



2011 Geography

Higher Paper 2

Environmental Interactions

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 (^) 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 (Rural Land Resources)

- (a) Award up to 3 marks for relevant named examples from different features. Give a maximum of 2 marks for any one process eg plucking, abrasion, freeze-thaw. Maximum of 2 marks for a list of unexplained processes.

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 15. For full marks a minimum of two features must be described and explained eg for a corrie points could include:

- Snow accumulates in north/east-facing hollow due to lack of melting.
- Successive layers of snow compress into ice/neve.
- Ice moves downhill under gravity.
- Freeze-thaw weathering occurs on backwall.
- Plucking steepens the backwall.
- Boulders embedded in ice grind away at bottom of the corrie.
- Abrasion carves out armchair-shaped depression due to rotational movement.
- Rate of erosion decreases at edge of corrie leaving a rock lip.

18 marks

- (b) Answers are expected to link these opportunities to the physical landscape, and answers must mention both social and economic opportunities for full marks. Award up to 3 marks for specific named examples not already credited in part (a).

Explanations can be developed from:

Social opportunities

- Mountaineering and hillwalking.
- Forest walks, picnic sites and orienteering courses.
- Sailing, fishing and other water sports.
- Nature conservation.

Economic opportunities

- Tourism and associated employment and profits.
- Development of hotels, bunkhouses and campsites.
- Hill sheep farming.
- Forestry plantations.
- HEP and water supply.
- Quarrying.

10 marks

(c) Answers should be able to compare the popularity of parks based on analysis of the resource:

- Lake District is close to heavily populated areas, Merseyside, Yorkshire, Manchester.
- Snowdonia more remote in North-West Wales.
- Lake District is more accessible by motorway especially for short visits, M6, M74.
- Snowdonia is less accessible by motorway.
- Credit can also be given for candidates' knowledge of both parks, in terms of attractions.

6 marks

(d) (i) Award up to 4 marks for specific place names in (d), not already credited. Non-authentic answers that fail to supply place names should be given a maximum of 6 marks. A maximum of 5 for any one conflict.

Answers should be able to explain the environmental conflicts including:

- Traffic congestion especially on narrow rural roads and in car parks especially at peak holiday periods.
- Increased air and noise pollution.
- Increased holiday homes which leave rural areas empty during the week or off peak.
- Footpath erosion.
- Disruption to farms, damage to walls, disturbance to animals.
- Litter.
- Unsightly buildings including hotels, leisure complexes, caravan sites.
- Impact on lakes, bank erosion and diesel pollution due to water sports.

10 marks

(ii) Assess out of 6 for solutions to ONE conflict, giving full marks only if there is some effort to comment on effectiveness eg traffic solutions might include:

- One way streets, bypasses, wardens, parking restrictions.
- Encourage use of public transport eg park and ride, minibus.
- Use of cycle paths, bridle ways, long distance paths.
- Use of permits to separate locals and visitors.

6 marks

Question 2 (Rural Land Degradation)

- (a) **Assess out of 12 marks with up to 8 marks for either water or wind erosion. Award up to 4 marks for any one process.**

The four main processes of erosion by water can be described as:

- Rainsplash – the impact of raindrops on the surface of a soil.
- Sheet wash – the removal of a thin layer of surface soil which has already been disturbed by rainsplash.
- Rill erosion – small eroded channels, only a few centimetres deep and not permanent features, often obliterated by the next rainstorm.
- Gully erosion – steep sided water channels, several metres deep which can cut deeply into the soil after storms and are often permanent.

The three main processes of wind erosion can be described as:

- Surface creep – the slow movement of larger (and heavier) particles across the land surface.
- Saltation – the bouncing along of lighter particles.
- Suspension – the lightest particles (dust) blown off ground for up to several hundred kilometres, dust storms.

12 marks

- (b) **Answers should include the following descriptions and explanations from the resources. Award a maximum of 2 marks for figures lifted directly from diagrams.**

- Niger is a landlocked, dry country – part of the Sahel Zone.
- Extreme range of temperatures on a daily basis.
- Seasonal rainfall concentrated from April to September.
- High temperatures coinciding with highest precipitation leading to high evaporation.
- Annual rainfall creates desert conditions.
- Variable annual rainfall from 1950 to 2010 with periods above average encouraging farming even in marginal areas, and periods below average leading to drought and degradation.
- Clear skies and strong direct sun can bake ground.

