

**2005 Geography**

**Higher – Physical and Human Environments**

**Finalised Marking Instructions**

**These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments.**

## Instructions to Markers : General Notes

### Procedure before Markers' Meeting

You are asked to make yourself familiar with the question paper and the marking instructions. Marking of scripts at this stage should be only tentative and none should be finalised or returned. Please note any point of difficulty for discussion at the meeting.

### Marking

- 1 The maximum mark for Paper I is 50. Markers are encouraged to use the whole range of marks and to give a high assessment for an answer of high quality.
- 2 The total marks assigned by you for each complete question should be entered in the outer right-hand margin of the answer book. When a question consists of more than one part, the marks assigned to each part **MUST BE SHOWN SEPARATELY** in the column provided on the inner right-hand side of the book.

It is of great importance that the utmost care should be exercised in adding up the marks. Where appropriate, all summations for totals and grand totals must be carefully checked. Where a candidate has scored zero marks for any question attempted "0" should be shown against the answer.

The TOTAL mark for any paper as recorded in the box at the top right-hand corner on the front cover of the script, and as entered on Form Ex6, must be given as a WHOLE NUMBER. Where a fractional mark has been given in a total mark, you must round up the total mark to the next whole number. Thus if the candidate gains, say, 29  $\frac{1}{2}$ , the mark 30 should be entered in the box on the front of the script AND ON FORM EX6.

- 3 It is helpful in later procedures if points receiving marks are clearly indicated. In general a  $\frac{1}{2}$  mark should be awarded for a short correct statement with a full mark being awarded for a developed point.
- 4 All mistakes **MUST** be underlined in red pen. A wavy line (~~~~~) should be used for something that is not quite right, a single line (-----) for mistakes which, though not very serious, are undoubtedly wrong, and a double line (=====) for gross blunders. These corrections are valuable when borderline cases and appeals are being considered. Where a page shows neither a correction nor a mark, a red tick **MUST** be placed at the bottom right-hand corner.
- 5 The marker should take the candidate's answers strictly as they are written; no attempt should be made to read into answers ideas which the candidate may have intended to convey but which have not been successfully conveyed. A caret ( $\lambda$ ) should be used to indicate an important omission. A question mark (?) should be used to indicate that the marker cannot understand the meaning intended. The letter "R" should be used to indicate that the candidate is repeating something already stated in the answer.
- 6 Care should be taken that no credit whatsoever is given to irrelevant parts of answers, however accurate the irrelevant passages may be. Irrelevant passages should be square-bracketed [ ].

It should be noted, however, that a fact or argument which is irrelevant in one candidate's answer may be made quite relevant by another candidate who has the ability to connect it to the question.

### Question 1 - Lithosphere

- (a) Answers should provide a broad description, and/or identify by name or by appropriate grid reference evidence that the area had been affected by processes of glacial erosion eg

Corries	-	area around Low Tarn GR1609 or Scoat Tarn GR1510
Hanging Valley and Waterfall	-	Overbreck GR1607, Netherbreck GR1507
Ribbon Lake	-	Wast Water GR1606
Glacial Valley	-	U shaped valley near Down in the Dale GR1808
Pyramidal Peak	-	Scafell Pike
Arete	-	Lord's Rake GR205068
Misfit River	-	Lingmell GR1908
Truncated Spur	-	Long Crag GR1506

**Assess out of 3 marks, with up to 1 mark for appropriate Grid References or names**

**3 marks**

- (b) For the selected features, candidates must explain the processes involved in their formation eg in relation to a corrie:

- Snow accumulates in a mountain hollow when more falls in winter than melts in summer.
- North facing slopes more shaded.
- Compression of the neve into ice.
- Plucking of rock from the backwall.
- Movement of ice downhill under gravity.
- Boulders and stones embedded in ice due to freeze-thaw action
- Embedded materials and ice grind away or abrade rock at surface
- Rotational movement scours out a basin-shape

**Maximum of 5 marks if there are no diagrams. Diagrams which are fully annotated could be awarded full marks.**

**Assess out of 6 marks. Two features should be dealt with for full marks, but avoid double credit for repetition of process.**

**Accept 'waterfall' only in context of hanging valley.**

**6 marks**

## Question 2 - Biosphere

- (a) Climax vegetation is the **final** stage in the development of the natural vegetation of a locality or region when the composition of the plant community is relatively **stable** and in equilibrium with the existing environmental conditions. This is normally determined by climate or soil. These are self-sustaining ecosystems.

