

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

GCE Advanced Subsidiary and Advanced Level

**MARK SCHEME for the November 2003 question papers**

<b>9696 GEOGRAPHY</b>	
<b>9696/01</b>	<b>Paper 1 (Core Geography), maximum raw mark 100</b>
<b>9696/02</b>	<b>Paper 2 (Physical Geography), maximum raw mark 50</b>
<b>9696/03</b>	<b>Paper 3 (Human Options), maximum raw mark 50</b>

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*.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2003 question papers for most IGCSE and GCE Advanced Level syllabuses.

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

November 2003

GCE A AND AS LEVEL

MARK SCHEME

MAXIMUM MARK: 100

SYLLABUS/COMPONENT: 9696/01

GEOGRAPHY  
Paper 1 (Core Geography)

**MARK SCHEME**

**9696/1 Geography Core**

**November 2003**

**Section A**

**Hydrology and fluvial geomorphology**

**1. Fig. 1 shows the flow of water through a drainage basin system.**

**(a) (i) Name the water movement shown as A**

**(1)**

**(ii) Name the water movement shown as B.**

**(1)**

Q.1 (a) (i) A = infiltration (1)  
(ii) B = percolation (1)

**(b) (i) Describe two different conditions under which surface (overland) flow might take place.**

**(4)**

**(ii) Briefly explain the differences between surface storage and soil moisture storage.**

**(4)**

(b) (i) Any two different conditions viz. rainfall intensity exceeding infiltration capacity, antecedent soil moisture, impermeability of surface ( only one condition – no credit for more than one type of impermeability), infiltration excess flow (Hortonian) at slope bottom, lack of interception from vegetation.

**(4)**

(ii) Surface storage ( or depression storage) occurs where ppt is stored above the soil in puddles, depressions etc as water cannot infiltrate for one of reasons above . Soil moisture storage is infiltrated water that is held in the pores between soil particles or in capillaries within the soil.

**(4)**

## Atmosphere and Weather

2. Fig. 2 shows two methods by which air is uplifted.

(a) Name the two methods shown as A and B.

(2)

Q.2. (a) A is convergence,(1) and B is convection (1)

(b) (i) Briefly describe the processes that have brought about the uplift of air shown in both diagrams.

(5)

(ii) Describe the type of weather that might result from the uplift of air shown in diagram B.

(3)

(b) (i) Convergence is brought about by the global distribution of surface pressure ie movement of air from high to low pressure areas (eg ITCZ). Convection is caused by heating of air from below ie radiation from earth's surface. Air at the surface is heated , expands and becomes less dense.

(5)

(ii) If convection is sufficiently strong it will result in condensation and the formation of cumiliform cloud that could result in showers or even thunderstorms.

Also accept descending air, identified from diagram, with weather associated with stability and stratiform cloud.

(3)

## Rocks and Weathering

3. Fig .3 shows two types of activity found along plate margins.

(a) (i) Give two differences between the plate margins X and Y.

(2)

(ii) Give two similarities between the plate margins X and Y

(2)

Q.3. (a) (i) Differences are :- subduction of two oceanic plates as against subduction of continental and oceanic plate. Production of fold mountains as against island arcs. Melted plate margin producing island arc on top of oceanic plate rather than between

(ii) Similarities are :- convergent plate margins, subduction zones, oceanic trenches, rising magma.

Any two under each .

**(b) Give a brief explanation of the processes that have created the fold mountains, and ocean trenches**

(6)

(b) The asthenosphere provides a plastic surface upon which the lithospheric plates can migrate. Convective movements of molten magma bring about a collision of plates along destructive ( convergent ) plate margins. The nature of the plates will determine the type of material destroyed and the type of feature produced. In oceanic areas as one plate is subducted under another a deep oceanic trench is formed. Where a continental plate is involved in the convergence, sediments are forced upwards to form fold mountains.

(6)

4 The world map in Fig.4 shows infant mortality rates in 2000.

(a) (i) Give the meaning of the term *infant mortality rate*.

the number of babies/infants/accept children born 0

per 1000 [on map] 0 live births 1 who die before the age of 1/their first birthday 1  
2

(ii) Using Fig. 4, compare the levels of infant mortality in Africa with the levels of infant mortality in South America.

IMR is <sup>lower</sup> higher in South America than in Africa overall/<sup>higher</sup> lower in Africa than South America 1  
data support from Africa: 31-90, 91-150 and one area 150+ (Mozambique) 1  
data support from South America: split 31-90 and 11-30 (eg Chile, Argentina). 1 3

(b) Explain briefly the very low rates of infant mortality in many more economically developed countries (MEDCs).

This can be explained in terms of a wide range of factors, including:

level of economic development; government spending and investment in infrastructure, healthcare and education; quantity and quality of food supply; medical innovation and state-of-the-art neonatal technologies and care; personal affluence and living standards; health of mothers in pregnancy etc etc.

A full answer should cover the roles of the government 3 and the individual/family 2 and offer exemplar support. It is important that the material is directed to *infant mortality* and is not about death rates in general.

For an answer which simply expresses "the best of everything" max.2.

5

Total: 10

5 Fig. 5 is a model of the movements of the poor to and within a city, Alexandria, Egypt.

(a) (i) Identify the destinations of first movements to the city shown on Fig. 5. city centre slum areas; squatting areas; semi-informal housing areas (outside city boundary).

for one identification 0, for two 1 and for three 2

2

(ii) Describe the third movements inside the city shown on Fig. 5.

credit 1 three of: medium length; both inwards and outwards; varied destinations L/R; destination detail ie (margin of) rural areas and popular residential areas (R) or squatter areas and semi-informal housing (L) 3

(b) Suggest reasons why areas of semi-informal housing (shanties and squatter settlement) develop in many cities in less economically developed countries (LEDCs).

