

Mark Scheme (Results) Summer 2007

GCE

GCE Geography (6474/01)

6474 Summer 2007

1. (a) (i) Describe the weather conditions shown.
 (ii) In what ways would the weather conditions of a typical winter anticyclone be similar and different to those shown in Figure 1?
 (12)

Characteristics of the summer anticyclone shown in Figure 1	Similarities to a winter anticyclones	Differences to a winter anticyclones
<ul style="list-style-type: none"> • High pressure (1032mb); slight sea • Warm/hot days (20°C+) • Clear skies especially in the South East with few or no clouds. • Lighter winds. (10-12mph); • Cloud cover over western areas (associated with the occluded fronts + winds blowing over the Atlantic). 	<p>Winter and summer anticyclones have common features because of their stability (blocking) and the subsiding air at the centre, which is adiabatically warmed leading to dry weather with relatively low humidity.</p>	<ul style="list-style-type: none"> • Less insolation due to the low angle of the sun making the days cold (Max 6°C down to below freezing) and the nights even colder due to lack of cloud cover. • Fed by polar not tropic air mass • Fog and frost forming at night due to stable conditions, especially radiation fog in low-lying areas. • Possibility of freezing fog • As a warm front approaches, the very cold air and ground can lead to heavy snow.

Level 3 10-12 marks	A structured response. Clear description of Figure 1 & examination of <u>both</u> similarities and differences. Terminology apparent.
Level 2 6-9 marks	Some structure in the answer which describes Figure 1 soundly. May be unbalanced and lack full examination of similarities and differences.
Level 1 1-5 marks	Some basic observation but very limited detail beyond that.

- (b) With reference to specific examples, assess the value of short and long term forecasting in predicting weather events.

(13)

Longer term forecasting includes satellites /remote sensing - record temperature & humidity. New generation radar (upward pointing dopplers) give upper atmosphere wind profiles for jet stream movements. Also tornado trackers, etc. Advances in computer technology gives improved statistical forecasting, prediction & modelling. Short term forecasting is now quite reliable and is used to give information on short-range impacts. Forecasts can be targeted for particular users or events, e.g. road gritting, outdoor events or retailer promotions. However, differences in track or intensity can still occur or human error (E.g. UK hurricane Oct 1987, Hurricane Katrina, New Orleans 2005)

Level 3 10-13 marks	Well organised, structured account. Shows good knowledge of a range of both short and long term forecasting. Clear exemplification. Some assessment of value.
Level 2 6-9 marks	Some structure - a descriptive account which looks at several aspects, but with variable depth/detail. Alternatively focus on short term or longer term forecasting. Limited assessment.
Level 1 1-5 marks	1-2 basic ideas. Not well linked to the value of forecasting.

2. (a) Using Figure 2, and your own knowledge, examine the physical factors responsible for the distribution of different global biomes.

(12)

Factors:

Temperature (main factor)

Precipitation (main factor)

Resulting soils, humidity and daylight hours

Altitude

Seasonal variations, e.g. shift in the ITCZ, monsoons

Expect temperature & rainfall data extracted from Figure 2 supported by own knowledge of other factors for exemplar biomes.

Credit other ecosystems e.g. coral where other factors may be relevant.

Max 9 for one biome only.

Level 3 10-12 marks	Well structured account which includes both factors and evidence from Figure 2. Shows good knowledge of a range of factors, Uses data from the graph to support points made. Terminology apparent.
Level 2 6-9 marks	Some structure. Shows variable knowledge of some factors. Some understanding but may be heavily reliant on evidence from Figure 2 or uses own knowledge but disregards resource.
Level 1 1-5 marks	1-2 basic ideas on what the figure shows. Descriptive & lacks clear structure or reasoning. Likely to lift off from resource.

With reference to either forest or grassland or marine ecosystems, evaluate their environmental importance.

(13)

Allow a broad interpretation of environment. Accept alternative frameworks such as goods and services.

