



2009 Geography

Higher – Environmental Interactions

Paper 2

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 2 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 (λ) 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.

Rural Land Resources

Question 1

(a) For a corrie points could include:

- snow accumulates in a (north-facing) hollow on mountainside
- successive layers of snow compress first snowfalls into ice/neve
- ice moves downhill under gravity
- freeze-thaw weathering loosens rock above glacier
- plucking steepens back wall of the corrie
- maximum erosion takes place where weight of ice is greatest
- boulders and stones embedded in ice grind away at the bottom of corrie
- abrasion carving out hollow/armchair shaped depression (over deepening)
- rate of erosion decreases at edge of corrie leaving a rock lip.

NB Do not credit scree unless linked to a glacial feature.

Minimum of 3 features needed for full credit.

For an answer to achieve full marks well annotated diagrams must be used.

Although unlikely, if an answer does not have any diagram then mark out of 16.

Award up to three marks for relevant named examples (one mark for each feature).

Maximum 2 for any one process (erosion or deposition).

20 marks

(b) Responses will vary according to the area chosen but opportunities may include:

tourism, recreation, nature conservation, hill farming, forestry, HEP generation potential, water supply, quarrying. For forestry, candidates could describe the use of plantations for providing wood for furniture, building materials, Christmas trees (economic) and also forest walks, nature trails, picnic sites, mountain bike and orienteering courses (social) with resulting employment (reducing rural depopulation) and profits/taxes for businesses/government.

Award up to 3 marks for specific named locations. Credit negative statements which are made relevant eg impact of relief on farming.

Assess out of 10 ensuring both economic and social opportunities are dealt with. Max 4 for description of opportunities – need an explanatory link to landscape.

10 marks

(c) (i) **Conflicts may include:**

- traffic congestion especially on narrow rural roads and in car parks – particularly during peak holiday periods
- large volumes of visitor traffic increase air and noise pollution and can spoil the attraction of many villages
- increase in holiday home ownership has pushed up prices forcing many local people to move away
- erosion of footpaths and resulting visual pollution due to high visitor numbers
- some visitors may cause problems for farmers and landowners (eg damage to property such as stone dykes, animal disturbance)
- development of unsightly visitor/leisure complexes/caravan sites etc.

Assess out of 10 with over-generalised ‘non-authentic’ answers that fail to include any place names given a maximum of 6 marks. A maximum of 5 marks if only one conflict discussed.

10 marks

(ii) Solutions might include a variety of environmental conflicts depending on the area chosen but for tourism/traffic it could be:

- traffic restrictions in more favoured areas/at specific peak times, eg one-way streets, bypasses or complete closures
- encourage the use of public transport eg park and ride, minibuses and the use of alternative transport eg cycle paths and bridle ways
- separating tourist and local traffic, the use of permits (for access or parking) in some areas.

Assess out of 10 allowing up to 3 marks for specific place names/names of authentic control measures. (A good example might be the Goyt Valley Traffic Scheme as it encompasses a range of traffic control measures.) Some mention of the success/failure of the ‘solution’ must be included to gain full marks.

Award a maximum of 6 marks for vague, over-generalised responses.

10 marks

Rural Land Degradation

Question 2

(a) Answers should be able to pick out such points as:

- the considerable fluctuations in rainfall over the period shown
- the preponderance of wetter than average years – certainly between the end of the 19th century and 1970
- the marked concentration of wet years between 1950 and 1970 (only 2 drier than average in these two decades – 1960 and 1969)
- the very obvious pattern of drier years throughout the 1970's and 1980's
- the marked differences in more recent years.

Assess out of 6.

6 marks

(b) (i) For **Africa north of the Equator** human activities/inappropriate farming techniques contributing to land degradation could include:

- overgrazing; over cropping; deforestation; monoculture; reduced fallow periods; the growing of cash crops; increased population pressure leading to more and more marginal land (more vulnerable to erosion) being cultivated.

For the **Amazon Basin**:

- deforestation – eg for logging/ranching/mineral extraction/road building HEP projects/resettlement schemes/charcoal burning
- the impact of ranching – forest cleared, used for a few years until grass fails – move and clear a new area of forest and so perpetuate the whole process
- population pressure and shortage of available land arising from these increased demands on the rainforest have resulted in some shifting cultivators returning to tribal lands prematurely and therefore encouraged soil erosion.

Assess out of 18.

Award a mark for specifying a particular cause of land degradation (eg overgrazing) and up to 4 marks for specific named locations.