Candidate must relate aspects of climate to degradation caused by wind and water erosion.

8 marks

- (c) Assess out of 16 with credit of up to 4 marks for specific examples. Do not credit terms such as, 'overgrazing', in the question.**

Answers should include explanations in the four areas of human activity outlined (Africa north of the Equator):

- Deforestation for firewood and farmland left soil exposed to erosion, removed root systems which would hold soil together, and removed shelter belts and wind breaks.
- Overgrazing exposed soil to winds by loss of vegetation cover, hooves break up soil making it susceptible to wind and water erosion, and in some cases compact the soil, especially near water holes.
- Overcropping means soil structure breaks up, with monoculture depleting nutrients, reduced fallow times meaning soil cannot rest or recover, marginal land eg slopes being used and becoming susceptible to wind and water erosion.
- Inappropriate farming techniques including monoculture, inappropriate ploughing eg deep ploughing of fragile soils, irrigation leading to salinisation, lack of organic fertilisers used.

16 marks

- (d) Assess out of 14 with up to 4 marks for correctly located named examples. Award a maximum of 6 marks for any one conservation strategy.**

Soil conservation strategies might include:

- Crop rotation.
- Diversification of farming types.
- Keeping land under grass or fallow.
- Trash farming/stubble mulching.
- Replanting shelter belts.
- Strip cultivation and intercropping.
- Improved irrigation.
- Soil banks.
- Contour ploughing.
- Terracing.
- Use of natural fertilisers.
- Gully repair.
- Re-afforestation of slopes and marginal land.

14 marks

Question 3 (River Basin Management)

- (a) **Assess out of 12, awarding a maximum of 4 marks for specific data taken from the graphs.**

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

- Very high rainfall in Borneo (tropical rainforest conditions).
- Flood control.
- Regulating flow and storage of water.
- Power supply for expanding cities and industry.
- Export of surplus electricity.
- Water for industrial purposes.
- Drinking water for increasing population.

12 marks

- (b) **Assess out of 10.**

Physical factors might include:

- Solid foundations for a dam.
- Consideration of earthquake zones/fault lines.
- Narrow cross-section to reduce dam length.
- Large, deep valley to flood behind the dam.
- Lack of permeability in rock below reservoir.
- Sufficient water supply from catchment area.
- Low evaporation rates.
- Impact on the hydrological cycle.

10 marks

- (c) (i) **Answers should be authentic for the chosen river basin. Up to 4 marks may be awarded for appropriate place names.**

Answers will depend upon the basin chosen. However, some suggestions are outlined below:

Social:

- Greater population can be sustained with increased fresh water supply.
- Less disease and poor health due to better water supply/sanitation.
- Recreational opportunities/tourism on rivers and reservoirs.
- More widespread availability of electricity (and therefore modern technology/development).
- Floods could be avoided.

Economic:

- Improved farming outputs with possible surplus for sale.
- HEP – industrial development creating job opportunities eg Borneo could export surplus electricity to Indonesia and transfer to mainland Malaysia.
- Water (and power) for industry eg a proposed aluminium smelter in Borneo linked to the Bakun Dam.
- Navigation opportunities.

Environmental:

- Increased fresh water supply improves sanitation and health.
- Scenic improvement?

16 marks

- (ii) **Explanations should be assessed out of 10 marks. Award up to 4 marks for relevant descriptive points making use of the reference diagrams, or for specific named examples not credited in (c) (i).**

Answers will depend on the dam studied but for the Bakun Dam, answers may include:

- Threatened wildlife – endangered species may vanish, loss of tourism revenue, loss of medicinal plants/drugs still to be discovered.
- Forest cover – deforestation from reservoir/dam construction and increased access to remote areas with the resulting impact on local climate and global warming, silting up of rivers/soil erosion.
- Changing landscapes – reduced supply of timber for world trade and the increased planting of palm oil for biofuels/oil exports replacing the rainforest and resultant loss of biodiversity as access improves.
- People – relocation of indigenous tribes, loss of land/traditional way of life, spread of water-borne diseases from reservoirs.

The candidate may also include facts from the reference diagrams:

- There is already a surplus of electricity.
- The transmission line to transfer more electricity to the Malaysian mainland is only 'proposed'.

