



2008 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) Candidates should mention both surface and underground features such as:

- limestone pavements
- sink/swallow/potholes
- dolines/shakeholes
- disappearing/resurgent streams
- dry valleys
- gorges
- scars and scree
- caverns
- stalagmites, stalactites and pillars.

Appropriate explanations should be provided for the formation of the features, eg for a limestone pavement:

- glacial erosion has scraped clear the overlying soil and exposed the limestone
- joints in the limestone have been formed as a result of pressure release
- these joints/lines of weakness are enlarged due to the action of chemical weathering: rainfall is a dilute acid (carbonic acid) and the limestone (calcium carbonate) can therefore be dissolved by this rainwater. This leads to deep gaps (grykes) and raised blocks (clints).

Assess out of 20 marks. Fully annotated diagrams could score full marks. Credit named examples up to 4 marks.

20 marks

(b) (i) The opportunities provided by the landscape could include:

- tourism, recreation, conservation
- farming, forestry
- water supply
- quarrying.

For full credit each land use should be linked to a landscape feature, and at least 2 land uses are required.

Assess out of 8 marks, allowing up to 2 marks for specific named locations.

8 marks

(ii) Explanations of problems and conflicts will depend on areas studied but will generally include:

- air and noise pollution from tourist traffic
- traffic congestion
- erosion of footpaths
- damage to fences and walls
- litter
- water pollution
- visual pollution from new complexes, car parks etc
- noise and air pollution from quarrying
- heavy traffic polluting, congesting and damaging rural roads.

Award 2 marks for specific named locations of conflicts or problems.

Assess out of 14 marks

14 marks

(c) If candidates selected National Parks as their conservation strategy answers may include the following points:

- the landscape is protected by legislation
- National Parks were set up to 'conserve and enhance natural beauty'
- National Parks will undertake to promote understanding and enjoyment of areas
- National Parks have a strong voice in issues like developments seeking planning permission
- National Parks will have information centres, newspapers etc which will provide information about conservation strategies.

Avoid giving credit for comments on the evaluation of strategies.

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

8 marks

Rural Land Degradation

Question 2

(a) Candidates descriptions may include:

- high temperatures throughout the year
- rainfall peaking during “summer” months/drought in “winter”
- northern areas of Burkina Faso having less rainfall than southern areas
- long term patterns of rainfall showing a decrease over a 30 year period
- fluctuating annual rainfall can also be assumed.

Candidates should explain why these patterns lead to land degradation. Points might include desertification, erosion from rain and wind, over-cultivation during wet periods and impact of drought on vegetation.

Assess out of 16 marks, with up to 8 marks for description, including up to 4 marks for appropriate use of statistics from graphs.

16 marks

(b) Answers will depend on the area chosen but may include:

- over-cultivation depleting soils of nutrients
- monoculture removing specific nutrients
- deep ploughing of fragile soils making them susceptible to erosion
- irrigation leading to salinisation
- deforestation of slopes to increase farmland leading to gully erosion
- removal of shelter belts leading to susceptibility to wind erosion
- lack of organic fertilisers used
- cultivation of marginal land leading to problems during drier years
- overgrazing of pasture leading to loss of vegetation cover.

Assess out of 8 marks. (If no named area – maximum 7)

8 marks

(c) If candidates select the Sahel as their chosen case study answers may include:

- crop failure and resulting malnutrition leading to famine
- disease and illness can become endemic
- migration on a large scale, often into shanties on the edge of cities
- collapse of traditional way of life eg nomadism
- many nomads forced to settle in villages, causing pressure on surrounding land
- conflict within countries as people move and re-settle
- countries rely on international aid
- a cycle of poverty develops.

Assess out of 10 marks.

Maximum 2 for specific named examples.

10 marks

(d) Soil conservation methods 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
- increased irrigation
- soil banks by keeping soils under grass rather than ploughing
- diversification by farmers into recreation
- contour ploughing
- terracing
- use of natural fertilisers
- gully repair
- re-afforestation of slopes and marginal land.