Direct importance/benefits:

- Food - crops, grazing land, fish
- Raw materials such as timber, bamboo, salt
- Genetic resources to improve yields and/or disease resistance
- Medicines
- Carbon storage especially in forests
- Employment in agriculture and tourism
- Biodiversity as an insurance against climate change, drought & vegetation stresses
- Soil generation especially in grasslands
- Industrial use of timbers, grasses and of seaweeds, (iodine)

Indirect importance/benefits:

- Erosion control especially by forests and grasslands
- Water purification and filtration
- Pollination
- Scenic enjoyment and spiritual significance
- Importance of mangroves to moderate storm impact on coastlines
- Waste dilution and treatment

Level 3 10-13 marks	Well organised, structured evaluation with a clear focus on the benefits of ecosystems at a global scale. Shows good knowledge of a range of aspects. Expect clear exemplification.
Level 2 6-9 marks	Some structure - a descriptive account with limited evaluation which looks at several benefits, but with variable depth/detail
Level 1 1-5 marks	1-2 basic ideas. Little or no detail or exemplification.

Max 9 for a named place only e.g. Korup.

3. (a) Describe and explain the trends shown.

(12)

The Living Plant index is used to measure the natural wealth of the earth's continental and marine ecosystems. It was developed by the WWF and is the average of three indices which monitor the changes over time in populations of representative animal species in different ecosystems.

Indices have all decreased 1970 - 2000, especially 1980 onwards.

Levels were stable (or even a slight increase) 1970 - c1980. Greatest decrease in Tropical grassland/savannah/tundra; least change in temperate forests. Expect figures to be quoted from the graph.

Decrease is caused by physical factors and human pressure on global ecosystems due to:

- clearance of areas to expand/develop agriculture
- provide space for infrastructure and urbanisation
- provide resources such as wood for building & fuel
- negative impact of tourism development
- Marine habitats affected by pollution, over fishing, changes in water flow, etc.
- Influence of climate change
- Many other reasons possible - accept feasible explanations.

Level 3 10-12 marks	Clear description and use of data from graphs. Sound understanding of trends. Some linkage to LPI.
Level 2 6-9 marks	Picks out trends and some use of data. Some explanation, possibly implied at the lower end.
Level 1 1-5 marks	1-2 basic observations. Description only.

(b) With reference to specific examples, explain how the level of development may affect ecosystem management.

(13)

N.B. Development is either MEDC/LEDC or level of human pressure.

Points made will largely depend on the examples chosen. Likely inclusions include:

- Conservation of certain high value areas
- Acknowledgement of other factors, such as political will and financial availability, affecting management.
- Variability in the adherence to restricted areas/conservation approaches
- Perceived value of ecosystems not always high in certain countries.
- Certain indigenous peoples are pro conservation.
- Greater funding available for MEDC schemes
- Many LEDCs schemes need financial pump priming but they are fearful of MEDC interest in case of exploitation

Allow any feasible suggestions related the specific examples chosen.

Level 3 10-13 marks	Structured explanation of a range of management strategies used. Clear exemplification and linkage to "level of development".
Level 2 6-9 marks	Some structure - a descriptive account which looks at several aspects of management, but with variable depth/detail.
Level 1 1-5 marks	1-2 basic points. Generalised account. Little or no detail. No linkage to level of development.

4. (a) Suggest reasons for the different trends shown.

(10)

Trends:

India - decline from 5.3 TFR in 1970 to 3.1 in 2001

Thailand - rapid decline from 5.7 in 1970 to 1.8 in 2001

Argentina - slight increase 1970 - 1975; then level at 3.3; finally declined from 1982 to 2001 (TFR of 2.5)

Italy - Initial decline 1970=2.4; 1980 = 1.6. After 1980 more gradual decline & levelling off to 1.2 in 2001

Possible reasons:

- Employment prospects / independence for women
- Improvements in healthcare reduces the need for large number of births
- Wider availability (1970s UK) and use of contraception
- Age structure of population (lower % in reproductive age range)
- Advancing materialism
- More single person households / higher divorce rate
- Government population policies (e.g. Anti-natalist in India)

Accept any feasible reasons

Level 3 8 - 10 marks	Structured account which includes a range of reasons. A sound understanding of the causes of changing fertility rates. Likely to offer supporting data from Figure 4.
Level 2 5-7 marks	Some structure and understanding but with variable depth/detail. Biased towards description of trends but has some reasoning.
Level 1 1-4 marks	1-2 basic ideas. Generalised description. Little or no detail.

(b) With reference to specific examples, examine the national challenges posed by declining fertility.