Other factors such as cost or political factors could be made relevant by the candidate.

12 marks

Question 4 (Urban Change and its Management)

- (a) **Assess out of 10 with a maximum of 6 marks for description of distribution, (not site) of the major cities. Award up to 3 marks for named cities linked to specific reasons for location.**

Answers will depend on the Developed World city chosen, but for the UK answers might suggest favourable locations for cities eg:

- Coastal locations – for trade with Europe/America (London/Glasgow), fishing industry (Aberdeen) and ship-building industry (Glasgow/Belfast).
- Natural routeways/rivers/canals – for communication, trade in raw materials (Leeds, Manchester, Sheffield, Birmingham).
- Access to raw materials – for coal, iron ore and limestone for the iron and steel industry (Glasgow/Sheffield).
- Historical/political factors in location of capital/primate cities – royal residences, parliaments etc (London, Edinburgh, Cardiff).

Whereas negative locations may also be included eg:

- Mountainous/upland areas – Highlands, Pennines.
- Inaccessible/marshy areas – Islands, Fens

10 marks

- (b) **Assess out of 10 with a maximum of 7 marks for either advantages or disadvantages. Award a maximum of 3 marks for specific data taken from the resources.**

Candidates should note the advantages for the residents of the East End of Glasgow using the statistics from the diagrams/table.

Advantages could include:

- Improved communications – motorway/road extensions and improvements.
- Jobs – in the various venues before, during and after the event (construction, catering, transport etc).
- Training – the promise of skills training in various volunteer roles during the competitions that could then lead to permanent jobs.
- Social – attending/participating in the competitions.

Disadvantages could include:

- Disruption and pollution from the construction process in producing the 30% of the venues/facilities still to be built.
- Loss of land, access, community spirit/cohesion that new roads/motorways can lead to, particularly with the M74 extension cutting through a densely populated area.
- Some landowners/developers may have had to sell their property under compulsory purchase orders that may have led them to lose potential profits.

10 marks

(c) Assess out of 10 with up to 3 marks for appropriate and relevant examples within the chosen city.

Traffic congestion in a Developed World city. For Glasgow, candidates might suggest:

- An urban core developed in the pre-car era with medieval/Victorian sections unsuited for modern traffic (narrow, cobbled, grid-iron pattern with many junctions).
- Increased commuting from dormitory towns and villages converging on a few main arteries (Paisley Road West, Great Western Road, M8, Kilmarnock/Ayr Road).
- Major roads converging to cross the River Clyde (Clyde Tunnel, Kingston Bridge).
- Glasgow is a growing tourist/shopping centre attracting coach tours and shoppers from a larger hinterland.
- More stringent traffic regulations in and around the CBD with a shortage of cheaper gap site car parking facilities.
- Growing car ownership and school run traffic extending and expanding the 'rush hours'.
- Increased road haulage/deliveries in larger vehicles with a resulting need for more road maintenance.

10 marks

(d) (i) Allow a maximum of 4 marks in parts (i) and (ii) for specific named examples eg of 'shanties' or schemes relevant for the named city.

Assess out of 12.

The problems should be relevant to the candidate's chosen city and might include:

- Chaotic urban infrastructure eg incomplete water and sewerage supplies and connections leading to the spread of disease.
- Unemployment/underemployment
 - Growth of the 'grey' economy and black market
 - Drugs, crime, racketeering and prostitution are common and often involve a greater % of the population than a city in developed country
 - Poor wages for unskilled jobs partly due to the huge supply of labour available.
- Lack of services, schools and hospitals.
- Difficulties in encouraging city/public employees to work in the 'shanty' areas.

- Chronic traffic congestion and associated high levels of atmospheric pollution
 - Proliferation of 'informal' city transport (having both advantages and disadvantages.)
- Continued growth of 'shanty towns' in a range of locations in and around the city
 - 'Natural' disasters such as landslides resulting from the inappropriate building techniques and methods on fragile or unsafe land.

12 marks

(d) (ii) Assess out of 8

Again the methods used to tackle the problems should be related to the candidate's chosen city.

Candidates could offer a number of 'generic' solutions:

- An increase in the empowerment of the local people often with the aid of charity/church groups which provide advice/counsel/lobbying facilities for the poorest elements of the population.
- Local council plans to improve basic infrastructure, including provision of water/sewerage to established 'shanties'.
- Improvements in the standard of basic education.
- The provision of hardware/utilities with the local populace providing the skill/effort to install these ie the 'basic shell' of housing being provided.