**Assess out of 16 with up to 4 marks for correctly located named examples.
For full marks some explanation of these methods must be attempted.**

16 marks

River Basin Management

Question 3

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

- very low rainfall in Egypt (desert conditions)
- flood control
- regulating flow and storage of water
- power supply for expanding cities and industry
- water for industrial purposes
- water for agricultural irrigation as food demands increase
- drinking water for increasing population
- maintaining a navigable river.

Assess out of 10, awarding a maximum of 4 marks for specific data taken from graphs.

10 marks

(b) 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.

Assess out of 10.

10 marks

(c) Answers will depend upon the basin chosen. However, some suggestion are outlined below:

Benefits	Adverse Consequences
<p>Social:</p> <ul style="list-style-type: none">• greater population can be sustained with increased food supply• less disease and poor health due to better water supply and more food being available• recreational opportunities• more widespread availability of electricity eg 16% of Egypt's total in 1998• floods in 1998 and 1999 and droughts from 1979 to 1987 avoided in Egypt	<p>Social:</p> <ul style="list-style-type: none">• forced removal of people from valley sites eg 90,000 Nubians from the Aswan High dam/reservoir site• increased incidence of water borne diseases such as Bilharzia in irrigation channels

Benefits	Adverse Consequences
<p>Economic:</p> <ul style="list-style-type: none"> • improved farming outputs with possible surplus for sale • HEP – industrial development creating job opportunities. (Aswan paid off more than 20 times the cost of the dam in 10 years – it produces more than 10 billion kilowatt hours of electricity every year) • water for industry • navigation opportunities 	<p>Economic:</p> <ul style="list-style-type: none"> • huge costs of new schemes eg Aswan cost 1 billion US \$ • dependence on foreign aid/finance in the case of ELDC's – consequent debt • more money required for fertilisers eg 1 million tonnes now used in Egypt • reduction by up to half the sardine and shrimp stock off the delta (although now recovering) • possible dislocation of communication links
<p>Environmental</p> <ul style="list-style-type: none"> • increased fresh water supply improves sanitation and health • scenic improvement? 	<p>Environmental</p> <ul style="list-style-type: none"> • water pollution and industrial pollution • loss of alluvial supplies to flood plain/delta • silting up of reservoirs • flooding of archaeological/historical sites eg UNESCO provided 40 million US \$ to rescue Abu Simbel and 19 other monuments

Answers should be authentic for the chosen river basin. Up to 6 marks may be awarded for appropriate place names illustrating the above.

Candidates must refer to all 6 parts for full marks (reduce maximum by 2 marks for each part missed).

24 marks

(d) Political problems will depend on the chosen river basin but may include reference to:

- water control/dependence on neighbours upstream eg 86% of the Nile's annual flow comes from Ethiopia
- pollution levels across borders eg 17% of Lake Nasser lies in Sudan
- shared costs with limited benefits
- complex legislation over appropriate water shares and how these are determined eg in the 1959 Nile Water Agreement Egypt and Sudan ignored Ethiopia and in the 1960's Egypt blocked the funding for 29 irrigation/HEP projects in Ethiopia
- reduction in water flows in some areas
- difficulty of predicting further demands.

Explanations should be assessed out of 6 marks.

6 marks

Urban Change and Management

Question 4

(a) (i) Description could focus on:

- the increasing urbanisation of the world's population in **both** More Developed and Less Developed regions
- the more rapid increase in urbanisation since 1970 in Less Developed regions
- the differing rates of increase between named areas in both More Developed and Less Developed regions (eg the urban population share has increased more significantly between 1970 and 1994 in Europe than in already highly urbanised North America). Similarly rates of urbanisation in recent and forthcoming decades are faster in Africa than in more urbanised Latin America.

(ii) Reasons for the differences could include:

- some explanations for higher birth rates experienced in ELDC's compared to fairly stable or even declining birth rates in EMDCs
- rural "push" and urban "pull" factors
- legislation such as Green Belt policies designed to curtail outward expansion of urban agglomerations in EMDCs.

Assess out of 14. Allow a maximum of 8 marks for either description or explanation.

