



**2012 Geography**

**Higher Paper 1**

**Finalised Marking Instructions**

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## 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 1 is 100. 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 the paper should be recorded in the box at the top right-hand corner on the front cover of the script.

- 3 It is helpful in later procedures if points receiving marks are clearly indicated. In general a mark should be awarded for a correct statement.
- 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 (^) 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.

## Section A

### Question 1: Lithosphere

- (a) **Assess out of 12 awarding up to 5 marks for appropriate grid references or named features. NB if feature, name and grid reference given award a maximum of 2 marks. Each erosion feature should be credited only once, but credit can be given for extended descriptive points eg the steep sides and flat floor in a glacial trough. A maximum of 6 marks should be awarded if there is no map evidence.**

Evidence which suggests that Area A on Map Q1 is a glacial erosion landscape could include:

- Corrie and tarn – Glaslyn 6154, Llyn Coch 5954 (Llyn = lake)
- Corrie – 6055
- Lyn Du r Addu
- Hanging valley and waterfall – Cwm Llan 6152 with waterfall at 623517, Afon Merch and waterfalls in 6352 (Afon = river)
- Ribbon Lake – Llyn Gwynant 6451 and 6452
- Glacial Trough/U shaped Valley and misfit stream – Afon Glaslyn 6552 and 6553
- Pyramidal Peak – Snowdon summit 610544
- Arête – Crib Goch 621553, Crib y Ddysgl 615552 (Crib = ridge) – Bwlch Main 605538, Bwlchysaethau 616542 (Bwlch = mountain pass/gap)
- Truncated Spur – 650536, 645527

(Craig = rock and Pen – y = the head of a valley)

Accept any relevant examples.

**12 marks**

- (b) **Assess out of 6.  
A sequence of diagrams, fully annotated, could score full marks.  
Answers which fail to make use of diagram(s) should score a maximum of 4. Do not credit erosion processes.**

In explaining the formation of terminal moraine, for example, candidates could refer to such points as:

- Moraine is material transported by a glacier.
- When the glacier reaches lower altitudes (or temperatures rise) the ice melts and deposits the moraine at its snout.
- Terminal moraine marks the furthest point that a glacier reaches.
- It forms a jumbled mass of unsorted material that stretches across the valley floor.
- Once the ice has retreated, the terminal (or end) moraine can often form a natural dam, creating a ribbon lake.

In explaining the formation of a drumlin, candidates may refer to points such as:

- Drumlins are elongated hills of glacial deposits.
- They are formed when the ice is still moving.
- The steep 'stoss' slope faces upstream and the 'lee' is the more gentle, longer axis of the drumlin which indicates the direction in which the glacier was moving.
- The drumlin would have been deposited when the glacier became overloaded with sediment.
- As the glacier lost power, material was deposited, in the same way that a river overloaded with sediment deposits the excess material.
- The glacier may have experienced a reduction in power due to melting.
- If there is a small obstacle on the ground, this may act as a trigger point and till will build up around it.
- It may also have been reshaped by further ice movements after it was deposited.

In explaining the formation of an esker candidates may refer to points such as:

- Eskers are produced as a result of running water in, on or under the glacier.
- They are linear mounds of sand and gravel that commonly snake their way across the landscape.
- As the glacier melts, sub-glacial streams flow and deposit their load.
- When the glacier retreats the sediment that had been deposited in the channel is lowered to the land surface where it forms a linear mound, or hill, that is roughly parallel to the path of the original glacial river.
- Eskers consist of sorted materials, largest first.

**6 marks**

## Question 2: Hydrosphere

- (a) **Assess out of 10 marks with a maximum of 5 marks for one human activity.**

For **deforestation** candidates could describe how cutting down trees increases run-off, decreases evapo-transpiration (and therefore cloud formation) and leads to more extreme river flows as water is not intercepted and stored by the trees.

For **irrigation** candidates could describe how taking water from a river or underground store can reduce river flow, lower water tables and increase evaporation/evapo-transpiration by placing water in surface stores (ditches/canals) or by crops removing water from the cycle as they grow.

For **urbanisation** candidates could describe how removal of natural vegetation and replacement with impermeable surfaces and drains can speed up overland flow and evaporation and can lead to higher river levels. It also decreases the amount of water which returns to groundwater storage, possibly reducing the water table.