Specific solutions related to the candidate's chosen city are also wanted, these could include government drives to demolish squatter settlements and re-house the residents in new housing schemes.

8 marks

Question 5 (European Regional Inequalities)

- (a) **Assess out of 10. A maximum of 4 marks should be awarded for quoting from the table to show the possible benefits of EU membership, eg the increase in GNP per capita (faster rates of increase for new members) that has accompanied membership for all nations but also commenting on the gap in GNP per capita that still exists in the EU.**

Countries may wish to become members of the European Union for the following reasons:

- Removing trade barriers to boost growth and create jobs.
- Tackling climate change and promoting energy security.
- Improving standards and rights for consumers.
- Fighting international crime and illegal immigration.
- Bringing peace and stability to Europe by working with its neighbours.
- Giving Europe a more powerful voice in the world.
- Securing food supplies and essential raw materials.
- Improving standards of living in the member states.

Specific EU measures to aid development include:

- European Regional Development Fund (ERDF) which provides a wide range of direct and indirect assistance to encourage firms to move to disadvantaged areas eg loans, grants, infrastructure improvements.
- European Investment Bank (EIB) provided loans for businesses setting up in disadvantaged areas.
- European Social Fund (ESF) assists with job retraining and relocating.

10 marks

- (b) **Assess out of 12. Award a maximum of 4 marks for specific data taken from the resources.**

Evidence might include the marked differences in GNP per capita between the “North” and the “South”. Figures should be quoted and regions named, Abruzzi, Molise, Sardinia, Campania and Sicily stand out as being particularly disadvantaged compared to regions such as Emilio Romagna or Lombardy in the “North”. Regions such as Umbria and Latium could be said to be in a middle category or transitional. The concentration of industry, commerce and services in the North should be noted.

12 marks

- (c) **Assess out of 16. Award a maximum of 4 marks for appropriate and relevant examples.**

Answers will be dependent on the country chosen. For Italy, the following factors may be mentioned:

Physical factors

- Relief/geology.
- Climate/water/resources.
- Soil quality/soil erosion.
- Natural disasters.

Human factors

- Remoteness/isolation/communications.
- Limited employment opportunities in the South.
- Decline of traditional industry.
- Land tenure problems.
- Unskilled labour, poorly educated workforce.

16 marks

- (d) (i) **Assess out of 12. Award up to 3 marks for named examples. Candidates who fail to comment on effectiveness can score a maximum of 9 marks.**

Once again answers will depend upon the country chosen.

National Government Measures 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 relocation of major government employers or state owned firms to disadvantaged areas eg Fiat to Southern Italy, DVLA in Swansea, MOD in Glasgow.
- In Italy the Cassa il Mezzogiorno would be a key policy.
- Tesco Finance to Glasgow - £5 million Regional Selective Assistance (RSA) grant.

- (ii) Comment should be made on the effectiveness of the measures outlined eg the long term benefits or disadvantages of using these incentives.

12 marks

Question 6 (Development and Health)

- (a) (i) **Assess out of 10 giving credit to answers which make good use of statistics to illustrate comparative statements. Maximum of 4 marks for specific data taken from the resources. Award up to 2 marks for interpretation/explanation of indicators – ie how they show development.**

Candidates should be able to identify several differences between provinces using the figures provided. It is clear that the North Eastern province is by far the least developed across the development indicators and that Central province is clearly at the highest level of development within Kenya.

Candidates should get credit for noting that the table covers the three major areas of education, wealth and health and could comment on each of these in turn.

- Education – varies from 87% of females with no education in North Eastern province to only 10% in Nairobi. The striking difference between male and female percentages, especially in poorer provinces, with males getting preferential treatment in many developing countries, could be noted.
- Wealth – all areas of Kenya have many poor, but again big variation from almost 2/3 in North Eastern, Western and Nyanza to <1/3 in Central.
- Health – huge variation again here with >3/4 of children in Central province having all vaccinations whereas only 8% in North Eastern are protected. The North Eastern province trails all others alarmingly in this indicator.