18 marks

(ii) For **Africa north of the Equator** *human* consequences of land degradation could include:

- crop failures/death of livestock – reduced food supply – malnutrition – famine – increases infant mortality rates and death rates
- encourages the drift from rural areas to already overcrowded urban areas – growth of shanty towns
- the collapse of traditional nomadic ways of life

Whilst *environmental* consequences might be:

- soil structure breaks up due to over cropping and monoculture
- wind erosion can remove dried out soil
- deforestation means that soil is exposed and more prone to erosion
- torrential rain often leads to widespread gullying which is impossible to rectify – further loss of precious farmland
- level of water table reduced
- intensified drought due to albedo effect.

For the **Amazon Basin** *human* consequences could include:

- destruction of the way of life of the indigenous population
- clashes between tribal groups and ‘outsiders’/developers
- creation of reservations for indigenous people
- impact of “western diseases” on tribal people
- encourages rural-urban migration

Whilst *environmental* consequences might be:

- adverse effect on the rainforests closed nutrient cycle
- leaching of minerals/removal of topsoil/increase in laterisation with loss of protective natural vegetation cover
- increased run-off and flooding; silting up of rivers
- loss of wildlife habitats/biodiversity – some species threatened with extinction
- loss of potentially useful medicinal drugs
- impact on global climate (Greenhouse Effect).

Assess out of 10 awarding up to 6 marks for either part (ie human versus environmental).

Allow up to 2 marks for authentic/appropriate ‘illustrations’ such as named areas or names of tribes.

10 marks

(c) (i) Soil conservation measures employed in **North America** could include:

- contour ploughing
- crop rotation/diversification
- trash farming/stubble mulching
- planting of shelter belts/windbreaks
- strip cultivation
- increased use of irrigation.

(ii) eg in relation to **shelter belts** – trees planted at right angles to the direction of the prevailing wind have managed to reduce wind speeds and provide an effective barrier to protect the soil. The taller and more complete the tree cover, the more effective the shelter. They also improve water retention and help bind the soil together. The negative consequences of this might also be noted eg the area of land occupied by trees/hedges and competition for water and nutrients.

16 marks

Assess out of 16.

For full credit candidates should mention a minimum of 4 strategies.

Allow up to 5 marks for any one method.

Credit named location/projects etc up to 4 marks.

Some comment should be made on the effectiveness (or otherwise) of each measure.

Total: 50 marks

River Basin Management

Question 3

(a) Candidates may mention a range of reasons to explain the need for water management including:

- low annual precipitation
- flood control
- regulating flow and storage of water
- power supply for expanding cities and industry
- water for industry
- water for irrigation as food demands increase
- drinking water for increasing population.

Assess out of 10 marks, awarding up to 4 marks for appropriate use of specific data taken from maps and tables.

10 marks

(b) Physical factors might include:

- solid foundations for dams
- consideration of earthquake and underground movements
- narrow cross-section to reduce dam length
- large, deep valley to flood behind dam
- impermeable rock beneath reservoir
- sufficient water supply from catchment area
- low evaporation rates, due to small surface area of reservoir
- impact on hydrological cycle.

Human factors might include:

- cost of construction
- proximity of urban areas for water and electricity
- proximity of agricultural areas for irrigation
- cost of displacing people
- cost of compensating farmers and home owners
- impact on communications.

Assess out of 14, with up to 10 marks for either physical or human factors.

14 marks

(c) (i) Problems might include:

- difficulties between states which are represented by different political parties
- sharing allocation of water rights
- changing needs of different states including increasing populations and increasing irrigation
- increased pollution and salinity downstream affecting water quality
- shared costs of purification and desalination plants
- impact of dam construction on consumers downstream
- relationship between neighbouring countries.

- (ii) These problems could be overcome by having political agreements eg the Colorado River Compact which divided up water allocations based on historical rainfall patterns. International agreements may be needed where different countries are involved.

Assess out of 10 ensuring that both problems and solutions are included for full credit.

10 marks

(d) Social benefits include:

- improved water supply for drinking
- irrigation providing an increased food supply
- less water borne disease
- population increases sustainable
- greater availability of electricity
- opportunities for tourism and recreation
- increased fresh water improves health and sanitation.

Economic benefits include:

- improved navigation and roads across dams
- HEP and water for industry
- irrigation allowing double cropping and commercial farming
- income from tourism and recreation.

Environmental benefits include:

- flood control
- reliable seasonal water supply
- dramatic scenery around dams and reservoirs
- introduction of new wildlife habitats.

Assess out of 16. Answers should be authentic for the chosen water control project. Candidates must refer to all 3 sections for full marks. Reduce maximum by 2 marks for each part missed. Award up to 4 marks for named examples.

