



2011 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: Atmosphere

- (a) **Assess out of 6 marks with maximum 3 marks for each air mass. Award 1 mark for origin per air mass and the balance for characteristics/nature.**

Maritime Tropical (mT)

- Origin – Atlantic ocean/Gulf of Guinea, in tropical latitudes
- Weather characteristics – hot, high humidity, warm
Nature – unstable

Continental Tropical (cT)

- Origin – Sahara Desert, in tropical latitudes
- Weather characteristics – hot/very hot, dry, low humidity, warm
Nature – stable, poor visibility

6 marks

- (b) **Assess out of 12 marks with maximum 8 marks for either description or explanation. Do not credit descriptive points already credited in part (a).**

Description should highlight the marked contrast in precipitation totals, seasonal distribution and number of days between a very dry north (Gao with only 200 mm in a hot desert climate in Mali) and a much wetter south (Abidjan with 1700 mm in a tropical rainforest climate in the Ivory Coast).

Bobo-Dioulasso in Burkina Faso in central West Africa has an ‘in-between’ amount of both rain days and total annual precipitation (1000 mm in a Savannah climate).

Candidates should also refer to the variation in rain days and seasonal distribution for each station. Gao with a limited amount of precipitation in summer, Bobo-Dioulasso with a clear wet season/dry season regime and Abidjan with a ‘twin-peak’ regime with a major peak in June and a smaller peak in October/November.

Explanation should focus on the role of the ITCZ and the movement of the Maritime Tropical and Continental Tropical air masses over the course of the year. For example, Abidjan, on the Gulf of Guinea coast, is influenced by hot, humid mT air for most of the year, accounting for its higher total annual precipitation and greater number of rain days. The twin precipitation peaks can be attributed to the ITCZ moving northwards in the early part of the year and then southwards later in the year in line with the thermal equator/overhead sun.

Gao, on the other hand, is under the influence of hot, dry cT air for most of the year and therefore has far fewer rain days and a very low total annual precipitation figure as it lies well to the north of the ITCZ for most of the year. Bobo-Dioulasso again is in an ‘in-between’ position, getting more rain days and heavy summer precipitation from June-August when the ITCZ is furthest north.

12 marks

Question 2: Biosphere

- (a) **Assess out of 5 marks with a maximum of 1 mark for an example of climax vegetation.**

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 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 temperature climate such as exists over much of Britain or Scots pine-birch forest in colder, wetter and less fertile Highland environments.

5 marks

- (b) **Assess out of 13 allowing up to 5 marks for the names of particular plant species at appropriate locations (one mark per location). Avoid over crediting the same explanatory factors (eg shelter, humus content, salinity, pH, distance from sea, water table ...). Allow up to 3 marks for any one plant's 'adaptations' (probably Marram Grass). Do not credit descriptive points already credited in point a).**

Strandline (Sea Sandwort, Sea Rocket, Saltwort, Sea Twitch)

These are all salt tolerant (halophytic) species and can withstand the desiccating effects of the sand and the wind. Some can even withstand periodic immersion in sea water. There is a high pH here (alkaline conditions) due to the presence of sea shells. The presence of these plants leads to further deposition of sand and the establishment of less hardy species.

Embryo Dune (Sea/Sand Couch, Lyme Grass, Frosted Orache, Sea Rocket)

These dune pioneer species grow side (lateral) roots and underground stems (rhizomes) which bind the sand together. These grassy plants can also tolerate occasional immersion in sea water. Some species on the strandline are also found in the embryo dunes.

Fore Dune (Sea Bindweed, Sea Holly, Sand Sedge, Marram Grass)

A slightly higher humus content (from decayed plants), and lower salt content (further from the sea) allows these species to further stabilise the dune and allow the establishment of Marram Grass which becomes a key plant in the build up of the dune.