Reasons may include ideas including,

- demand outstrips the supply of "formal" housing
- economic opportunities are located in urban areas and attract migrant workers
- the rate of migrant arrivals exceeds ability of city authority to provide housing
- migrants (without jobs initially) need affordable shelter
- existence of informal areas encourages others to build
- networks of family, tribe or village ties and support offer new arrivals a place to start
- cities offer tracts of less desirable land as locational opportunity eg along railway lines, on steep slopes, even, famously, in cemeteries (Cairo)
- workers need access to work opportunities without paying for transport
- urban authorities at least tolerate and may improve/service such areas

Credit single ideas 1 and developed or illustrated points 2

5

**Total: 10**

## Section B: The Physical Core

### Hydrology and fluvial geomorphology

6. (a) (i) Name three methods by which rivers transport their load.

(3)

(ii) Briefly describe turbulent flow and helicoidal flow.

(4)

(b) Draw labelled diagrams to illustrate the formation of :-

- (i) a delta,
- (ii) a waterfall.

(8)

(c) Explain how urbanisation can affect river channel flows.

(10)

6 (a) (i) Dragging or rolling material along channel bed; saltation (jumping) of particles; suspension of light material; solution. Any three.

(3)

(ii) Turbulent flow is where velocity changes over short distances on rough or steep channels. Helicoidal flow is a corkscrew flow that swings from side to side in meandering channels. 2 marks each. annotated diagrams will suffice.

(4)

(b) 4 marks for each diagram to illustrate the formation of:-

- (i) triangular accumulation of sediment built into sea( lake) with distributary channels.
- (ii) resistant rock in long profile with plunge pool.

(8)

(c) Urbanisation can produce flooding through the increased run off via drains and from impermeable surfaces. This means water arrives more quickly and in quantities such that the channel cannot cope. This can lead to engineering of the channel ( deepening, flood walls etc). All tend to contribute to a more flashier river discharge. Good answer will cover aspects of channel flows (8 –10) . Others will concentrate upon impermeable surfaces and overland flow leading to flooding.(5-8). Weaker responses will get little further than flooding (1-4)

(10)



## Atmosphere and Weather

7. (a) (i) Briefly explain how radiation cooling can occur at the earth's surface.

(4)

(ii) Name three weather phenomena that can result from radiation cooling at the earth's surface .

(3)

(b) (i) Draw a labelled diagram to show why polar areas receive less solar radiation than equatorial areas.

(3)

(ii) Why are temperature ranges greater over land than over sea ?

(5)

(c) Explain how urban heat islands develop. To what extent can urban heat islands influence the weather experienced in cities ?

(10)

7. (a) (i) Radiation cooling at the earth's surface occurs due to the loss of long wave radiant heat from the ground during the night. The surface loses heat faster than the air above cooling the lowest layers of the atmosphere. This is particularly evident on clear nights ( anticyclones) where the radiant heat is not reflected back by clouds etc

(4)

(ii) Dew, frost (and any variant eg hoar frost ,rime etc), mist , radiation fog.  
Any three.

(3)

(b) (i) Simple diagram to show tilt of earth's axis ( or equinox position) , greater surface area and atmosphere at poles compared with equatorial areas.

(3)

(ii) Land heats quicker and cools faster than the oceans. Hence land is colder in winter and hotter in summer for any given latitude Oceans are heat reservoirs (thermal capacity) and circulate heat via ocean currents . Effects of land sea breezes also acceptable, but not required.

(5)

(c) Urban heat islands are due to the ability of buildings to absorb insolation and release it at night giving higher night time temperatures in central urban areas. There is also a degree of anthropogenic heat generated . The effect is not only in raising temperatures but also in producing increased convection ( leading to ppt) lower relative humidity and can reduce the incidence of mists etc. Good answers will concentrate on the urban heat island and its effects (8 –10). A more common approach will be to launch into a general and rather unspecific account of urban

climates, largely unlinked to heat island. (5-8). Others will merely associate urban areas with pollution and industrially and domestically generated heat. (1-4)

## **Rocks and Weathering**

**8. (a) (i) Define the weathering processes *wetting and drying* and *heating and cooling* (*insolation weathering*).**

**(4)**

**(ii) Describe the possible effects on rocks of one of the processes defined in (i).**

**(3)**

**(b) (i) Draw a diagram of a slope that has convex, rectilinear and concave elements. Label each slope element on the diagram**

**(3)**

**(ii) How might such a slope develop ?**

**(5)**

**(c) To what extent can both physical and chemical weathering be said to be controlled by climate alone?**

**(10)**

8. (a) (i). Wetting and drying is the process of the ingress and absorption of water and its subsequent evaporation in suitable climatic conditions. Insolation weathering results from large diurnal temperature change resulting in expansion and contraction.

**(4)**

(ii) Wetting and drying can lead to differential expansion and hence weathering particularly in shales and clay.

Insolation weathering leads to stresses that eventually weaken the rock. Most impact is upon surface layers a few mm in depth leading to breaking away of platy fragments ( exfoliation) Different colours and types of mineral may expand at different rates leading to granular disintegration.

**(3)**

(b) (i) Diagram should show rounded summital convexity, straight rectilinear slope element and concave slope foot. Each slope element should be clearly identified.

**(3)**

(ii) Convex slopes can be structural but are more usually the result of transportation. Material is moved downslope by processes of rainwash and soil creep. Generally in climates favouring slow mass movements. Rectilinear elements are usually debris or repose slopes. The angle will depend on the size of the debris. Often erosional slopes occur where material is being transported downslope. Concave

elements can be the result of deposition ( eg alluvial fans) or thin layers of alluvium ( pediments. essentially these are slopes of transport.

