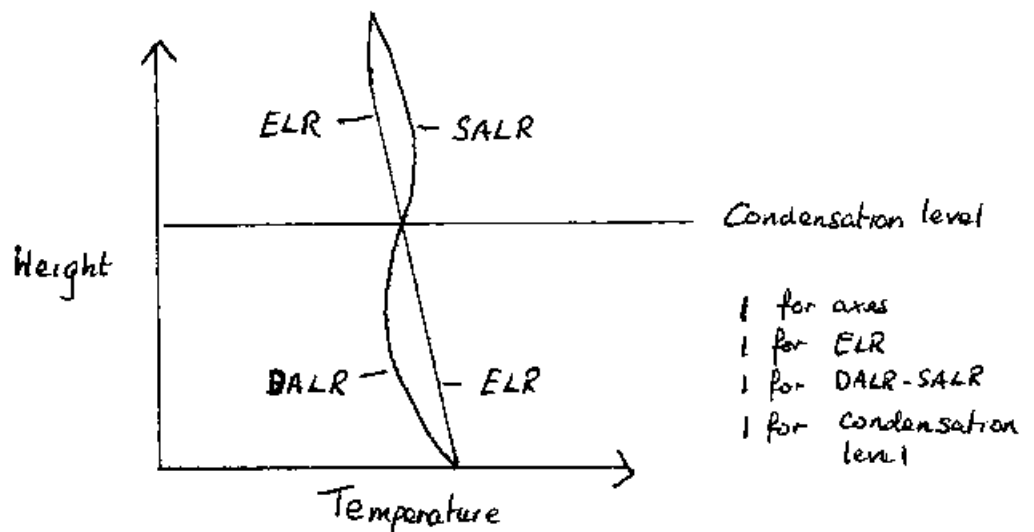
Q.7. (a) (i) Sensible heat is the heat that can be transferred either by convection or conduction latent heat transfer is consequent upon a changed state eg condensation and evaporation.

(4)

(ii) Nocturnal radiation leading to surface heat loss, cooling of lowest layer of atmosphere to below dew point temperature, condensation on ground level objects, calm conditions, clear skies, high humidity, anticyclonic conditions. Any three for the marks.

(3)

(b) (i)



(ii) Obvious case is that of orographic uplift whereby initially stable air is forced to rise until it is warmer than surrounding atmospheric LR. With further ascent the parcel is cooled to dew point after which air can continue to rise at SALR.

(4)

(d) Level 3

Urban heat islands will be explained in terms of the absorption and storage of solar radiation by the urban fabric. This is released at night and together with the heat generated from industries etc give rise to higher temperatures than in surrounding rural areas. This can in turn have other climatic effects viz more frost free days, greater convection (ppt) but lower humidity.

(10-8)

Level 2

Cause of urban heat island understood, but a more descriptive than explanatory account of its effects. temperature rise will be the most prominent feature and there may be some account of urban climates but these will not be linked to heat islands per se.

(7-5)

Level 1

Urban heat islands seen as heat generated in urban areas with effects that extend little beyond temperature rise. A simple descriptive account with little explanation.

(4- 1)

Q.8. (a) (i) The earth is divided into 7 major plates (plus 12 minor). These are comprised of part of the crust and upper mantle (a lithospheric block) which can migrate across the plastic zone of the asthenosphere. They can be composed of oceanic or continental crust (or a mixture of both) Look for four substantive facts.

(4)

(ii) Simple diagram to show the subduction of an oceanic plate beneath another plate and hence the creation of a deep offshore trench.

(3)

(b) (i) Rock type will affect its strength and hardness and therefore its resistance to weathering and erosion. hence free faces will generally be developed in harder rocks (shear strength) although of course the influence of jointing and bedding planes can have a crucial impact. Can be illustrated by reference to granite , sandstone limestone etc

(ii) Climate affects the type and rate of weathering activities that impact upon the slope. Thus in very arid areas probably little activity occurs maintaining slopes. More humid climates lead to greater activity and probably greater slope decline. can also affect other features such as vegetation.

(8)

(c) Level 3

Three basic mechanisms of flowing , sliding and heaving can be illustrated by reference to soil creep, solifluction, rock and land slides as well as catastrophic mass movements. Human activities can affect these processes (particularly catastrophic mass movement) by excavation, construction, deforestation, impeding drainage etc.

(10 -8)

Level 2

Descriptive of types of movement rather than explanatory of the nature of such movements hence creep, slumps landslides will dominate. Human activities will seen as contributory to these processes .

(7- 5)

Level 1

Descriptive of instances of mass movement with a concentration on the catastrophic types of landslide etc . Processes involved will be implied rather than stated and human activities seen solely in catastrophic mode with little explanation.

(4 – 1)

Section C

9 Choose one country whose population policy you have studied in detail.

(a) Outline the government's priorities in its population policy.