Yellow Dune (Marram Grass, Sand Fescue, Sand Sedge, Sea Bindweed, Ragwort)

Both the humus content and the acidity of the soil have increased at this location. Marram can align itself with the prevailing wind and curl its leaves to reduce moisture loss; it can also survive being buried by the shifting sand of the dune. As sand deposition increases the Marram responds by more rapid rhizome growth (up to 1 metre a year). It is xerophytic, and so is better able to survive the dry conditions of the dune. It also has long roots which help to bind deposited sand and anchor it into the dunes as well as access water supplies some distance below. All these factors allow it to become the dominant species on the Yellow Dune.

Grey Dunes (Sand Sedge, Sand Fescue, Bird's Foot Trefoil, Heather, Sea Buckhorn, Grey Lichens eg *Cladonia* species)

As a result of an increase in organic content (humus), greater shelter and a damper soil, a wider range of plants can thrive here. Marram dies back (contributing humus) to be replaced by other grasses. As a result of leaching and the build up of humus the soil is considerably more acidic allowing more plant species to flourish.

Slacks (reeds, rushes, cotton grass, flag iris, alders and small willow trees)

In the wetter slacks, close to the water table, several water loving (hydrophytic) species may survive.

Climax (Heather, trees such as Birch, Pine or Spruce)

In some areas heathland may dominate with a range of heathers being prominent. Eventually trees such as Birch, Pine or Spruce could establish a hold. In the shell rich areas of the Western Isles, Machair may develop.

13 marks

Question 3: Rural Geography

- (i) **Credit should be given for specific named examples (of tribes and crops grown etc) up to a maximum of 3 marks BUT if no named area mark out of 7 marks. Credit explanation of farming system where linked to landscape.**

For **shifting cultivation** the main characteristics of the landscape might include:

- clearings are made in the rainforest by cutting down and burning trees
- largest trees and some fruit-bearing trees may be left for protection/ food (some are too difficult to remove)
- the 'cultivation' part refers to the practice of growing crops (manioc/cassava, yams ...) in the clearing, using ash from the tree burning as fertiliser
- the 'shifting' part refers to the practice of moving to another clearing as the soil becomes exhausted and crop yields fall
- low population density due to large area of land needed
- settlements could be fixed (and rotational clearings made around them) or the housing may also be abandoned and left to biodegrade before the tribe returns to the area.

8 marks

- (ii) **Assess out of 10 marks allowing up to 3 marks for environmental changes due to global warming. Award up to 7 marks for either changes or impact of change.**

For **shifting cultivation** the main changes might include:

- loss of traditional tribal land due to cattle ranching, mineral extraction, logging, HEP development
- change in land use with set reservations/settlements, National Parks and conservation areas
- climate change with increasing unpredictability of drought/flood cycles.

For **shifting cultivation** the main impacts might include:

- population movement into inaccessible areas which are often less fertile
- rural depopulation with shanty town growth in larger urban areas
- contact with Western culture can bring diseases, alcohol/drug misuse
- population densities increase in remaining areas, putting more strain on limited land and a shorter fallow period.
- decreasing soil fertility and output per hectare
- soil erosion can take place with the soil choking the rivers reducing fish/wildlife in the area/impact on diet.
- pollution from other land users ie mercury used in gold extraction can impact on the health of the locals
- the impact of global warming on biodiversity and medicinal cures.

10 marks

Question 4: Industry

- (a) **Assess out of 10 marks, ensuring a balance of description and explanation to a maximum of 6 for either. Award up to 3 marks for grid references and/or named features. Award a maximum of 7 marks if answer has NO map evidence. Award credit if candidates refer to regeneration of area B. For full credit, both physical and human factors should be included.**

Reasons for location of industry in Swansea may include:

Physical factors:

- Area A on the outskirts of town with flat land, and room for expansion, Area B is on flat floodplain of Afon Tawe.
- Both have flat land for easy construction of industrial buildings.