For **mining** candidates may refer to the silting up of lakes, rivers and reservoirs leading to reduced storage capacity in these areas. Mining may also lead to reduced vegetation cover leading to increased run-off, higher evapo-transpiration and cloud formation altering the rainfall pattern.

**10 marks**

- (b) **Assess out of 8.  
A sequence of diagrams, fully annotated could score full marks.  
Answers which fail to make use of diagrams should score a maximum of 5.**

In explaining the formation of a **floodplain and natural levee** candidates could refer to such points as:

- When a river floods it deposits material (the load) on its flood plain.
- As the water loses energy on leaving the river channel material is deposited in order from heaviest particles nearest the channel to lightest further out.
- A natural embankment is therefore built up in layers each time the river floods.
- Material is also deposited on the river bed as water breaks through the levee in times of flood.
- Some river beds and their levees can rise many metres above the flood plain over time as the load on the river bed and levees build up, exacerbating flooding when it occurs.

## **Ox-bow Lake**

**Credit should be given for the development of a meander to a maximum of 5 marks.**

- As the outer banks of a meander continue to be eroded laterally through processes such as hydraulic action the neck of the meander becomes narrower.
- Eventually due to the narrowing of the neck, the two outer bends meet and the river cuts through the neck of the meander. The water now takes its shortest route rather than flowing around the bend.
- Deposition gradually seals off the old meander bend forming a new straighter river channel. Due to deposition the old meander bend is left isolated from the main channel as an ox-bow lake.
- Over time this feature may fill up with sediment and may gradually dry up.

## **Delta**

- When the river flows into a calmer body of water – a sea or lake, it is forced to slow down and there is a resultant drop in energy.
- This causes the river to deposit its suspended material.
- The river channel flowing into the sea may divide into a number of channels called distributaries as alluvium is built up in the channel.
- The coarsest materials are deposited first as foreset beds and fine sediment as bottomset beds further out to sea.
- Over many years this material builds up to form a body of land known as a delta.
- Typically, deltas are shaped like the triangular Greek letter after which they are named.
- However, this shape is created only when the material is deposited uniformly over the whole area. If the particles are dropped at different rates a bird's foot shape is formed.
- Where tidal currents are strong deltas may not develop and the sediment is carried further out to sea.

**8 marks**

### Question 3: Population

- (a) **Assess out of 10, awarding maximum of 5 for description and a maximum of 8 for explanation. Credits can also be given (up to maximum 2 marks) for role of migration in influencing total population change.**

#### Changes

##### Stage 1

- Total population fluctuates but population growth is low, as high Death Rate (DR) due to wars, famine and epidemics is balanced by high Birth Rate (BR). due to high infant mortality rate and lack of contraception.

##### Stage 2

- Rapid population growth as DR falls due to medical advances eg vaccinations, improved water supply and sanitation and marked decrease in Infant Mortality Rate (IMR).
- BR remains high due to lack of contraception and family planning, children seen as an 'economic asset' and parents wanting many children as an 'insurance policy' for being looked after in old age until IMR is seen to fall.

##### Stage 3

- Despite rapidly falling BR, continued rapid population growth as DR continues to fall, with continued improvements in medicine and standards of living.
- BR falls due to the awareness of family planning and that smaller families are needed with decrease in IMR; children now seen as an 'economic liability'.
- Population growth levels off at end of stage 3 as BR and DR reach similar low levels.

**10 marks**

- (b) **Assess out of 8, awarding a maximum of 5 marks for either the changes to the population or the problems that these changes may lead to. Award a maximum of 3 marks for description from the graph. Descriptions of changes may include reference to facts and figures from the DTM model or the resource provided but credit should be awarded for other potential population projections which are reasonable.**

Possible changes to the population include:

- Stage 5 of the DTM, falling birth rate and slightly higher death rate due to larger proportion of older people in the population.
- Declining population may occur.
- If migration continues there may be a more youthful population.
- 6% increase in the working age proportion up to 63% population in 2012.
- 4% increase in the population of pensioners to 20% of the population.
- 17% children (down 10%).

Issues for government may include:

- Need to maintain an active population large enough to allow levels of taxation to remain constant or raise retirement age.
- Need to ensure there are no future shortages in workforce – need to recruit immigrant labour/ease access for asylum seekers. This can lead to civil unrest/ethnic tension.
- Need to sustain demand for particular products or services eg schools, maternity hospitals, which if affected could lead to higher levels of unemployment.
- Ageing population gives increased cost of pension provision and unpopular decisions for government about how pensions should be funded.