14 marks

(b) (i) Social, economic and environmental problems ought to be related to the candidate's chosen city and might include:

- overcrowding, inadequate water supplies, poor sanitation, lack of amenities, high incidence of disease Lack of services, schools and hospitals
- unemployment/underemployment
 - growth of 'grey' economy and black market
 - drugs, crime, racketeering and prostitution
 - poor wages for unskilled jobs
- unsightly, homemade dwellings made out of a range of discarded materials. These are often sited on fragile or unstable land liable to landslides. Chronic traffic congestion and associated levels of pollution.

(ii) Again, methods used to tackle the problem ought to be authentic to the candidate's chosen city! For many cities these could include mention of:

- self-help schemes (such as those in Sao Paulo) where local authorities provide basic houses made of breeze blocks and roof tiles with local residents supplying labour and digging ditches for water, sewage pipes etc and for general "finishing off" (eg joinery work)
- money saved can then be used to provide amenities such as electricity, a clean water supply, tarred roads, a community centre, perhaps a school
- erecting high-rise apartment blocks, mainly in suburbs
- building new dormitory or satellite towns to relieve pressure on the existing metropolis (eg Cairo's Sadat City or 10th of Ramadam City.)

Assess out of 18. Allow up to 12 marks for part (i) ensuring that some reference is made to social, economic and environmental problems. Note that some candidates will provide a 'composite' response.

Maximum 16 if no named examples.

Up to 4 marks for named examples within the chosen city.

18 marks

(c) Answers will obviously be dependent on the change chosen and the EMDC city studied. For **housing** change in inner city **Glasgow**, for example:

(i) Factors responsible for the change would be such points as age and poor condition of many of the city's tenements which could be described in some detail.

(ii) Ways in which Glasgow's inner city housing areas have been changed could include:

- wholesale demolition of the worst of the tenements
- the creation of Comprehensive Development Areas
- 'decanting' residents to peripheral housing estates, New Towns and further afield – Overspill Policy
- more recently the emphasis has been on urban renewal/regeneration of older properties (eg sandblasting exteriors, new roofs and windows, security doors, modernising interiors – new kitchens and bathrooms etc) and the building of new more up-market privately owned flats.

Candidates could clearly enhance answers with reference to named developments/locations in their chosen city.

(iii) Comments on the success or otherwise of such strategies might refer to the reluctance of some older people to move; the problems associated with huge housing estates (eg lack of amenities such as a pub on the corner of every street, high crime rates, distance from workplaces) and high-rise flats (eg shoddy build quality, dampness, noise, vandalism). Many of the flats built to re-house former tenement dwellers have, in recent years, had to undergo extensive repair and, in some cases, have even been knocked down. Others may comment on the relative success of New Towns and the popularity of refurbished traditional homes.

Assess out of 18 ensuring that all three parts of the question have been dealt with for full marks.

Up to 4 marks for named examples within the chosen city.

Max 16 if no named examples.

18 marks

European Regional Inequalities

Question 5

(a) New Eastern Periphery reasons for lack of prosperity might include:

- less favoured area climatically – very cold continental winters
- more remote from major political centres of Europe – London, Strasbourg, Paris, Brussels
- less well served by transportation links – away from major motorway networks, away from ‘hub’ airports like Schipol, London and Paris airports and away from major container ports like Europort with worldwide trade links
- some areas are distant from Euro-Core – miss out on economies of scale and benefits from agglomeration factors
- countries with former centrally planned economies making the transition to market economies with persisting legacy in some cases of high unemployment or underemployment and high percentage with relatively poor living standards.

Assess out of 10 with maximum of 6 for either physical or human factors.