(5)

(c) Climate plays an important element in both physical and chemical weathering (e.g. freeze thaw and insolation weathering ). It also supplyies water for chemical processes and heat to increase the rate of reaction. Rock properties, however, are of equal signficance in providing joints and bedding planes for ingress of moisture for both chemical and freeze thaw. Mineral and chemical composition of rock are of great importance for chemical and thermal fracture. Good answers will try to argue a case citing climatic regions for weathering ( Peltier diagram) and attempting some balance of influences. (8 –10). Moderate responses will tend to list the different influences on particular processes eg freeze-thaw, carbonation etc. (5-7). Others will merely describe particular processes without much insight into climatic or other influences.(1-4).

## Section C

- 9 (a) Explain the meaning of the terms *underpopulation*, *optimum population* and *overpopulation*.

The terms express the relationship of,

the number of people in an area relative to the amount of resources 1

at a given level of technology 1

with *overpopulation* being too many people for the available resources 1

*underpopulation* being too few to make full use of them 1

and *optimum population* being the balanced/equilibrium situation 1

which can achieve the highest living standards 1

for some expression of the dynamic relationship 1

eg as resources increase overpopulation is averted or if population increases in an underpopulated area, perhaps by immigration, living standards rise.

A diagram may help to express this. No credit for examples unless they make one of the above points.

7

- (b) Describe the evidence of overpopulation in one or more overpopulated areas you have studied.

The area(s) chosen may be at any scale but the level of exemplar detail will, in part, determine the quality of the response (cf "in India").

Better answers will demonstrate not simply that conditions are "bad" but that population has outstripped resources eg unemployment and underemployment; overcrowding; failure of infrastructure; over-cultivation; land fragmentation etc.

Suggest credit socio-economic **evidence 4**, physical/environmental **evidence 4**

8

Some variation allowed in mark allocation for good evidence in only one category

- (c) **To what extent may attempts to reduce the birth rate help to solve the problem of overpopulation?**

The syllabus section is entitled Population-resource relationships and encourages candidates to study both elements. As such, whilst a number of approaches are possible it is likely that candidates will argue that whilst seeking to reduce the birth rate and thus reduce NIR is fundamental (perhaps in relation to Stage 3 of the demographic transition model and the time delay after the fall of the death rate in Stage 2), it is not sufficient as resources also need developing. Candidates may also be aware of schemes to encourage emigration eg within Indonesia.

**Candidates will probably:**

- L3 Produce an assured assessment outlining both the contribution of birth rate reduction and the need for resource development/other action, with good exemplar support for both dimensions. [8-10]
- L2 Offer a sound but limited assessment, likely to be directed more to the population (birth rate) dimension than to resource development, with some exemplar support. [5-7]
- L1 Take a largely descriptive approach, probably focussing on attempts at birth rate reduction without addressing the issues of extent and of overpopulation's link to resources. [0-4]
- Total: 25**

- 10 (a) **Suggest reasons why urban-rural migration may occur in less economically developed countries (LEDCs).**

An area of which centres and candidates are growing in their understanding. Likely reasons include,

- retirement of workers back to farm, tribal land or home village
- failure of rural-urban migrants to find work/shelter/betterment
- high class residents or urban elites reject negative externalities of urban areas
- business-related moves eg entrepreneurs or job relocations
- forced movements

Do not credit circulation (ie moves of less than one year's duration such as holidays)

Credit individual **reasons** up to 3 marks if well-developed and/or illustrated, such that a full answer consists of the identification of at least three different **reasons** 7

- (b) Using examples, describe the push factors in rural areas in LEDCs that may result in migration to urban centres.

A vast array of **push factors** may be produced; suggest that balanced answers score highest. Of the four dimensions (social, economic, environmental, political) credit responses in one dimension max.3, two max.5, three max.7.

8

- (c) Evaluate the impacts of rural-urban migration in LEDCs on the rural area(s) left by the migrants.

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

**Candidates will probably:**

- L3 Produce a clear evaluation, recognising a range of possible impacts, both positive and negative, in the rural source areas, supported by the convincing use of one or more example(s). [8-10]
- L2 Develop an answer which shows a sound grasp of impacts but with limited exemplar detail 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, which may recognise only one or two impacts, or which remains a framework. [0-4]

Total: 25

- 11 Choose one example of an inner city area in a more economically developed country (MEDC).

- (a) Describe the nature of the area you have chosen.

The nature of the inner city may be interpreted broadly. No credit for name or location.

Four dimensions may be used: physical/environmental; social; economic; political.

For one dimension max. 4, a full answer may consist of describing two or more dimensions

7

**(b) Suggest reasons for the inner city's problems.**

A variety of **reasons** may be seen, depending on the case(s) chosen, but the heart of the answer is that the inner areas of MEDC cities were built in the 19th century to accommodate factory and transport workers when personal transport was limited.

In recent decades the factories have closed completely or moved to LEDCs and peripheral urban locations, whilst improved transport systems and increased affluence and car ownership have allowed those who are able or choose to live further out in suburbs or, through counter-urbanisation, villages. This has left in the inner city areas those who are unable to get out (or who choose not to eg ethnic minority communities) and those who are "dumped" there by local authorities eg single parents, the disabled, ex-offenders etc.

This may have been compounded by a lack of finance/will to intervene, by the failure of some early initiatives in urban renewal eg the high rise developments of the 1960s, by the shift outwards of services, notably retail, and by the low tax revenue/lack of votes in the inner city. Reference may be made to the influence of negative images/perception. **8**

**(c) Assess the extent to which attempts to improve the inner city have been successful.**

Using the chosen case(s) candidates need both to introduce the attempts made and to assess their success. Again, the recognition of differential success for different groups may be an indicator of quality. Comprehensive answers are not needed for high awards.