Human factors:

- Proximity to local market in South Wales.
- Access to docklands for import and export and via Afon Tawe.
- Close to motorways for easy access of materials and finished goods, a and branch line 683970
- Proximity to local labour force.
- Edge of town – cheaper land.
- Close to universities for skilled graduates and research facilities.
- Close to other modern industries that may supply components or share resources.
- Swansea airport for visiting executives, or transporting light products (5691).
- Pleasant working environment.

10 marks

- (b) **Assess out of 8 marks, allowing up to 2 marks for appropriate and relevant examples. If no named area, mark out of 7 marks.**

Answers will vary, depending on industrial concentration chosen.

Explanations may include:

- Creation of Enterprise Zones.
- Welsh Development Agency.
- Creation of new town (Cwmbran).
- Rent free accommodation.
- Grants.
- Retraining schemes.
- Relocation of industry (government offices eg DVLA, and foreign businesses eg Sony).
- Tax incentives.
- Road and infrastructure projects (M4).
- Environmental improvement schemes.
- Objective 1 funding.

8 marks

Question 5: Lithosphere

- (a) **Assess out of 6, award up to 2 marks for grid references and/or names. Do not credit repeated features.**

Descriptions could include:

- Cliffs eg Newton Cliff (GR 600870).
- Headland eg Pwlldu Head (GR 570863).
- Caves eg Mitchin Hole Cave (GR 555869).
- Blow Holes eg Bacon Hole (GR 561868).
- Shore (wave-cut) platform (GR 615869).
- Stack eg Mumbles Head (GR 636871).
- Skerries (stack or stump) eg Rothers Sker (GR 612869).
- Bay (GR592874) – Caswell Bay

6 marks

- (b) **Assess out of 8 marks with a maximum of 6 marks for the processes of coastal erosion (maximum of 2 marks for an unexplained list). Award up to 1 mark for a named example not already credited in (a). Quality diagrams could achieve full marks, but if there is no diagram award a maximum of 6 marks.**

Candidates should refer to the processes of coastal erosion ie hydraulic action, abrasion, solution and attrition. A typical answer may include:

Caves are most likely to occur where the coastline consists of hard rock and is attacked by prolonged wave attack along a line of weakness such as a joint or fault. The waves attack the weakness by abrasion, hydraulic action or solution. Over time, horizontal erosion of the cave may cut through the headland to form an arch. Continued erosion of the foot of the area may eventually cause the roof to collapse leaving a stack, isolated from the cliff.

8 marks

Question 6: Hydrosphere

- (a) **Assess out of 7. A fully annotated diagram could score full marks. If all four elements are not referred to award a maximum of 6 marks.**

Answers should refer to the four elements in a drainage basin:

- input: precipitation
- storage: surface storage eg lakes, soil moisture, ground water, interception
- transfers: surface run off eg tributaries, throughflow, groundwater flow, infiltration, throughfall, percolation, stem flow
- outputs: transpiration, evaporation, surface run-off (rivers)

7 marks

- (b) **Assess out of 7. Award a maximum of 4 for either description or explanation.**

Answers should identify various parts of the river level graph.

- Steady river level (under 0.4m) until 03:00 hours due to an initial lack of rain and then small amounts of rain at 05:00 hours (0.5mm) and 06:00 hours (0.8mm) infiltrate the soil (after interception by vegetation) and the river level starts to increase slowly.
- The river level continues to rise at a steady rate from 07:00 hours to 10:00 hours, due to the increase in rainfall totals and duration. The heavier rain is filling up storages in the soil because of throughflow and groundwater. The soil is now saturated, so water runs off the land and enters the river quickly leading to a potential flood situation.
- The peak rainfall occurs at 08:00 hours (6.2mm) and the peak river level occurs at 18:00 hours (0.7m). This is a basin lag time of approximately 10 hours. This could be accounted for by vegetation cover, or by reference to geology or soil infiltration rates.
- From 14:00 hours to the end of the graph the rainfall declines and stops at 18:00 hours. The recession limb falls back towards base level as the supply of water is reduced.