(15)

Possible impacts:

- Birth rates below replacement level
- Increasing dependence on immigrant population /economic migrants to maintain workforce
- Increase in the proportion of elderly - increases the need for health facilities/ nursing care and leisure facilities
- Pensions crisis in the UK and France
- Gender imbalance, e.g. China and India

Allow any feasible ideas

Level 4 13-15 marks	Structured, detailed examination which includes a range of challenges. A sound understanding of a range of factors affecting changing fertility rates. Well exemplified.
Level 3 9-12 marks	Structured account with sound information on a range of specific challenges. Some exemplification.
Level 2 5-8 marks	Some structure and understanding. Variable depth/detail or generalised account not specific to a country.
Level 1 1-4 marks	1-2 basic ideas. Little or no detail.

5. (a) Analyse the patterns shown.

(10)

Possible patterns that candidates might highlight:

- Highest net migration to established tourist areas such as Spain (17.7), Cyprus (17.6) and Italy (10.3), but lower than expect to France (0.9) - economic migration
- Outward migration (-ve values) from Eastern block countries such as Poland (-0.4), Estonia (-0.3), Latvia (-0.4) and Lithuania (-1.8)
- Net migration for the UK is close to the EU average
- Possible second home purchase (e.g. Spain, Italy Cyprus)
- Celtic tiger /economic development - e.g. Ireland

Level 3 8-10 marks	Structured account which includes a range of points. A sound analysis with use of data from the resource to highlight variations. Likely to show an understanding of net migration. May give an overview of particular patterns.
Level 2 5-7 marks	Some structure and understanding but with variable depth/detail. Little range and/or limited data support. May tend towards description rather than analysis <u>or</u> analysis with limited reference to the data.
Level 1 1-4 marks	1-2 basic ideas. Little or no detail.

(b) With reference to specific examples, assess the effectiveness of different approaches to managing international migration.

(15)

Clearly answers will vary depending on the examples selected and whether migration is forced or voluntary. Common approaches might include:

- Regulations of the number of migrants via a quota system, e.g. points score, green card, etc
- Prevention methods –e.g. border patrols
- Expansion of temporary accommodation – e.g. Bosnians in 1996
- Detention & repatriation issues. E.g. asylum seekers
- Third party country as a holding place for those without visas

Allow any feasible ideas.

N.B. Could be before migration happens and/or during it.

Level 4 13-15 marks	Structured, detailed account with a clear focus on assessment. A sound understanding of different management approaches to international migration. Detailed exemplification. Likely to take an overview of the relative effectiveness of the different approaches.
Level 3 9-12 marks	A sound account with a clear structure. Includes information on a range of approaches with exemplification. Some assessment implied in relation to effectiveness.
Level 2 5-8 marks	Some structure and understanding. Variable depth/detail. Some exemplification. No assessment. Not focussed on management.
Level 1 1-4 marks	1-2 basic ideas. Little or no detail.

6. (a) Suggest reasons for the global pattern shown.

(10)

Due to the complexity of the resource there is no expectation of a discussion of net investment flows.

Trends:

- *Highest values in NW Europe, China, USA and Canada (>20 000\$m)*
- *Lowest values in Africa (<700\$m)*

Reasons:

- Trends largely reflect stage of economic development and proximity to a global 'hub'
- Investment level probably linked to trading patterns or former colonial ties.
- Impact of globalisation & TNCs in certain industries / countries
- Wage differentials widening between MEDCs and LEDCs make LEDCs attractive - cheaper labour costs - gives more competitive products / services
- Inward investment into setting up bases in certain LEDCs, often attracted by other incentives.
- Development of modern infrastructure, (transport, ICT) in certain countries

Level 3 8 - 10 marks	Structured, detailed account which includes a range of observations and reasons. A sound explanation of investment flows. Likely to offer some overview statements.
Level 2 5 - 7 marks	Descriptive account with some structure. Some detail but may be heavily reliant on data from the resource or limited range of reasons; e.g. one pattern only
Level 1 1-4 marks	1-2 basic comments only. Tendency towards 'lift-off' from the resource.

(b) With reference to a named country, evaluate the environmental and social impacts of net inward investment.

(15)

Examples are listed below but accept any feasible suggestions.

	Environmental impact	Social impact
Positive	<ul style="list-style-type: none"> • Associated infrastructure development in the local area • Rejuvenation of old industrial areas 	<ul style="list-style-type: none"> • Increase in employment • May counteract job losses from other sections of the local area • Revives stagnant local economy • Encourages local enterprise.
Negative	<ul style="list-style-type: none"> • Pollution (air & water) • Transport congestion • Pressure on infrastructure 	<ul style="list-style-type: none"> • Increased area dependence on few large companies • Exploitation & child labour • Migration issues

NB. There may be more to say on social impacts than environmental ones. Allow focus on one region within a country.