**8 marks**

#### Question 4: Industrial Geography

Allow up to 4 marks across both parts of this question for reference to specific named examples and relevant statistics within the area chosen.

Answers which do not refer to named areas should be marked out of 14.

**(a) Assess out of 8.**

Reasons for industrial decline may include:

- Lack of local raw materials.
- Increased competition from overseas.
- Cheaper labour from competitors.
- Old fashioned/dated equipment.
- Increasing cost of transporting new materials and finished goods.
- Poor infrastructure of road and rail.
- EU and government grants/incentives running out.
- Rationalisation of foreign companies leading to overseas plants in EU closing.
- Falling demand as new products take over market.
- Restricted/dated working practices.

**8 marks**

**(b) Assess out of 10 marks, awarding a maximum of 8 if any impact is omitted.**

The impact of industrial closures may include:

- Unemployment.
- Rise in cases of depression.
- Rise in crime rates.
- Closure of local schools.
- Associated service and supply industries close.
- Workers and their families migrate from the area.
- Shops close.
- Lack of investment and inflow of new industry due to ethos of decline.
- Factories and surrounding areas become derelict.
- Houses and closed shops are boarded up.
- Area looks rundown.
- Less pollution from older industries.
- Areas may attract government intervention for regeneration.
- Brownfield sites are cheaper for regeneration.
- Contamination of industrial sites means it can be expensive to reclaim for other uses.

**10 marks**

## Question 5: Biosphere

A fully annotated diagram could achieve full marks for A and for B.

**Assess out of 6.  
Avoid crediting explanatory points.**

The following characteristics could be described for a gley soil:

- (a)
- Horizons – well defined Ao, A and B horizons.
  - Colour – A horizon, dark brown/grey colour – B horizon, blue-grey with red mottling (iron compounds).
  - Soil biota – lack of soil biota.
  - Texture – A – silty, B – clayey – angular rocks frost heaved up into B horizon.
  - Drainage – waterlogged, giving anaerobic conditions.
  - Short roots of grasses/shrubs.

**6 marks**

- (b) **Assess out of 8.**

The following features could be included for a brown earth soil:

- Natural Vegetation – deciduous forest vegetation provides deep leaf litter, which is broken down rapidly in mild/warm climate. Trees have roots which penetrate deep into the soil, ensuring the recycling of minerals back to the vegetation.
- Soil Organisms – soil biota break down leaf litter producing mildly acidic mull humus. They also ensure the mixing of the soil, aerating it and preventing the formation of distinct layers within the soil.
- Climate/Relief and Drainage – precipitation slightly exceeds evaporation, giving downward leaching of the most soluble minerals and the possibility of an iron pan forming, impeding drainage. Soil colour varies from black humus to dark brown in A horizon to lighter brown in B horizon where humus content is less obvious. Texture is loamy and well-aerated in the A horizon but lighter in the B horizon.

**8 marks**

## Question 6: Atmosphere

- (a) **Assess out of 8 marks awarding a maximum of 6 marks if there is no annotated diagram.**

Explanations for the differences between tropical areas and polar areas may include:

- Sun's rays concentrated on tropical latitudes where rays strike vertically.
- Rays have less atmosphere to pass through at the Tropics so less energy is lost through absorption and reflection.
- Sun's angle in the sky decreases towards the Poles due to the earth's curvature which spreads heat energy over a larger area.
- Albedo differs between Tropics and Poles – darker forest surfaces absorb radiation and ice covered areas reflect radiation.
- Sun is higher in the sky between the Tropics throughout the year, focussing energy.
- No solar insolation at the winter solstices at the Poles.

**8 marks**

- (b) **Assess out of 6 marks awarding up to 2 marks for authentic named examples.**

Descriptions of possible consequences may include:

- Rise in sea level.
- More extreme weather (and more variable) including floods, droughts, hurricanes, tornadoes etc.
- Extension and retreat of vegetation by altitude and latitude.
- Melting of ice sheets/icebergs.
- Impact on wildlife eg extinction of species.
- Increase in diseases eg malaria.
- Change in length of growing season.
- Some areas will become wetter, others drier.
- Changes to ocean current circulation.
- Changes in atmospheric patterns linking to monsoon, El Nino, La Nina etc.