**Candidates will probably:**

- |           |   |                  |
|-----------|---|------------------|
| <b>L3</b> | Develop an assured response distinguished by its structure, the range of attempts covered, good inner city detail and the scope of assessment offered.                  | <b>[8-10]</b>    |
| <b>L2</b> | Make a sound but limited assessment of attempts at improving the inner city area(s) chosen but lack the factual knowledge, overview and skills to develop this further. | <b>[5-7]</b>     |
| <b>L1</b> | Have only limited knowledge of the attempts and their success, and lack the vocabulary or skills to offer assessment. A simple and descriptive approach.                | <b>[0-4]</b>     |
|           |   | <b>Total: 25</b> |

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

November 2003

GCE A LEVEL

MARK SCHEME

MAXIMUM MARK: 50

SYLLABUS/COMPONENT: 9696/02

GEOGRAPHY  
Paper 2 (Physical Geography)





MARK SCHEME GEOGRAPHY ADVANCED PHYSICAL OPTIONS

9696/2 NOVEMBER 2003

Tropical Environments

1. (a) Explain how and where monsoons occur and describe the weather characteristics associated with monsoons.

(10)

- (b) Explain the nature of nutrient cycles found in the Tropical Rainforest and in the Savanna. Why are nutrient cycles important in explaining the operation of tropical ecosystems?

(15)

1. (a) Monsoons are literally seasonal winds and are caused by the impact of differential heating of continental areas and oceans. This affects the pattern of pressure belts which impact upon seasonal wind patterns. They are located in the sub tropical areas of high pressure and are complicated, as good answers will reveal, by the shifting of the ITCZ.. The strongest monsoonal effects are felt over India and Pakistan, SE Asia and China but they also affect east and parts of west Africa and N. Australia. As warm and moist air is attracted to low pressure systems developed by the heating over land seasonal heavy rainfall can develop.

Accept **one** area for full credit.

*Max 6 on either explanation or description.* (10)

- (b) Level 3.

Nutrients are the chemical elements needed by plants and animals within ecosystems. They cycle between soils and vegetation within systems and can be shown by Gerschemel diagrams distinguishing stores and flows as well as inputs and losses to the cycle. Differences between the two cycles should be demonstrated as should their importance in sustaining activity within the ecosystems. These answers might well allude to the nature of the balance that exists within the nutrient cycles that can be easily disturbed by edaphic or human agency

(15 –12)

- Level 2

A basic appreciation of the two nutrient cycles, even if some details of flows etc are less than accurate. The significance of the flows will be understood in general terms even if this is mainly expressed through their disturbance by human activities.

(11-8)

- Level 1.

For a pass some understanding of the nature of the nutrient cycles should be evident even if it is expressed through rather crude block diagrams or pictograms. The second

part will probably be seen only in terms of the destruction of the biome by human intervention.

(7 -1)

**2. Fig. 1 shows the formation of inselbergs.**

**(a) Explain the theory of inselberg formation shown in fig1.**

(10)

**(b) Describe the impact of human interference upon the soils, natural vegetation and nutrient cycle of one tropical ecosystem.**

(15)

2. (a) This theory of inselberg formation is one that relies upon the occurrence of deep chemical weathering along a basal surface of weathering. This is most effective in areas of jointing etc. Subsequent stripping of the regolith reveals the rounded nature of the inselberg. Its shape is further accentuated by the curvilinear jointing produced by exfoliation consequent upon the removal of the overburden.

(10)

(b) Level 3.

An opportunity to use a case study of either the TRF or of the Savanna, which are the most likely ecosystems chosen. Attention will be focussed on the elements within the question. Soils will be seen as subject to leaching, degradation and erosion if vegetation is removed by human activities. It is, however, possible for fertility to be enhanced by the addition of fertilisers etc. Vegetation also will be largely viewed in terms of its destruction or degradation into secondary growth, although these are not the only possible scenarios. Good candidates will use the nutrient cycle as a means of explaining the processes that bring about these changes.

(15 -12)

Level 2.

A more limited appreciation and may well be generalised in approach although examples should be cited. The account will largely view human intervention as destructive but there will be some attempt to explain the processes and their impacts.

( 11-8)

Level 1

Seen largely as an opportunity to launch into the destruction of the TRF with attendant global impact. Alternatevely, candidates may develop the desertification and/or erosion of soils in the Savanna after clearance and overgrazing etc. Little attempt will be made to explain process or display any appreciation of the nature of ecosystems.

( 7-1)

**Coastal Environments**

**3. (a) Explain how waves can transport and deposit sediment in coastal areas.**

(10)

**(b) With the help of diagrams, describe the features of three different types of coastal depositional landform and explain the formation of each.**

(15)

3. (a) Waves can transport sediment that has been produced by marine erosion or from rivers; this is achieved by carrying light material in suspension or pushing it along beaches (beach drift) and coasts (longshore drift). The orbital motion of waves and tidal currents help prevent the material being deposited. Deposition occurs where velocity is reduced as waves break (swash) on beaches or where there is a shallowing of the coast or a change in direction of the coast. All lead to a reduction in the velocity of waves and hence their ability to carry sediment.

(10)

(b) Level 3

Spits, bars and beaches would be the most common although dunes and coastal marshes would also be acceptable. Diagrams can be used to good effect, particularly in supplying the main elements of the descriptions of the features. Explanation of the formation of these features will be accurate in these answers although, with three features to deal with, they will be fairly brief.

(15–12)

Level 2

Less well executed diagrams leading to some deficiencies in the descriptions of the features. Formation will be more generic and generalised rather than specific eg LSD and waves “dropping” sediment. Both aspects of the question will be attempted, albeit unevenly.