Candidates should be credited for being able to demonstrate a knowledge of the evolution of plant life from early colonisation by **pioneer species** then, **by succession**, to the ultimate vegetation climax. Appropriate examples could also be given credit eg oak-ash forest in a cool temperate climate such as exists over much of Britain or Scots pine-and-birch forest in colder, wetter and less fertile Highland environments.

**Assess out of 3 marks**

**3 marks**

- (b) (Award a maximum of 1 mark for descriptions of plant types (which could include a ½ mark for a correctly named plant species) at each location with the balance for explanatory/influencing factors such as shelter, pH, salinity, humus content ....)

All three sites should be referred to for full marks.

Allow a maximum of 3 marks and a minimum of 1 mark for any one site. At each site, description and explanation should be included. Max ½ for correct plant names at each site.

- A. Between the strandline and the fore dune

Likely plant types along the strandline: Sea Sandwort, Sea Rocket, Saltwort. Salt tolerant species, able to withstand desiccating effects of the sand and wind. Some can even cope with periodic immersion in sea water. Have also to adapt to alkaline conditions (high pH) because of high concentrations of shell fragments along the foreshore.

Embryo Dune: Sand Couch, Lyme Grass, Sea Rocket. These dune pioneer species grow side (lateral) roots and underground stems (rhizomes) which bind the sand together. These grassy plants too can tolerate occasional immersion in sea water.

- B. Main (Yellow) Dune Ridge: mainly Marram Grass, some Sand Fescue, Sand Sedge, Sea Bindweed, Ragwort. Both humus content and soil acidity have increased at this location. Marram being xerophytic, thrives on the drier mobile sand of the yellow dune and becomes the dominant species. It can align itself with the prevailing wind to prevent moisture loss/reduce transpiration and, thanks to its long creeping rhizomes spreading vertically and laterally, can keep pace with being buried under fresh deposits of sand. (It is able to grow upwards at up to 1 metre a year). Its long roots enable it to obtain water from well below the surface.

**Question 2 (b) (continued)**

- C. Dune Slacks: Reeds and Rushes, Cotton Grass, small Willows and Alders. These damp, low-lying hollows have a much higher water-table, especially in winter and support a hydrophytic (water tolerant) vegetation cover. Increased organic matter, shelter from the dune ridges in front and, being further inland, a less saline environment also contribute to a wider range of plants at this location. As a result of waterlogging and the build up of humus the soil is also more acidic.

**6 marks**

### Question 3 – Population Geography

- (a) Although the question seeks information with regard to Botswana general factors used to explain population structures in ELDCs should be credited.

**Description** might highlight –

- the largest proportion of children (although a very recent decline in birth rate)
- the relatively low number of people of working age
- the high death rate indicated by the rapidly decreasing length of bars
- the very low number of old people
- relatively low life expectancy. (Some candidates might note the higher number of those 80+ - but this is due to greater range of ages included.)

**Explanations** might include –

High Birth Rate due to –

- lack of family planning
- tradition of large families
- children required to work on farms/help generate income
- children provide security for parents in old-age/infirmity
- traditionally high infant mortality means that to ensure some children survive into adulthood each family must have many.

High Death Rate/Low life expectancy might be due to –

- lack of health care eg childhood vaccinations/access to doctors/hospitals
- poor nutrition levels
- inadequate sanitation
- lack of access to clean water
- poverty and a generally low standard of living.

Assess out of 5 with a maximum of 2 for description.

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- (b) Description should note:

- the incredible lack of people over the age of 40
- the continued drop in the birth rate – diminishing numbers of children
- the greater number of people in the two or three oldest age groups.