**6 marks**

## Question 7: Rural Geography

- (a) **Assess out of 6.**  
**Award 1 mark for a named area or tribe.**

Main features of the shifting cultivation system might include:

- Clearings are made in the rainforest by cutting down and burning trees.
- Ash is used as natural fertiliser.
- Some trees are left for protection from erosion or food (fruits and nuts).
- 'Shifting' part refers to the practice of moving to another clearing as the soil becomes exhausted quickly by heavy rains and lack of fertilisers. Land area required is large as cultivators move from area to area within forest.
- 'cultivation' part refers to the practice of growing crops in the clearing such as manioc/yams/cassava.
- System is labour intensive with small labour force due to subsistence nature of system which is unable to support a large population.
- Very low input of capital related to subsistence nature of system and very low output as only a tiny proportion of land area required is cultivated at any one time.

**6 marks**

- (b) **Assess out of 8. Award a maximum of 5 for any one change. To gain full marks candidates must comment on advantages and disadvantages of each change. Avoid double credit for similar points made for each of the two chosen changes.**

### **High yielding varieties (HYVs)**

- Advantages – HYVs of staple food crops like rice and wheat have higher yields (fourfold in some areas) and grow more quickly so that more crops are harvested each year. This has meant a shift from subsistence farming towards more commercial farming with surpluses for sale.
- Disadvantages – HYVs are less drought-resistant, more susceptible to pests and disease and need large amounts of expensive fertilisers. Local people claim HYVs do not taste as good.

### **Mechanisation**

- Advantages – The use of mini-tractors (rotavators) and small mechanised rice-harvesters instead of draught animals means farming is less labour-intensive, reducing labour costs and allowing amalgamation of uneconomic small fields and farms, and farming on a larger, more profitable scale.
- Disadvantages – richer farmers have benefited most. Poorer farmers have lost their land, causing unemployment and rural-urban migration.

**8 marks**

## Question 8: Urban

Credit can also be given (up to maximum 2 marks) for appropriate and relevant named examples across part (a) and (b).

(a) **Assess out of 8. For no named city or general/non-authentic responses maximum of 6 marks.**

For Glasgow, candidates may refer to:

- Pedestrianisation and landscaping of CBD roads eg Buchanan Street, Argyle Street etc to reduce traffic flow in and around the CBD – to increase pedestrian safety and improve air quality and environment. Upgrading of CBD open space eg George Square.
- Diversification of city employment – much greater emphasis on tourist industry (significance of city-break holidays) leading to increased bed accommodation in new CBD hotels (Hilton, Radisson). Hotels can also tap into lucrative conference market given Glasgow's improved image as a tourist and cultural centre.
- Alteration of CBD road network – one-way streets (around George Square), bus lanes to discourage use of private transport and encourage use of public transport. Also achieved by increased metering and increased parking charges in and around CBD.
- Renovation and redevelopment of many CBD sites to provide modern hi-tech office space (Lloyds TSB, Direct Line etc) and residential apartments (Fusion Development, Robertson Street).
- Building of M8 and M74 extension all designed to keep traffic off CBD roads.
- Younger, more affluent population continues to be attracted to central city area by long-standing concentration of up-market pubs, clubs, cinemas etc (Cineworld in Renfrew Street).

**8 marks**

**Credit can also be given (up to maximum 2 marks) for appropriate and relevant named examples.**

- (b) Assess out of 6 allowing up to 4 marks for either description or explanation. The description and explanation of urban landscape characteristics may include reference to environmental characteristics such as noise levels and pollution.**

**Inner City:** Transition zone, first developed in the 19<sup>th</sup> century, mixture of old and newer buildings (recent regeneration to encourage more people to live there), high density of tenement or terraced housing, high-rise flats, derelict land and waste around, redevelopment occurring, new houses of mixed type, lack of greenery and open space, environmental improvements exist in some areas etc.

**Outer Suburbs:** Modern late 20<sup>th</sup>/early 21<sup>st</sup> century semi-detached and detached housing, gardens and greenery around the areas, low density and high quality environment with well-planned street patterns of crescents and cul-de-sacs. Some outer-city council estates with flats, high rise and mixed housing. Growths of car ownership, commuting and demand for quieter and safer residential environments have led to the growth of these areas. Candidates may refer to land values.

**6 marks**

[END OF MARKING INSTRUCTIONS]