(8–11)

Level 1

Diagrams will be weak and some coastal features absent. Descriptions will be vague and generally unsubstantiated by any grasp of the processes involved in their formation.

(7–1)

**4. Fig 2 shows the influence of lithology (rock structures) on cliff profiles.**

**(a) Explain how each cliff profile has been affected by the nature of rock structure.**

(10)

**(b) Explain the problems of the sustainable management of a stretch or stretches of coastline you have studied.**

(15)

4. (a) The profiles of the cliffs should be related to the aspects of the rock structures. This basically concerns the slope of the strata and the jointing and bedding planes. Hence steep profiles can be related to horizontal or seaward dipping strata. Slipping along bedding planes will maintain the angle of slope. The angle is in the tail in the slope over wall which is produced by differential weathering and erosional activities acting on different geological structures.

General guide 5 x 2

(10)

(b) Level 3

Sustainable management will be understood as a concept and applied to a case study. Different problems might be illustrated by reference to different stretches of coastline but the emphasis will be on the problems. This may involve the conflicts between the demands of human uses of coastlines and the impacts upon the natural processes of marine erosion/deposition etc. Sustainability is rarely expressed through the agency of hard engineering.

( 15 –12)

Level 2

Sustainability and problems will probably feature less in the examples/case studies chosen. This will revolve more around attempts to preserve or protect the coastlines and therefore produce more on hard-engineering solutions

(11 –8)

Level 1

Unspecific accounts that either produce a catalogue of human activities on coasts vaguely connected to their protection or even destruction. Little attention will be focussed on any problems or upon any aspect of sustainability.

( 7 –1)

### **Hazardous Environments**

**5. (a) Explain the nature and causes of earthquakes.**

(10)

**(b) Using examples show why earthquakes can be hazardous and describe methods that can be used to limit their effects.**

(15)

5.(a) Earthquakes are a shock or series of shocks consequent upon movements of crustal rocks generated at a focus within the crust or mantle. They are particularly associated with the margins of tectonic plates although through fault lines

etc their effects can be felt some distance from the actual margins themselves. Some description of the actual incidence of an earthquake is acceptable, but the causes should be stated.

(10)

(b) Level 3

Earthquakes are hazardous in areas of dense populations in close proximity to major fault lines ( e.g. San Andreas, Anatolian). The shock and after shock impacts can be compounded by local geological conditions ( eg Californian Basin or Northern Turkey) landslides etc or by inadequate building techniques. Limitation of effects can be cited from California and Japan where such methodologies are affordable. ( deep foundations, reinforced buildings, early warnings, special service supplies etc) otherwise education and evacuation may be all that can be achieved.

(15 –12)

Level 2

More emphasis on the actual effects of a particular earthquake ( eg Kobe or San Francisco) with the hazardous elements by implication. methods to limit effects will be largely those associated with hard engineering .

( 11 – 8)

Level 1

Basic earthquake account of the destruction of buildings followed by a simplistic account of “buildings on springs” etc. Little relationship of damage to nature of the hazard.

( 7-1)

**6. Fig 3 shows a tropical storm (hurricane) approaching the coast of Florida (USA).**

**(a) Describe the main features of the tropical storm and explain how it might have developed.**

(10)

**(b) Describe the effects that such a tropical storm might have upon coastal areas. How and to what extent can such hazards be successfully predicted ?**

(15)

6. (a) Good answers should describe the storm in terms of the patterns shown in the diagram ie the calm eye and the radiating cloud patterns, close patterns of isobars with low pressure at centre and circulating winds, curving track etc. Most will, however, go for a more generic explanation ie high sea temperatures, coriolis force central downdraft etc.

( 10)

(b) Level 3

High winds, torrential rain will hit coastal areas with considerable force In themselves they can cause considerable damage but on low lying coasts are compounded by

coastal flooding and high seas. Additional and often long lasting effects have been through river flooding and landslides ( e.g. Meso- America) particularly where the path takes storms across islands. If the hurricane goes inland in USA it will quickly lose its force, but will have far more effect if it travels along the coast. Hurricanes cause more loss of life and damage than other hazards so have had considerable investment in places like USA in their forecasting and prediction. Even so precise courses are still difficult to predict and hence warnings and remedial action can be difficult. In LEDCs little is available.

( 15 –12)

Level 2

Less use made of diagram and a more generalised approach to the effects of hurricanes ( winds, rain etc) Prediction will largely be seen in terms of forecasting of tracks and intensity.

( 11 –8)

Level 1

Basic and outline accounts of the passage of a hurricane with little attempt to produce any methodology of prediction or forecast.

( 7 –1)

### **Hot arid and semi-arid environments**

**7. (a) Describe the nature of hydrological regimes ( water flows and stores) in hot arid areas.**

(10)

**(b) Using examples, explain how water supplies and flows can affect the soils, vegetation and human occupation of hot arid environments**

(15)

7. (a) With low levels and infrequent inputs into the system both stores and flows tend to be minimal and episodic. Exotic rivers (e.g. Nile) do bring water into these areas but most channel flows are at best intermittent. ( wadis etc). Sheet flow will occasionally occur after rare but intense convectional storms. Ground water supplies are limited and often at depth. Thus much water movement within the soil is upward due to evapotranspiration. Fossil water supplies do exist and will occasional occur at the surface ( oases).

(10)

(b) Level 3

The impact upon soils of lack of moisture and episodic rain is to produce upward movement , salt and other crusts, which can facilitate sheet wash Soils lack both structure and profile. Vegetation shows adaptation to deep and episodic water supplies through various xerophytic and other mechanisms. Human activities are similarly

inhibited. low density occupation, nomadic grazing and reliance on fossil supplies in wells or oases. Some may give examples of attempts to overcome these limitations by irrigation etc but this is not a requirement of the question.