10 marks

- (ii) **Assess out of 10. Award up to 2 marks for specific named locations linked to regional variations. Award a maximum of 5 marks for over-generalised or “between countries” responses which fail to make any specific/‘authentic’ references to the country chosen or between countries. Should an answer refer to more than one country mark all parts but only count the best one.**

Answers will, obviously, depend on the Developing World country chosen but for Brazil could include:

- The South East is much more prosperous than other regions due to the concentration of industry and commerce in the “Golden Triangle” of Sao Paulo, Rio de Janeiro and Belo Horizonte. This area has the best transport system in Brazil, the greatest number of services, and has benefited most from Government help. Coffee growing has long been carried out on the rich *terra rossa* soils around Sao Paulo producing job opportunities and creating wealth for the area and the national economy. Rio de Janeiro – until 1960 the capital of Brazil, had the advantages of a good natural harbour which encouraged trade, immigration, industry, and more recently, tourism.
- The North East, in contrast, is handicapped by more negative factors such as periodic droughts, fewer mineral resources and a shortage of energy supplies all of which have encouraged outwards migration.
- The North (Amazonia) suffers from its more peripheral location, its inhospitable (rainforest) climate, poor soils, dense vegetation and inaccessibility. Not surprisingly, it is the poorest of Brazil’s five main regions. Until recently, there was a lack of Government investment and much of the region lost out on basic services such as health, education and electricity.
- In addition to explaining the sorts of marked socio-economic regional variations which exist in a huge and diverse country such as Brazil, candidates may also comment on the marked differences in living standards which exist between relatively wealthy and better-provided-for urban areas compared to poorer more isolated rural areas and to the contrasts that can be found *within* urban areas – eg hillside *favelas* such as Rocinho in Rio versus the prosperous apartments overlooking Copacabana Beach.

10 marks

- (b) **Assess out of 18. Candidates who fail to provide comparative evaluative comments on the effectiveness of at least some of their measures should score a maximum of 14 marks. A maximum of 1 mark each should be allocated for examples of insecticides, drugs or herbal medicines with an overall maximum of 4 marks for appropriate named examples.**

Measures used to combat the spread of malaria can include:

Trying to eradicate the mosquito/mosquito larvae:

- Pesticides/insecticides such as DDT and later Malathion.
- Mustard seeds thrown on water areas become wet and sticky and drag the mosquito larvae under the water, drowning them.
- Egg-white sprayed on water surfaces 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 larvae-infested ponds. The larvae eat the bacteria and have their stomach lining destroyed.
- Putting larvae-eating fish such as the muddy loach into ponds.
- Draining swamps, planting eucalyptus trees which soak up excess moisture, covering standing water.
- Genetic engineering, eg engineering sterile male mosquitoes.

Treating those suffering from malaria:

- Drugs like quinine, chloroquine, larium and malarone.
- Quinghauso extracted from the artemesian plant – a traditional Chinese cure.
- Continued search for a vaccine – not available as yet.
- The WHO 'Roll Back Malaria' campaign.
- Research carried out by the Bill and Melinda Gates Foundation.
- Education programmes in:
 - the use of insect repellents such as Autan
 - covering the skin at dusk and dawn when the mosquitoes are most active
 - sleeping under an insecticide-treated mosquito net
 - mesh coverings over windows/door openings.

18 marks

- (c) **Assess out of 12. Candidates who show detailed knowledge of specific PHC schemes should get up to 3 marks for named examples.**

Primary Health Care (PHC) strategies may include:

- Use of barefoot doctors ie trusted local people who can carry out treatment for certain common illnesses, often using cheaper, traditional remedies.
- Use of Oral Rehydration Therapy (ORT) to tackle diarrhoea and dehydration which can kill babies and young children.
- Vaccination programmes against diseases such as polio, measles and cholera. PHC can focus on preventative rather than more expensive curative medicine.
- Health education schemes in schools and communities, targeting children and women in relation to hygiene and diet. Using songs, posters, word of mouth rather than written information in societies with high illiteracy, especially among women.
- Local initiatives backed up by small local health centres staffed by doctors who can refer more serious/complex cases to hospitals.
- PHC can also be involved in provision of clean water supply eg WaterAid's work in Tanzania. Also construction of pit latrines/Blair toilets for decent sanitation, often with community participation.

12 marks

[END OF MARKING INSTRUCTIONS]