10 marks

(b) Indicators show the following:

- Euro-Core countries have significantly higher GDP/capita than either pre-2004 or new Periphery countries. They also have a very different industrial structure with a very small percentage in Primary Industry and a high percentage in the Services sector
- pre-2004 Periphery countries are in a ‘middle’ position with regard to GDP/capita but their IMR is very similar to the Core countries. Industrial structure shows a much greater reliance on Primary Industry in Greece and Portugal compared to Core countries. Greece’s structure is very similar to that of Estonia
- new Periphery countries have slightly higher IMRs indicating weaker health provision. GDP/capita is only slightly more than half that of Germany and the Netherlands, indicating a much lower wealth base. Industrial structure varies with Slovakia’s low Primary Industry figure more similar to that of Core countries

For full marks, candidates will require to illustrate points made with some well-chosen examples and statistics.

Assess out of 12 with a maximum of 8 for description.

12 marks

(c) The UK's regional inequalities stem from a combination of the physical differences between the higher and steeper land to the north and west of the UK compared with the lower and more gently sloping land to the south and east coupled with the remoteness of the north-west compared to the proximity of the south-east to the 'core' of the EU. Candidates may justifiably stress the positive and negative aspects of different regions.

- Physical factors might mention advantages/problems such as relief, rock types, climate and water supply, soil fertility and erosion.
- Human factors might mention decline of traditional heavy industries, growth areas of new lighter industries and hi-tech industries, out-migration from north and differences in accessibility related to communications and remoteness.

Award up to 3 marks for appropriate named examples.

Assess out of 14 with a maximum of 8 for either physical or human factors.

14 marks

(d) National government measures taken will vary according to whether candidate chooses a less developed region within UK, Italy or Belgium (or other).

UK national government help could include eg for South Wales:

- creation of Enterprise Zones (Swansea, Milford Haven) – giving credit for associated benefits
- the setting up of the Welsh Development Agency to attract high quality investment in Wales
- Cardiff as an example of an Urban Development Corporation
- development area status within the UK
- the construction of new towns such as Cwmbran
- the Heads of the Valleys Road as an example of improved infrastructure
- the DVLA to Swansea as an example of relocation of government offices.

EU measures would include:

- ERDF (European Regional Development Fund) – encourages firms to move to disadvantaged areas – loans, grants, improvements to local infrastructure
- EIB (European Investment Bank) – loans for factory modernisation etc
- ESF – (European Social Fund) – grants to improve job opportunities – retraining for redundant miners – assistance with relocation
- Problem/peripheral areas may be given Objective 1 or Objective 2 status which makes them eligible for funding packages/support for a set time.

Assess out of 14 with a maximum of 8 for either National or EU strategies.

Award up to 3 marks for appropriate named examples.

14 marks

Development and Health

Question 6

(a) (i) Economic indicators could include:

- Gross Domestic Product per capita
- Average Annual Income per capita
- Percentage of working population employed in, say, the Primary sector.

Social indicators could include:

- adult literacy rates (%)
- average life expectancy at birth
- infant mortality rates per 1000 live births
- number of cars/TV sets/telephones etc per 1000 people.

(Strictly speaking, the Human Development Index is a social welfare index which is calculated by giving each country a score based on: adult literacy rates, average life expectancy and average income per person adjusted to reflect local spending power).

Award 2 marks for each correctly stated indicator.

8 marks

(ii) Answers ought to be able to refer to the likes of:

- oil-rich countries such as Saudi Arabia, Brunei, the UAE or to relatively well-off countries like Malaysia which are able to export primary products such as tropical hardwoods, rubber, palm oil and tin as opposed to poorer nations such as Burkina Faso or Chad which lack significant resources
- Newly Industrialising Countries (NICs) eg China, South Korea, Taiwan are able to earn substantial amounts from steel-making, shipbuilding, car manufacturing, electrical goods, toys, clothing etc. They have been able to benefit from their population's entrepreneurial skills and low labour costs
- some countries such as Brazil and Malaysia have both resources and growing manufacturing industries
- the expansion of tourism has helped to improve living standards/create new job opportunities in countries like Thailand, Jamaica, Kenya, Malaysia, Sri Lanka and earns valuable foreign currency
- many countries are afflicted by recurring natural disasters which restrict development/hamper progress eg
 - drought in sub Saharan Africa (Mali, Chad, Burkina Faso ...)
 - floods/cyclones in Bangladesh
 - hurricanes in the Caribbean
 - tsunamis in Sri Lanka, Indonesia
- political instability – eg recent disruptive civil wars in places such as Sudan/Rwanda/Somalia/Liberia/Sierra Leone or larger-scale conflicts in Iraq or Afghanistan have also had a negative impact. Widespread corruption and mismanagement have accounted for the marked decline of Zimbabwe's economy and are a continuing problem in many other African nations.