( 15 –12)

Level 2

Soils will be rather skimpily addressed with some reference to salinity and lack of structure, although vegetation adaptations will be more fully described albeit in somewhat unspecific terms. Human occupation will be similarly described although there may be a tendency to lose sight of the hydrological regime.

( 11 –7)

Level 1

Very little concept of desert soils or their relationship to hydrology. Vegetation will be described in terms of the plant type (e.g. cactus). Human occupation may take up much of the response, but will tend to be fanciful and unrelated to hydrological regime

( 7 –1)

**8. Fig 4 shows some landforms found in the Southern Sahara.**

**(a) Using diagrams , describe and briefly explain the formation of any three of the landforms shown on fig 4.**

**(10)**

**(b) What evidence can be used to suggest that many desert landforms are the product of a much wetter past ?**

**(15)**

8. (a) Plenty to choose from but most will probably choose the two dune systems and yardangs. Whichever is chosen, the diagrams should describe the feature ( ie scale) and there should be some indication ( albeit brief) of the processes that have brought about their formation.

(10)

(b)

Level 3.

Much of the evidence resides in the diagram , which should be employed to good effect in good answers. Mega Chad can be used as evidence of Pleistocene pluvials as can the well developed systems of intermittent rivers and extensive wadi networks. None of these are likely to be the product of present levels of intermittent rainfall. Even the extensive sand seas can be seen as evidence of Pleistocene deposition. Other

evidence can be cited such as the large pediments, mountain fronts etc of internal basins as well as archaeological material.

( 15 -12)

#### Level 2

The evidence of the diagram will be utilised to a lesser extent and a more general type of wetter past/ drier present will be employed ( ie wadi systems, internal basins etc) Archaeological evidence will also feature more prominently.

( 11 -8)

#### Level 1

Only passing references to extant landforms as evidence although general comment re larger lake shores may be noted. It will be unclear as to how these reflect past pluvials. More attention will be to cave paintings, hippo bones etc.

( 7 -1)



**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**November 2003**

**GCE A LEVEL**

**MARK SCHEME**

**MAXIMUM MARK: 50**

**SYLLABUS/COMPONENT: 9696/03**

**GEOGRAPHY**  
**Paper 3 (Human Options)**



## Production, location and change

### 9 Choose an example of an agricultural holding which has experienced agricultural change.

what is acceptable as an **agricultural holding** by examiners needs to be agreed for 2 national scale example, not pursuing 2 holding specifically. Max 4

#### (a) Describe the reasons for, and the nature of, the changes in its agriculture,

Suggest credit **reasons** (food demand; profit-motive; government incentives; influence of friends/family; newly acquired skills/knowledge etc.) 5

and **nature** (scale; land; labour; capital; markets, probably expressed in crops, methods, management etc) 5

10

#### (b) To what extent can the changes described in (a) be considered successful?

Success may be differential between enterprises, in the short- and long-term or between groups of people eg the owner, labourers losing jobs through mechanisation etc. It may be measured in increased output, increased productivity per unit area or per worker, perhaps by the cultivation of previously marginal areas or in terms of enhanced wellbeing.

Candidates should have an appreciation of some of the difficulties of the management of agricultural change both in process and in outcome eg environmental degradation, issues in under-capitalisation, problems in the maintenance of equipment etc. although much will depend on the case studied, from which good detail may be expected.

#### Candidates will probably,

**L3** Demonstrate good detailed knowledge of the chosen holding, and a perceptive overview of agricultural change such that success is explored in several ways or dimensions (social, economic, environmental) within a clear context of assessment.

[12-15]

**L2** Show reasonable and sound knowledge of the outcomes of agricultural change for the holding chosen but offer an assessment of success which is limited in overall conviction or in breadth of understanding. National responses, not about 2 holding, allow to top L2

[7-11]

**L1** Take a descriptive, rather than an evaluatory approach, perhaps simply stating whether the changes were a success or not. Lack the material, or the time, to make an effective response.

[0-6]

**Total: 25**

- 10 (a) (i) **Explain the meaning of the terms *economies of scale* and *diseconomies of scale* in industrial location.**

*economies of scale* are the factors that cause average costs to be lower in large-scale operations than in small-scale ones 1

there are two types: *internal economies* affecting individual firms eg through specialisation, bulk-buying, spreading fixed costs over larger output 1

and *external economies* which benefit industries or industrial areas eg through a specialised labour pool, specialist suppliers at lower costs etc 1

*diseconomies of scale* operate where being large brings inefficiency and higher costs 1 eg through slow decision-making, unwieldy administration etc

4

- (ii) **Fig. 5 shows employment in the major *maquiladora* centres along the United States/Mexico border in 1996.**

**A *maquiladora* is an assembly plant to which components and materials from the United States are imported duty-free, providing the products are then exported.**

**Suggest reasons for the concentration of *maquiladoras* in the border zone.**

As it is unlikely that candidates will have studied these assembly plants, an interpretative response to the map is anticipated, **reasons** may include,

- MEDC meets LEDC to mutual advantage
- labour costs are lower in Mexico
- legal restrictions are looser eg on hours of work, wage levels, working conditions, environmental controls
- government involvement (Border Industrialization Programme 1965)
- transport costs are minimised by just being over national border
- contact with US is maintained more easily than at greater distance
- cumulative causation
- external economies of scale operate (allow 1 only given (i) ) etc

Credit single points 1 and developed points 2 such that a full answer consists of at least three developed points.

6

**(b) Assess the relative importance of different factors in the location of one manufacturing industry you have studied.**

Some flexibility on scale here, to allow candidates to use their material to advantage. It may be that an industry, particularly if it displays changing locations over time has more potential, but one detailed case study of one factory is fully sufficient.