As the syllabus specifies that the population policy studied ^{may} ~~should~~ comprise the two components, natural increase and migration, the outline here needs to cover both dimensions.
Max 5 for a one-dimensional answer. 7

ideally should include both

(b) Explain some of the difficulties of implementing the population policy.

Difficulties of implementing the policy could include such issues as,

- finance and funding
- personnel eg health workers or immigration officials
- practicalities of enforcing border controls eg USA/Mexico or in relation to refugee movements
- resistance to change and traditional attitudes to family size
- religious objections to birth control
- access to remote areas with higher birth and death rates
- literacy and language issues

8

(c) To what extent has the government been successful in its attempts at managing natural increase?

The assessment of success is for managing natural increase only and clearly depends on the country chosen. A full answer makes reference to changes in both the birth rate and the death rate and comments on extent, perhaps indicating different degrees of success for different elements of the population policy or in different areas

of the country eg urban/rural.

Candidates will probably:

- policy's
- L3 Develop a well-structured and convincing assessment of the success dealing with both birth rate and death rate, supported by effective and detailed use of the exemplar.
[8-10]
 - L2 Present a thoughtful and sound discussion of some aspects of the policy's success, but one which lacks development and balance.
[5-7]
 - L1 Show some knowledge of attempts to manage natural increase in the chosen country and describe these making little or no assessment of the extent of the policy's success.
[0-4]

Total: 25

10 (a) Outline the factors which influence a person's *migrability* (how likely they are to migrate).

Factors affecting migrability, may include,

gender, age, financial status, skills, aspiration, information, family ties, catastrophe, transport networks/availability, perception, obstacles etc.

Many of these factors operate in a complex manner,

eg skills: migrants come from low skills groups such as agriculture and high skills groups such as from education and medicine as 'brain drain'.

eg family ties: these may restrict movement if bonds are strong or encourage migration in circumstances such as crime, divorce or feuding or if relatives living in the receiving area offer a place to start.

Credit single ideas 1 and developed points 2 such that a full answer consists of at least four factors. **7**

(b) Using examples, describe the circumstances in which rural-urban migration is likely to occur in less economically developed countries (LEDCs).

A straightforward invitation to describe 'push' and 'pull' factors for rural-urban migration in LEDCs with appropriate exemplification.

For an answer dealing with either 'push' or 'pull' only max 5 **8**

No example - max 5

(c) Evaluate the impact of rural-urban migration on the rural areas themselves.

The impacts covered may be social, economic, political, environmental; immediate or longer term; positive and negative.

Candidates will probably:

- L3** Make convincing use of the example(s) chosen to produce a response with a strong evaluative thread which recognises a range of possible impacts in the rural source areas.
[8-10]
- L2** Develop an answer which shows a sound grasp of impacts but with limited detail about the rural areas and/or evaluation which is limited in development or expression.
Answers which are wholly negative (or positive) max 6
[5-7]
- L1** Present a superficial answer which is descriptive rather than evaluative or which only offers a framework.
[0-4]

Total: 25

- 11 (a) Give the meaning of the terms *functional zonation* and *vertical zonation* in relation to land-use in the Central Business District (CBD) and explain why each occurs.

Functional zonation: the dominance of one function over others so that observable clusters or associations exist 1

for an example 1

explanation: competition and/or comparison; mutual benefit and ease of working 2

vertical zonation: different users occupy different storeys of multi-storey buildings 1

explanation: differential bid-rent and ability to pay, different needs for contact with the public 2

Accept construction of site (e.g. Manhattan, Singapore) 7

(b) Describe some of the recent changes within the CBD of one town or city you have studied.

An invitation to use an exemplar in detail. Changes covered may be of any sort growth/decline; different sectors eg retailing, transport; relate to providers or users; private or public initiatives etc but need to stay **within** the CBD.

For an answer that deals with one change only max 4

8

(c) To what extent is it true that the changes described in (b) are evidence of the increasing pressures on the CBD?

Pressures may be of any sort eg traffic congestion; pedestrian congestion; lack of room for expansion; shortage of parking; pollution; increasing land costs etc. Other factors may be introduced if a counter-argument is pursued, perhaps admitting that the background is 'pressures' but that the urban authority is keen for comprehensive redevelopment, urban renewal, to increase revenues or enhance its own prestige.

Candidates will probably:

- L3** Produce an answer with a clear evaluative framework, using detailed material from the chosen CBD to demonstrate different types of pressure it experiences and introduce at least one other operative factor or consideration. **[8-10]**
- L2** Develop a sound answer in broad agreement with the question, exploring at least two different types of pressure on the CBD. **[5-7]**
- L1** Make an answer in which the consideration of extent is limited or absent and where the pressures on the CBD are simply described. **[0-4]**

Total: 25