Level 4 13-15 marks	Structured, balanced evaluation. A sound understanding of inward investment and a range of social & environmental impacts. Clear exemplification detail. Some balance between positive and negative. Likely to take an overview.
Level 3 9-12 marks	Structured account which includes some specific detail on a selected country. A sound understanding of the impacts of inward investment. Some attempt to evaluate. May be more unbalanced.
Level 2 5-8 marks	Some structure. Descriptive account. May have a limited understanding of inward investment. Variable depth/detail.
Level 1 1-4 marks	1-2 basic ideas. Little or no detail.

7. (a) Assess the implications of the trends shown.

(15)

Observations:

Focused on white collar jobs - sales, office support, R&D

Greater number of graduates and post-graduates

Large rise in Mexico and China

Knowledge based industries

This will produce another wave of impact on tertiary/quaternary industry in economically developed countries such as UK and USA

Increasing trends into the future

Globalisation has moved on from manufacturing /processing to services.

May reference Clarke Fisher model

Expect figures quoted from the resource to support points made

Level 4 13-15 marks	Structured account with a clear focus on the assessment of a range of changing patterns related to the global economy. A sound understanding of globalisation and the use of detailed supporting facts/data from Figure 7. Likely to take an overview.
Level 3 9-12 marks	Structured account which includes a range of trends and implications in some detail. Some attempt to assess and some understanding of globalisation.
Level 2 5-8 marks	Descriptive account but shows some understanding of the resource. Some structure but with variable depth/detail. No obvious attempt to assess.
Level 1 1-4 marks	1-2 basic ideas. Very generalised, descriptive account with little or no detail.

(b) Evaluate the role of one of the following in helping to create a brighter global future:

- new technologies
- green growth
- conservation of key environments.

(15)

New technologies -

The changing nature of work; flexible & home working; teleworking
Decline in the size of the workforce; increase in part time working
Reduced costs to companies
Issue of skills gap in some areas
Alternative energy development

Green growth -

Reduced need for resources - emphasis on recycling or more prudent use
May not be the cheaper option initial thought of
Wider global impact for the future

Conservation of key environments -

Increased awareness of their value but not all signed up to this concept
Local involvement plays a key part in its success
Likely to require international agreement on legislation and finance
Economic development often takes a higher priority

Level 4 13-15 marks	Structured account with a clear evaluation. A sound understanding of the value of the approach in creating a "brighter global future". Detailed exemplification. Likely to take an overview.
Level 3 9-12 marks	Structured account which includes a range of ideas in some detail. Some attempt to evaluate in relation to a brighter future, e.g. recycling.
Level 2 5-8 marks	Descriptive account. Some structure and understanding but lacks range or detail. No attempt to evaluate. May be generalised.
Level 1 1-4 marks	1-2 basic ideas. Very generalised descriptive account with little or no detail.

8. (a) Assess the global implications of the trends shown.

(15)

\$1 per day graph:

- *Greatest change/decline in East Asia and Pacific from 56% to 15% of population*
- *Closely followed by South Asia - change from 51% (1980) to 31% (2001)*
- *Upward trend for Sub-Saharan Africa (41% to 48%); slight increase in Eastern Europe and Central Asia*

Implications might include:

- Less reliance on subsistence economy/aid/NGO support alongside economic development (e.g. East Asia and Pacific)
- Still a need for support in Sub-Saharan Africa due to physical constraints (e.g. draughts in Sudan), AIDs related health issues and political unrest/conflict (e.g. Somalia)
- Trends may reflect inequality in QoL due to unfair systems and/or differential patterns within such large regions

Level 4 13-15 marks	Structured assessment of the resource. Sound understanding of global implications of trends in poverty. Likely to take an overview.
Level 3 9-12 marks	Structured account with some understanding of the implications but variable depth/detail. Some attempt to assess.
Level 2 5-8 marks	Descriptive account. No attempt to assess. May be focused on reasons only.
Level 1 1-4 marks	1-2 basic ideas. Very generalised descriptive account with little or no detail.

(b) With reference to specific examples, evaluate possible ways of reducing global differences in wealth.