The syllabus lists locational factors as; land, labour, capital, markets, materials, technology, economies of scale, inertia, transport and government policies.

**Candidates will probably,**

- L3** Produce a well-organised assessment distinguished by its clarity, skills basis, detailed knowledge of the industry or plant chosen and a high level of understanding of dynamic location decision-making. **[12-15]**
- L2** Develop a sound response which may be limited in the number of factors considered, in the detail of the case chosen and/or in the level of assessment made. **[7-11]**
- L1** Offer a few simple observations, which may not be easily applicable to any specific industry or single plant. Take a descriptive approach where assessment may be perfunctory and the relative roles of different factors remain unclear. **[0-6]**

**Total: 25**

## Environmental management

- 11 (a) **Describe the environmental impacts of the production, transport and use of fossil fuels (excluding nuclear power).**

Candidates need to mention coal, gas and oil for full marks; but the response may concentrate on two of these.

Suggest credit **production 3, transport 3 and use 4**. No credit for impacts on personal health and wellbeing.

the best quality answers should recognise **impacts of use** at the local and global scales (global warming and acid rain)

10

- (b) **Assess the extent to which the use of nuclear power may be considered sustainable.**

Sustainability is the ability to meet current needs without compromising the ability to meet the needs of future generations. Nuclear power is therefore an interesting concept because of its vast energy potential, high demands on initial capital, technology and skills levels and the associated safety issues (transport, power generation, wastes, accidents).

**Candidates will probably,**

- L3** Produce an assured answer, well-founded in knowledge of examples and showing a good understanding both of its nature and of the concept of sustainability. Offer a high level of assessment. **[12-15]**
- L2** Develop a reasonable response which goes only part way to addressing the issues of extent and of sustainability and which may show limited knowledge of (or limited accuracy about) nuclear power as an energy source. **[7-11]**
- L1** Make a poor, and perhaps simply descriptive, response to the question showing little robust knowledge of nuclear power and a poor grasp of sustainability. **[0-6]**

**Total: 25**

12 (a) Fig. 6 shows the rate of change in forest area plotted against the rate of change in arable area, for selected countries in three continents.

(i) Describe the relationship shown in Fig. 6 between the changes in forest area and the changes in arable area.

main scatter of points (lower RH ) shows shrinking forest and expanding arable 1  
 these are all LEDCs 1 or include Africa and Asia  
 Europe and MEDCs show mainly (small) + rates of change in forest and  
 (small) - rates of change in arable 1  
 beyond this no clear pattern/significant anomalies and outliers 1 4

(ii) Explain the meaning of the term *deforestation*. Suggest reasons why deforestation occurs.

*deforestation* is the complete removal of forest (and woodland) areas or trees 1  
 at rates faster than natural regeneration 1 or by cutting/burning

credit four different reasons 1 eg for fuelwood, extension of cultivation, lumbering, mining, HEP provision; or may be expressed in terms of pressure eg increased food demand or because of the action of TNCs, poverty/ignorance etc. 6

(b) With reference to examples you have studied, assess the effectiveness of attempts to control water pollution.

Candidates may use examples of fresh or seawater for any scale or environment.

There are three elements needed, responses should give details of:

- \* the examples of water pollution chosen (location, source(s), impact(s))
  - \* the **attempts** (what, when, how, who by, how funded etc)
- and an assessment of **effectiveness** indicating success/failure with reasons.

**Candidates will probably,**

**L3** Produce a response distinguished by its balance across the three elements, by its overall perspective, by the level of detail offered and by the positive and negative aspects of the assessment given. [12-15]

**L2** Have a reasonable level of knowledge of water pollution and of the attempts to control it but lack the overall understanding and/or the evaluative skills to develop the answer fully. [7-11]

**L1** Make a limited attempt at the question, perhaps ignoring one element entirely and take a descriptive rather than an evaluatory approach. Responses which digress into other forms of pollution, or which remain general and not appropriately exemplified, remain in this level. [0-6]

**Total: 25**

**Global interdependence**

- 13 (a) (i) **Give the meaning of the term *tariff*. Explain the role of tariffs in international trade.**

a tariff is a tax or a duty 1 charged/put on (the value of) imports 1  
 the role is to increase the price to the consumer making imports less competitive,  
 while protecting domestic goods 2 4

- (ii) **Table 1 gives information about tariffs agreed by the World Trade Organisation on products from less economically developed countries (LEDCs). Describe the main features of the tariff data in Table 1.**

For comparison by the nature of the products 3:

tariffs increase with product complexity, 1  
 raw materials lowest; semi-manufactures intermediate; finished products highest 1  
 any other observation 1 eg the division between industrial products/products based  
 on natural resources is less clear

for comparison between the time periods 3:

all tariffs fell by 1995 / were higher in the mid 1980s 1  
 an illustration or data to support this 1  
 any other observation 1 eg loss of differential (2.0/2.0 RMs and SMs in lower data set)  
 6

- (b) **Describe and explain changes in the international trading patterns (imports and exports) of one country since 1960.**

Straight from the syllabus, but allow some flexibility on the 1960 dateline as centres may not have material for that date. Should be straightforward after (a)'s demands.