16 marks

Urban Change and Management

Question 4

(a) Answers will depend upon the EMDC chosen, but for Spain answers might suggest:

- concentrations on and around the coast of Spain, both on the North coast and along the East and South coastal areas
- coastal cities would include ferry terminals (Santander, Palma), historical trading ports (Barcelona) and holiday areas accessed by airports (Malaga, Alicante)
- along rivers for communication, trade, raw materials (Sevilla, Zaragoza)
- major cities on Spanish islands (Palma, Mallorca and Las Palmas, Gran Canaria)

Assess out of 10 with maximum of 6 marks for description. Award up to 3 marks for named cities linked to specific reason for location.

10 marks

(b) (i) Social, Economic and Environmental problems should be related to the candidate's chosen city. Answers would be enhanced by convincing relevant details on the chosen city such as **named** shanty areas or specific projects to tackle problems. Problems might include:

- continued growth of these shanty towns (favelas, bustees etc) in and around the city
- shanty areas are characterised by poor quality home-made dwellings, overcrowding, inadequate water and power supplies, poor sanitation, disease and general lack of amenities like services, schools and hospitals
- they are often sited on unstable hillsides, marshy areas or other areas avoided by other building
- unemployment or underemployment and poor wages for the few jobs available
- 'grey' or 'black market' economies with problems of drugs and high crime rate
- chronic traffic congestion and high pollution levels from nearby industries
- sites are illegally settled and may be bulldozed and removed by city authorities at any time.

Assess out of 12. Up to 2 marks can be awarded for named examples.

12 marks

(ii) Ways to tackle problems might include:

- self-help schemes (eg São Paulo) where city authorities provide basic housing made of breeze block and roof tiles. Local residents supply the labour for 'finishing off' and digging ditches for water supply and sanitation
- basic amenities such as power, clean water, roads and community facilities may be provided
- groups of residents within shanty town areas may form community groups to share trade skills to improve existing facilities within the larger shanty town
- city authorities may build high-rise apartment blocks in suburbs to provide high-density housing to replace the extremely high-density living in shanty areas

Some qualitative statements on the success or otherwise of these schemes is required to attain full marks. For example, “the advantages of self-help schemes are that costs are kept to a minimum to maximise the number of ‘basic shell’ houses that can be built. Working together can establish community spirit with shared common purpose.”

Assess out of 8. Up to 2 marks can be awarded for named examples.

8 marks

(c) (i) Maximum of 14 in (b) (i) and (ii) – if no named city.
Traffic congestion in an EMDC city. For Aberdeen candidates might suggest:

- increased commuting from dormitory towns and villages to N, W and S of Aberdeen as people seek quieter living conditions focuses rush hour traffic on major traffic junctions eg Haudagain roundabout
- Aberdeen has major industrial areas at Altens and Dyce, leading to large commuter flows outwith the city centre
- major roads have to converge to cross the rivers Don and Dee, leading to bottlenecks at bridges over the rivers
- around 15,000 journeys per day in Aberdeen are generated by through traffic, clogging up city streets unnecessarily
- more stringent traffic regulations in and around the CBD and shortage of car parking facilities, leading to unnecessary traffic flow as spaces are sought
- growing car ownership, related to high disposable incomes and increased number of 2 (or more) car families. > 60% of employed people in Aberdeen travel to work by car
- increased use of private transport to do ‘school run’ during rush hours, due to safety issues (ironically caused by increased traffic)
- increase in number and size of lorries and buses which often find it difficult to manoeuvre in outdated road network, delaying other traffic
- increase in need for road maintenance due to increased traffic flow and weight of modern lorries
- shutting off of side roads formerly used as ‘rat runs’ focuses all traffic on to main arterial roads.

Assess out of 12. Up to 3 marks can be awarded for named traffic problems in the chosen city.

12 marks

(ii) Candidates may suggest protests and land-use conflicts that would be due to:

- breaching of green belt land
- roads such as the AWPR use up large tracts of land, often good quality farmland or recreational land, leading to protests by groups such as the Aberdeen Greenbelt Alliance or Friends of the Earth who want to preserve green belt areas
- removal of sensitive woodlands and meadows in the Dee Valley may harm endangered species in the areas, such as the Red Squirrel
- once roads such as the AWPR have been built, they act as a focal point for developers wanting to build houses and/or industrial areas and/or out-of-town retail parks with vast buildings and huge car parks taking up large areas of land, these all benefit from the improved access brought by the new road, these also in turn lead to further breaching of the green belt land, including potential loss of golf courses, country parks etc

- property blighting, where any properties which are within sight or sound of the road may lose much of their value
- spiralling costs of projects like the AWPR lead protesters to argue that the huge amounts of money involved could be used to improve existing infrastructure and modernise public transport
- compulsory purchase orders are placed on properties on the proposed route and people are forced out of their houses.
- farms are often split by such roads, causing access problems for farmers and their livestock
- encroachment of housing may increase crime and vandalism for farmers and their property.