Explanations could include:

- clear impact of AIDS on population in middle age – caused by the disease being passed on by sexual contact
- the impact also of AIDS on children who may be born with the disease (acquired in the womb or from breast feeding). In Botswana 1 child is born with AIDS every hour (2001/2002)
- the oldest age groups are those that were outwith the ‘risk ages’ in the first pyramid and who have perhaps benefited from improving health services.

Assess out of 4 with a maximum of 2 for description.

Give credit for civil war, migration, natural disasters.

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#### Question 4 – Urban Geography

(a) Dependent upon city chosen.

For Glasgow, candidates may refer to site and situation as follows:

Low lying land at either side of River Clyde, although some may allude to position beyond the threat of immediate flooding from River Clyde on the banks of the Molendinar Burn and the twin-centre early nature of Glasgow (ecclesiastical & fishing/market).

Fresh water and food from site on river.

Protection from weather extremes offered by surrounding hills (Kilpatrick Hills and Renfrewshire Heights).

Natural fording point over River Clyde and consequent focussing of routes at this point, later development as a bridging point.

‘Fortunate’ location on western side of Scotland, following establishment of trading rights with ‘The Americas’.

Coal fields for mineral exploitation in later/industrial period.

**Assess out of 4 marks, maximum 3 marks if either site or situation is omitted. Accept references to cities in ELDCs.**

**4 marks**

(b) For Glasgow, candidates may refer to:

Decline, closure, dereliction and reclamation of former industrial land, often (in Glasgow) extensive tracts of land formerly used for manufacture/heavy industry.

Decline of commercial function of port (Clydeport) at this location, reduction in warehousing, break of bulk point etc at this inner city dockside location.

Change in land-use function from industrial/commercial to residential/commercial-leisure.

Continued demand for new housing from population due to a shortage of new housing stock to meet increased demand (social change as families ‘reconfigure’); difficulties in developers obtaining ‘greenfield’ sites therefore opportunities for redevelopment of ‘brownfield’ sites.

Change in commercial focus of riverside sites from warehousing and associated distribution industries to leisure/entertainment industries for a more affluent consumer base.

Improvements to public transport infrastructure associated with demand for inner city properties for the reasons noted above, plus the growing reluctance to face a long commute - compared to the ease of access to CBD for employment and leisure provided by a renovated inner city location.

Further developments likely as ‘Bluefield’ sites come under scrutiny for development.

**Assess out of 5 marks, but description and explanation required for full credit (with a maximum of 2 marks for description). Credit up to 2 x ½ for relevant named examples.**

**5 marks**

## Section B

### Question 5 - Atmosphere

(a) Explanation

(Note: only human reasons for global warming are required)

- Carbon Dioxide: from burning fossil fuels – road transport, power stations and from deforestation – particularly in the rainforests.
- CFCs: from aerosols, air-conditioning systems, refrigerators, polystyrene packaging etc.
- Methane: from rice paddies, animal dung, belching cows.
- Nitrous oxides: from vehicle exhausts and power stations.

**Assess out of 4 marks.**

**4 marks**

(b) Credit might be awarded for reference to:

- Sun's rays are more concentrated on tropical latitudes as the intensity of insolation is greatest where the sun's rays strike vertically.
- At tropical latitudes the sun's rays have less atmosphere to pass through – so less energy is lost through atmospheric absorption and reflection.
- Sun's angle in the sky decreases toward the Poles so heat energy is spread over a much larger area.
- Differing relative albedos between the Tropics and the Poles – darker forest surfaces around the Equator absorb radiation whereas the lighter snow-covered ones at the Poles are more likely to reflect incoming solar radiation.
- References may also be made to the effect of the curvature of the earth.

**Award a maximum of 2 marks if no annotated diagram.**

**Assess out of 3 marks.**

**3 marks**

### Question 6 - Hydrosphere

(a) The description may include any of the following points:

- Meanders.
- Waterfalls.
- Tributaries.
- U-shaped valley in upper part, becoming more V-shaped.
- Gorge section.
- Steep sides.
- Change of river direction from SW to E.
- River opening up to flat plain near confluence with River Irt.