**Candidates will probably,**

- L3** Develop a high quality and quite detailed description of changes in imports and exports in the time period, notable for its dynamic tone and for the broad base to the explanation offered. Whilst fully comprehensive answers are not required for L3 awards it will impress by its links to economic sectors and appeal to other factors. **[12-15]**
- L2** Make a generally sound attempt at the question. Although it may not be balanced between imports and exports and/or description and explanation, the response conveys a satisfactory understanding of the trends and their underlying reasons. **[7-11]**
- L1** Find it hard to provide sufficient detail of, or more than a few isolated or general reasons for the trading pattern chosen. May ignore imports or exports, or provide a static snapshot rather than change. **[0-6]**

**Total: 25**

14 (a) **Why have some parts of the world experienced much greater tourist development than others?**

Factors operating may include differences at local, regional or international scales, in,

- home demand for tourism, within MEDCs largely
- location in relation to tourist origins eg Caribbean for US market, Mediterranean for northern Europe, SE Asia for Japan/Australia
- natural environments
- heritage sites
- climate
- government investment and policy
- cumulative causation
- media coverage
- cultures
- transport infrastructure
- political regime, stability/instability
- role of MNCs and tour operators
- exchange rates

For a response which in considering **some areas**, omits **others**, max.6.

10

(b) **'Take nothing but photographs. Leave nothing but footprints.'** (A sign in Sikkim, North India.)

**Describe, and explain the recent trend towards, forms of sustainable tourism.**

Candidates should **describe** one or more **forms** such as eco-tourism. To **explain** this, mention should be made of both demand and supply sides.

The explanation of the trend resides in such ideas as the growing damage to and degradation of tourist destinations, the stagnation and decline experienced and growing concerns (social, economic, environmental, political) about the impacts and unsustainable nature of mass tourism and package tourism.

Beyond this reaction there is the positive change in demand and fashionability as tourists seek the new and innovative; are tired of traditional forms eg sun, sand and sea; and are more "green" in their choices and interests. Governments may also encourage and promote sustainable tourism.

**Candidates will probably,**

**L3** Show a high level of awareness of the trend towards sustainable tourism and a good grasp of the concept of sustainability. Provide an answer which is balanced between description and explanation, offering at least two examples of sustainable initiatives. **[12-15]**

**L2** Make a reasonably sound attempt, but one which may not give much attention either to the description or the explanation required. Show knowledge of at least one example of sustainable tourism, probably with a restricted understanding of sustainability as a concept. **[7-11]**

**L1** Have little knowledge and understanding of sustainable tourist development and produce a thin attempt in which description and explanation may be confused, or from which one element may be absent. Fragmentary or largely irrelevant responses remain in this level. **[0-6]**

**Total: 25**



**Economic transition**

15 (a) **Fig. 7 shows world variations in GNP (Gross National Product) per person.**

(i) **Describe one advantage and one disadvantage of using GNP per person to express inequality.**

credit one **advantage** and one **disadvantage**, simple point 1 developed point 2

eg statistic readily comparable internationally; indicator of overall development; average figure hides internal inequality eg elite/poor, urban/rural; too dependent on role of manufacture; quality of life a different issue etc. Cannot be used at subnational scale.

4

(ii) **To what extent may a North-South pattern be seen in Fig. ?**

simply to a large extent, a N-S pattern is highly visible 1

support from the North 2

support from the South 2

the position of Australia/NZ as a discriminator 1 or Brandt's "North"

May answer globally, or perhaps with reference to differentials within continents 6

(b) **Explain the need for social development. Describe the aims and character of attempts you have studied to improve social wellbeing.**

Social development is that which relates to society, of which the broadest view may be taken here (eg gender, rural/urban, families, literacy, education, training, family planning, justice, crime, advocacy, citizenship, minorities, recreation etc)

Social development is needed for a variety of reasons, economic development not being "enough" in itself and because a society may not develop/modernise "naturally". In particular there may be oppressed groups eg children, women, minorities, deserving particular help. Government priorities are wisely both economic and social because of the interaction of the two eg in the areas of literacy and skills training. Accept an 'umbrella' attempt of several elements.

**Candidates will probably,**

**L3** Develop an assured response, which has quite a broad view of the need for social development and describe in detail the aims and character of at least two contrasting attempts to improve social wellbeing. Make clear the links between economic and social development.

[12-15]

**L2** Provide an answer which goes part way to explaining the need for social development. Have limited knowledge of the aims and nature of attempts to improve social wellbeing. For a one attempt response max.10. [7-11]

**L1** Offer a loose response which shows a weak grasp of the concept of social development and fragmentary knowledge of an attempt or attempts at improving social wellbeing.

[0-6]

**Total: 25**

- 16 (a) Give the meaning of the terms *transnational corporation* and *the spatial division of labour*.

***transnational corporation***

a large firm or business or company 1

which operates in more than one country 1 "all around the world" 0

***the spatial division of labour***

employment/jobs/functions 1

are separated locationally to economic advantage 1

4

**For one named transnational corporation which you have studied:**

- (b) describe how it is organised spatially,

depending on the example chosen, a full answer should include at least two sectors (primary, secondary, tertiary, quaternary) and specific locational information.

A diagram may serve well.

6

- (c) describe how, and explain why, it benefits from operating transnationally.

Apart from profitability and economic advantage, the **how** and the **why** may depend much on the chosen case and the level of detail offered.

No credit should be given for the difficulties and costs of operating transnationally as the question is only about **benefits**.

**Candidates will probably,**

**L3** Develop a balanced answer how/why, working from good knowledge of the chosen TNC and firm understanding of its operations. The ability to show a number of benefits and the interaction of a number of reasons, most likely at the intercontinental scale, will distinguish the response, although comprehensiveness is not needed. **[12-15]**

**L2** Make a sound attempt at both elements, how and why, although one may be mentioned in only a limited way. Have a reasonable knowledge of the operation of the TNC chosen but may lack overall insight, some relevance or robustness. **[7-11]**

**L1** Demonstrate some difficulty in dealing with the issue and may omit either the how or the why completely. Show limited skill in the selection and application of material; lack material or the time to develop it. **[0-6]**

**Total: 25**