Assess out of 8. Award up to 2 marks for specific named examples.

8 marks

European Regional Inequalities

Question 5

- (a) Candidates should note the higher levels of development in pre-2000 states. This may be due to locations near the economic Core, the length of membership and subsequent financial benefits, the quality of infrastructure, the proximity of markets, the ease of trade and the sourcing of resources. The relative prosperity of the pre-2000 states also leads to a better quality of life. Candidates will also gain credit from noting anomalies and where possible outlining reasons for these anomalies eg Portugal and Slovenia.

Assess out of 10 marks, allowing a maximum of 7 for either description or reasons. A maximum of 2 should be allowed for a direct use of rankings.

10 marks

- (b) (i) Credit should be awarded for candidates noting that Objective 1 status is awarded to Europe's peripheral areas. A maximum of 6 marks should be awarded for identifying areas or countries eg Ireland, SW England, Wales, Portugal and Spain, S Italy, Greece, Sweden, Finland, the eastern part of Germany and the new states of the Eastern bloc.

Assess out of 8 marks.

8 marks

- (ii) Countries would benefit from Objective 1 status through the following:

- support for infrastructure improvements
- support for employment training and education
- support for production/manufacturing sectors
- environmental protection
- improving access to the peripheral areas
- improving IT, literacy and numeracy.

Assess out of 8 marks.

8 marks

- (c) (i) Answers will be dependent upon the country chosen but must be authentic for the candidate to score full marks.

Physical factors could be related to (for example):

- difficult terrain/relief (mountain ranges: Northern Spain, Central Italy, Highlands of Scotland)
- physical isolation (Highlands of Scotland/Wales, areas in Central Spain, much of Southern Italy)
- climatic problems such as drought (Southern Italy, Central, Southern and Eastern Spain, Greece)
- prolonged winters (Northern Sweden, much of Finland)
- natural disasters (earthquakes; Greece, Italy; volcanic eruptions; Southern Italy).

Human factors could include (for example):

- differences in employment opportunities
- decline in the range and scope of opportunities in the rural-based economy
- decline in range of relevant skills in a declining industrial area
- perceptions of inward investors
- problems of land ownership and tenure
- political/terrorist factors (ETA)
- overdependence on seasonal employment in (for example) the tourist industry
- variations in investment infrastructure
- distance from main markets/Euro-core.

Assess out of 18 with a maximum of 12 for either physical or human factors. Award up to 3 marks for specific named examples.

18 marks

(ii) Once again answers will depend upon the country chosen but national government strategies to tackle regional inequalities might include:

- regional development status, Enterprise Zone status, capital allowances, training grants, assistance with labour costs
- specific assistance to former coal mining/iron and steel areas
- intervention of national government resulting in the location of major government employers in disadvantaged areas DVLA (Swansea), MOD (Glasgow), SNH (Inverness)
- intervention by national government to encourage inward investment – particularly in newer industries – electronics/call centres.

Assess out of 6. Award up to 1 mark for named examples.

6 marks

Development and Health

Question 6

(a) Essentially single indicators are too broad/generalised:

- they are averages which disguise or distort wide internal variations eg a few immensely wealthy families but the majority of the population may be living at subsistence level
- combining indication on health, education and the economy give a more balanced view of development
- some regions/areas of a country may be much better off than others – ‘north-south’ or ‘urban-rural’ contrasts
- GNP figures are in some cases inflated by oil revenues (showing a big gap between these and other indicators that have yet to ‘catch up’)
- subsistence agriculture and ‘barter economies’ are not included in wealth indicators
- certain indicators are perhaps irrelevant to the real quality of life in many poorer ELDCs eg TVs per household when there is no electricity supply.