**Credit can also be given for heights and shape and aspect of the valley.**

**Assess out of 4 marks, awarding up to 1 mark for appropriate Grid References** **4 marks**

(b) For the formation of a meander candidates may refer to the following points:

- Development of pools and riffles.
- Erosion on the outside (concave) bank of the bends due to faster flow.
- Helicoidal (corkscrew) flow removes material.
- Deposition on the inside (convex) bank of bends due to slower flow.
- Creation of point bars.
- Migration of meanders downstream.

**Answers without diagrams should be marked out of 2 marks.**

**Assess out of 3 marks.** **3 marks**

## Section C

### Question 7 – Rural Geography

(a) Candidates could identify the following:

- Flat, flooded paddy-fields needed for the successful cultivation of rice. Also allows fish farming to be carried on providing a useful extra source of protein in people's diets.
- High labour input owing to a lack of capital for purchasing machinery. The high population densities/large family sizes means that labour shortages are not usually a problem.
- Small parcels of land – farmers are unable to afford large farms and holdings may have become sub-divided over different generations due to inheritance systems.
- Soil bunds/embankments – help to retain water in the padi-fields.
- Rice crop – here (foreground) seedlings are being transplanted from nursery beds into the padi-fields (or sawahs). Rice is the staple food in South East Asia. The high rainfall and continuous high temperatures allow more than one crop to be grown a year thereby supporting a high population density.
- Water buffalo used for ploughing/preparing the land – more suited to small fields than machinery.
- Trees around village (kampong) give shade but may also provide fruit or, in the case of coconut palms, have a variety of uses.

**Assess out of 4 marks. [Suggest 4 x ½ for 'features' and 4 x ½ for 'explanations']. Some explanation necessary for full credit.**

**4 marks**

(b) Likely recent changes in farming practices to have taken place could include:

- The use of mini-tractors (rotovators) and small mechanised rice-harvesters instead of draught animals – less labour-intensive.
- The widespread adoption of higher yielding/faster maturing new varieties of rice – the main impact of the "Green Revolution".
- Amalgamation of small uneconomic holdings/consolidation of fragmented fields as a result of land reform has altered the farming landscape in many areas.
- The formation of farming co-operatives has provided farmers with several benefits eg easier access to machinery; cheaper credit facilities; economies of scale arising from bulk purchasing of inputs such as 'miracle' seeds, pesticides or fertilisers; improved marketing opportunities.
- Greater use of modern pesticides and fertilisers coupled with new seed varieties, improved methods of irrigation etc has meant that farmers in many areas are enjoying greater prosperity than before and that there has been a move towards more commercial farming as opposed to purely subsistence farming with surplus crops being available for sale.

**Assess out of 3 marks.**

**3 marks**

### Question 8 – Industrial Geography

(a) Answers will vary depending upon the industrial concentration chosen, but for South Wales the following might be mentioned:

- Proximity to raw materials – coal, iron-ore and limestone for the manufacture of iron, and later, steel.
- The relative ease of extracting coal from the valleys – adit mines in the valley sides or easy access from the valley floors.
- Bays at Cardiff and Swansea provided suitable sites for ports for exporting coal and iron.
- Flat, but narrow valley floors permitted construction of railways to link mines to the coastal ports.

**Assess out of 3 marks. Max 1½ if no clear location**

**3 marks**

(b) Answers should be able to identify the following location factors from the map and then go on to explain each of them:

- Close to huge urban area (London) – provide market for products.
- Close to other modern industries – source of components or market.
- Close to motorway (M11 – large number of junctions giving access) – provides excellent transport links all over the UK but especially to London/the M25, the South East of England and the Channel Ports – exports to/imports from European mainland.
- Close to Universities (Cambridge and London) – source of highly skilled employees and possible partners in research projects.
- Close to Stansted Airport – for foreign businessmen flying in or for UK business people flying abroad.

**Assess out of 4 marks.**

**4 marks**

[END OF MARKING INSTRUCTIONS]