Assess out of 12 awarding up to 4 marks for the names of relevant countries provided they are linked to appropriate factors/reasons.

Award a maximum of 6 for over-generalised responses.

12 marks

(iii) Answers will, obviously, depend on the ELDC 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 also a lack of government investment and much of the region has 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.

Assess out of 10. Award a maximum of 6 marks for over-generalised responses which fail to make any specific/‘authentic’ references to the country chosen. Should an answer refer to more than one country mark all parts but only count the best one!

Maximum of 2 for specific named examples within the chosen country. 10 marks

- (b) (i) Answers will depend on the disease chosen but for Malaria might include:

Environmental factors:

- suitable breeding habitat for the female anopheles mosquito – areas of stagnant water such as irrigation channels, water barrels, padi fields, puddles etc
- hot wet climates such as those experienced in the tropical rainforests or monsoon areas of the world
- temperatures of between 15°C and 40°C
- areas of shade in which the mosquito can digest human blood.

Human factors:

- nearby settlements to provide a ‘blood reservoir’
- areas of bad sanitation, poor irrigation or drainage
- exposure of bare skin.

Assess out of 8 ensuring that both physical and human factors are included for full marks.

8 marks

- (ii) Measures taken to combat Malaria can include:

Trying to eradicate the mosquitoes:

- insecticides eg DDT – however this is environmentally harmful – impacts on the food chain and is supposed to be banned as a result. In addition the mosquitoes build up a resistance to chemical insecticides through time and they become less effective
- newer insecticides such as Malathion – these are oil-based and so more expensive/difficult for ELDCs to afford – also stains walls and has an unpleasant smell – so not popular!
- mustard seed ‘bombing’ – become wet and sticky and drag mosquito larvae under the water drowning them
- egg-white sprayed on water – suffocates larvae by clogging up their breathing tubes (as with mustard seeds – wasteful, costly and fairly impractical)
- BTI bacteria grown in coconuts. Fermented coconuts are, after a few days, broken open and thrown into mosquito-infested ponds. The larvae eat the bacteria and have their stomach linings destroyed! Cheap, environmentally friendly and 2/3 coconuts will control a typical pond for up to 45 days.
- larvae eating fish – effective and a useful additional source of protein in people’s diets
- drainage of swamps – requires much effort – not always practicable in the Tropics.

Treating those suffering from Malaria:

- drugs:
 - Chloroquin – easy to use/cheap but mosquitoes are developing a resistance to it
 - Larium – powerful, offers greater protection but can have harmful side effects
 - Malarone – fairly new drug – said to be 98% effective – few side effects but very expensive
- vaccines – still being developed/not yet in widespread use (eg Dr Manuel Pattaroya's in Colombia)
- education programmes:
 - insect repellent eg Autan
 - cover skin at dusk when mosquitoes are most ravenous!
 - sleep under treated mosquito nets – fairly cheap
- Quinghaosu – extracted from plant – used as a traditional cure in China for centuries – now in pill form – easy to take – may be the long awaited breakthrough.

No one solution has been found. A combination of strategies/control methods, combined with increasing public awareness/education programmes (eg WHO's 'Roll Back Malaria' – a global campaign aimed at halving the number of malaria cases by 2010) will be needed just to keep malaria in check. Some progress may be made thanks to the millions which the Bill and Melinda Gates Foundation has set aside for research into a cure.

Assess out of 12. Answers which fail to provide some sort of evaluative comment on at least some of their chosen control methods should score no more than 8 marks.

Maximum of 1 for specific examples/names per control method.

12 marks

Total 50 marks

[END OF MARKING INSTRUCTIONS]