Assess out of 4

4 marks

(b) Differences in the levels of development between ELDCs (Economically Less Developed Countries) may be due to:

- mineral reserves eg Saudi Arabia and similarly positioned Middle East countries with vast reserves of oil. They also have stable (if despotic) government regimes/monarchies that leads to the generation of huge wealth. This wealth can ‘trickle down’ to a wide sector of the population. Other countries may have no reserves of minerals in demand by the EMDCs (Economically More Developed Countries) eg Burkina Faso
- political instability eg many have unstable regimes or are suffering from border wars and/or civil wars eg Zimbabwe, Sudan and Indonesia
- colonial links eg some Caribbean countries receive support from European countries because of their former colonial ties
- strategic locations eg South Korea and many Central American countries receive additional support from leasing land for military bases
- encouragement of entrepreneurial skills and the ability to attract in major world companies eg by offering an educated, resourceful and relatively cheap work force (South Korea) and/or incentives eg 10 years rent free factory sites in Vietnam
- natural disasters eg Bangladesh (cyclones and floods), Niger (recurring drought and associated famines) will limit progress as development money is spent on repairing infrastructure and humanitarian aid.

Assess out of 12 allowing up to 4 marks for the names of relevant countries correctly matched to appropriate reasons. Award a maximum of 6 marks for over-generalised responses that fail to make any specific/’authentic’ references to named areas/countries or to only one country or within a country.

12 marks

(c) (i) For Malaria – Environmental factors:

- suitable breeding habitat for the female Anopheles mosquito – areas of stagnant water to lay eggs in
- hot and wet climates such as those experienced in the Tropical Rainforests or Monsoon areas of the world
- temperatures between 15°C and 40°C
- areas of shade in which the mosquito can digest blood.

Human factors:

- nearby settlements to provide a ‘blood reservoir’
- encouraged by bad sanitation and poor irrigation or drainage that leaves standing water uncovered eg tank wells, irrigation channels, water barrels, padi fields.

NB There may be some overlap between human and environmental factors.

Assess out of 6.

6 marks

(ii) Strategies used to combat the spread of Malaria can include:

Trying to eradicate the mosquito:

- insecticides eg DDT and now Malathion
- mustard seeds thrown on the water that become wet and sticky so dragging the mosquito larvae under, drowning them
- egg-white sprayed on the water creates a film which suffocates the larvae by clogging up their breathing tubes
- bti bacteria grown in coconuts – the fermented coconuts are broken open after a few days and thrown into the mosquito infested ponds. The larvae eat the bacteria and have their stomach linings destroyed
- larvae eating fish introduced to ponds
- draining swamps, planting eucalyptus trees that soak up excess moisture, covering standing water
- genetic engineering eg of sterile males

Treating those suffering from malaria:

- drugs like chloroquin, larium and malarone
- quinghaosu extracted from the artemesian plant – a traditional Chinese cure
- continued search for a vaccine – not available as yet
- education programmes in –
 - the use of insect repellents eg Autan
 - covering the skin at dusk when the mosquitoes are most active
 - sleeping under an insecticide treated mosquito net
 - mesh coverings over windows/door openings
- WHO ‘Roll back malaria’ campaign
- the Bill and Melinda Gates Foundation

NB A maximum of 1 mark each should be allocated for examples of insecticides and drugs.

Assess out of 12.

12 marks

(iii) Benefits to ELDCs of controlling disease may include:

- funds can be diverted elsewhere in the Health sector or transferred to other budgets that help development
- national debt can be reduced
- the workforce will be fitter (eg farmers better able to produce food), thus also helping to raise health levels
- productivity will increase as the workforce takes less sick leave/life expectancy increases
- the area will become more attractive to tourists, foreign currency income can be generated and this will also assist in developing tourism related services/industries
- a possible reduction in birth rates as a result of a fall in infant mortality rates.

Assess out of 6.

6 marks

(d) Examples of Primary Health Care (PHC) strategies may include:

- use of barefoot doctors – trusted local people who can carry out treatment for more common illnesses – sometimes using cheaper traditional remedies
- use of ORT (Oral Rehydration Therapy) to tackle dehydration – especially amongst babies. This is an easy, cheap and effective remedy for diarrhoea/dehydration
- provision of vaccination programmes against diseases such as polio, measles, cholera. Candidates may also refer to PHC as based on generally preventative medicine rather than (more expensive) curative medicine
- the development of health education schemes in schools, community plays/songs concerning AIDS, with groups of expectant mothers or women in relation to diet and hygiene. Oral education being much more effective in illiterate societies
- sometimes these initiatives are backed by the building of small local health centres staffed by doctors (like GPs)
- PHC can also involve the building of small scale clean water supplies and Blair toilets/pit latrines – often with community participation
- The use of local labour and building materials is often cheaper, it also provides training/transferable skills for the participants and gains faster acceptance/usage in the local and wider community.

Assess out of 10 ensuring that candidates explain why PHC is more effective in ELDCs to gain full marks. (Avoid crediting ‘cheaper’ more than once).

10 marks

[END OF MARKING INSTRUCTIONS]