(15)

Credit a range of strategies in one or more localities

Ways might include:

- Free Trade and/or Fairtrade arrangements
- Debt cancellation to the world's poorest countries
- Millennium goals set as part of the UN Development Programme
- Tobin Tax on international flows of money that could be used to fund development
- Work of NGOs to assist social & economic developments.
- Development of improved crops that would tolerate drought conditions, etc.
- Fair priced medicines available to areas such as Africa
- Development of tourism as an income generator for LEDCs

Allow any feasible suggestions

Level 4 13-15 marks	Structured evaluation. Clear exemplification detail on a range of strategies at a global scale. Clear linkage to the possible impact on wealth. Likely to take an overview.
Level 3 9-12 marks	Structured detailed account which includes information on a range of strategies. Some exemplification. Some evaluation.
Level 2 5-8 marks	Some structure and understanding but lacks range or detail. No evaluation. Narrow focus, e.g. fair-trade coffee in one country
Level 1 1-4 marks	1-2 basic ideas. Little or no specific detail.

9. (a) Assess the implications of this data for the environment and for people. (15)

The key impact would be Global Warming as a result of increased carbon dioxide in the atmosphere giving rise to an enhanced Greenhouse Effect. In the shorter term, this could give benefits as well as problems.

Implications for the environment:

- Possible biodiversity loss
- Effect on agriculture
- May also be stormier weather (linkage to El Nino)
- Land losses where coastal flooding is frequent

Implications for people:

- Possible need to manage a greater incidence of floods and droughts
- Changes will have varying spatial impacts - warmer in some areas, colder in others, rainfall patterns
- This, in turn, will affect energy demands, tourism potential, etc.
- Need to develop/take up more sustainable generation and use of sustainable energy
- Diseases and health concerns.

Allow any feasible ideas e.g. impact of people on unequal world, a need to be personally Sustainable (carbon footprint).

Level 4 13-15 marks	Structured assessment with exemplification. A sound understanding of several implications. Balanced account between people and environment. Likely to take an overview.
Level 3 9-12 marks	A structured detailed account. Covers a range of implications. Some attempt to assess.
Level 2 5-8 marks	Descriptive account. Some structure and understanding but variable detail/depth. Little exemplification. No assessment.
Level 1 1-4 marks	1-2 basic observations. Little or no detail beyond 'lift-off' from the resource.

(b) With reference to examples of global environmental problems, explain why it is difficult to gain international agreement on how to solve them. (15)

Answers will depend on the global environmental problem chosen.

Examples might include:

- An enhanced Greenhouse Effect/polluting emissions, e.g. Kyoto
- Reduction in the world's forest areas
- Disposal/recycling of waste
- Energy use
- Demand for water
- Reduction in CFCs, e.g. Montreal Protocol

Arguments around the difficulty in gaining international agreement on possible solutions are likely to be:

- Some countries are more dominant/influential than others
- Self-interest e.g. lack of agreement between G8 countries; concern about effects on development levels
- The perceived need for LEDCs to drive economic growth and prosperity using MEDC examples

- Conflicts between regions/countries
- Spectrum of awareness of ecological footprint and sustainability
- International agreements, e.g. whaling issue.

Allow any relevant ideas

Level 4 13-15 marks	Structured explanation with a clear attempt to examine the difficulty of tackling environmental problems at a global level. Detailed exemplification. Likely to take an overview.
Level 3 9-12 marks	Structured detailed account which includes a range of examples and some linkage to tackling environmental problems. Some exemplification and explanation.
Level 2 5-8 marks	Descriptive account. Some structure and understanding but lacks coverage of ideas or little exemplified detail. Narrow focus, e.g. Kyoto and perceived US self-interest.
Level 1 1-4 marks	1-2 basic ideas. Very generalised account with little or no detail.

Assessment Objectives:

Question		Knowledge	Understanding	Application	Skill	Total
1	a	3	4	1	4	12
	b	7	3	2	1	13
2	a	3	4	1	4	12
	b	6	4	2	1	13
3	a	3	4	1	4	12
	b	7	3	2	1	13
4	a	3	2	1	4	10
	b	7	5	2	1	15
5	a	2	3	1	4	10
	b	8	4	2	1	15
6	a	3	3	1	3	10
	b	7	5	2	1	15
7	a	7	4	2	2	15
	b	6	5	2	2	15
8	a	7	4	2	2	15
	b	7	4	2	2	15
9	a	7	4	2	2	15
	b	6	5	2	2	15