7 marks

Question 7: Urban Geography

- (a) **Assess out of 6. Answers which mention only site or situation should be marked out of 4.**

Answers which do not refer to a specific city, but rather a generalised set of factors, should be awarded a maximum of 3 marks.

Answers will vary according to the city studied but may include reference to:

Site

- Flat land.
- Inside a large river meander.
- Early functions eg religious, defensive, trading site.
- Raw materials.
- Lowest bridging point.

Situation

- Easily accessible to major settlements.
- Accessible to ports.
- Major route focus.
- Accessible to airports.

6 marks

- (b) **Answers should be assessed out of 8 with a maximum of 5 for either description or explanation. Credit should be given to specific named examples within the chosen city up to a maximum of 2 marks.**

Maximum of 6 marks for answers which fail to relate to a named city.

Answers will vary according to the city studied but for the inner city changes might include:

Description of the changes:

- Population reduced as people moved out of the area.
- Redevelopment of housing and the area.
- Construction of council houses and flats on cleared areas of the old inner city.
- Demolition of some terraces, improvements to others (indoor toilets etc).
- Environmental improvements eg parks, community centres, leisure centres.
- Relocation of industry and the closure of industry.
- Changes in the ethnicity of residents.

Explanation of the changes:

- Area was overcrowded.
- Housing was in a very poor condition and amenities were poor.
- High levels of unemployment, poverty and social problems such as crime.
- The environment was very poor and inward investment was difficult to attract.
- Industry declined as manufacturing moved to countries with lower labour costs.
- Industry has moved to modernised areas on the edge of the city in new custom-built units.
- Congested traffic and air pollution put off potential investors.
- Movement out to the suburbs due to the desire for a better quality environment.

8 marks

Question 8: Population Geography

- (a) **Assess out of 5 marks, with maximum of 3 marks for description of methods or explanation of purpose.**

Between censuses there is compulsory registration of births, deaths and marriages by the General Register Office for each part of the UK. The other main changes are brought about by emigration and immigration and the Home Office's UK Border Agency records migration into the UK.

Also mini or sample censuses are carried out such as the 2009 Census Rehearsal for England and Wales as well as government sponsored sample surveys of population and social trends.

The UK official 2011 Census website identifies 6 areas of accurate population data for the targeting of taxpayers' money.

- Population numbers – to calculate grants for local authorities to plan eg schools and teacher numbers.
- Health – to know the age and socio-economic make-up of the population to allocate health and social services resources.
- Housing – to ascertain the need for new housing.
- Employment – to help government and businesses plan jobs and training policies.
- Transport – to identify where there is pressure on transport systems and for planning of roads and public transport.
- Ethnic Group – to identify the extent and nature of disadvantage in Britain.

5 marks

- (b) **Assess out of 9 marks, with up to 3 marks for appropriately named examples.**

Difficulties affecting accurate population data collection in Developing Countries might include:

- Countries suffering from a continuing war situation such as Afghanistan.
- Illegal immigrants wishing to avoid detection eg Mexicans in southern California.
- The cost involved in carrying out a census is prohibitive to many Developing Countries – training enumerators, printing and distributing forms etc.
- The sheer size of some developing countries eg Indonesia with many islands spread over a large area.
- Suspicion of the use of data collected, eg China's one-child policy with many female births unrecorded.

- Countries with large numbers of migrants eg rural-urban migration into massive shanty towns eg Kibera in Nairobi, refugees from Rwanda in Burundi etc.
- Nomadic people such as the Tuareg in West Africa, shifting cultivators in Amazonia.
- Poor communication links eg mountain regions of Bolivia.
- Low levels of literacy and variety of languages spoken within a country eg India has 15 official languages.

9 marks

[END OF MARKING INSTRUCTIONS]