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Mark Scheme (Results)
Summer 2007

GCE

GCE Geography (6476/01)

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6476/01 Summer 07

1. Explain why Antarctica is considered to be of such global importance that nations have joined together to develop special methods of governance.

(20)

Information for examiners

1. The enormous size of Antarctica, combined with its pristine environment as the last great wilderness, make conservation imperative (details of its use for science, idea of nations sharing peaceful co-existence including USSR (as was) and USA for advancement of **science**). An enormous range of geophysical and other research could be cited.

2. Unique nature of the polar environment as the world's largest ice sheet. Glacial research and the unusual ecosystems (terrestrial, freshwater and marine). Polar environments with severe limiting factors lead to simplified food webs yet with unusual species (endemism).

3. Aesthetic value of outstanding scenery and wildlife (wilderness). Huge profusion of unusual wildlife such as range of penguins, six species of seal. Uniqueness. Fragility and vulnerability.

4. Role of Antarctica in influencing earth systems both oceanic and atmospheric – expect details of the vital role that the polar continent plays on atmospheric and ocean systems and how it is perhaps vital in any sea level changes following global warming.

5. Antarctica as a resource base – expect details of marine wealth (krill etc) and the need to conserve it as well as the land based wealth which is currently not exploitable (Environmental Protocol) but could be vital in the future.

L4	17-20	Wide ranging, well structured, well evidenced explanation of the global importance of Antarctica, linked to the need for unique international government. Uses terminology effectively. Shows evidence of synopticity from studies.
L3	12-16	Structured, evidenced explanation of the importance of Antarctica across a range of aspects. Uses some terminology across a range of ideas.
L2	7-11	Some structure in a partial explanation as to why Antarctica is important. Likely to be unbalanced and more limited in range.
L1	1-6	Describes some features of Antarctica, with very limited use of evidence. Lacks structure. Limited range.

2. Identify both the present and potential threats to Antarctica's environment and evaluate their relative importance.

(20)

Information for Examiner

Impact	Cause	Extent	Damage	Success of any action	Possible Significance
Climate change	Emissions of greenhouse gases	Global	Likely to be high. Direct and indirect. Sea level change	Limited success Convention on Climate Change (1994) Kyoto Protocol (1997) Agenda 21 Act Local	1 present and future
Ozone depletion	Emissions of CFCs and other ozone depleting chemicals	Global	Likely to be high. Worldwide, most ozone lost over Antarctica	Considerable success Vienna Convention (1985) Montreal Protocol (1989) Problems of delayed impact	2 present and future
Whaling	Hunting of the great whales for oil and meat	Regional Southern hemisphere oceans	High. Little or no recovery in whale populations since commercial whaling finished in 1960s. Issue of Japanese, Norwegian Icelandic killing	Convention for the Regulation of Whaling (1946) Moratorium on Commercial Whaling (1982) Southern Ocean Whale Sanctuary (1994)	3 Still recovering from past restart and future threat
Sealing	Hunting for fur seals for pelts and elephant seals for oil	Regional Southern Ocean and South Atlantic Ocean	Medium. Full recovery of fur and elephant seal populations since sealing finished in the late 1800s	Agreed Measures (1964) Convention on the Conservation of Antarctic Seals (1972)	6 No current problem almost over protected!
Fishing	Fishing for finfish, squid, krill	Regional. Southern Ocean. Major fisheries on continental shelf break areas. Future threat to krill of fish farms	Medium. No recovery of badly depleted stocks. Incidental mortality of seabirds from long lining. Issue of pirate fishing	Convention on the Conservation of Antarctic Marine Living Resources (1982)	6 As other areas are restricted could be future threat. Piracy present threat.
Mineral extraction	Fossil fuel	Localised	Mining, oil spills	Environmental protocol (1998) 50 years	Future threat?

Research stations and projects	Scientific research and associated logistical support	Impacts local. Antarctic coastline and offshore islands	Low, but localised. Historic damage under control now	Agreed Measures (1964) Environmental Protocol (1998)	7 Low level present. None for future
Vessel operations	Logistical support for scientists and tourists. Support for fishing operation	Impacts local. Antarctic Peninsula and offshore islands. South Georgia	Low, unless the big one occurs	International Convention for the Prevention of Pollution from Ships (1973) Antarctic Special Area (1992) Environmental Protocol (1998)	8 Slight but intensity of shipping could be future threat
Tourism	Tourists going ashore from tour ships	Impacts local. Antarctic Peninsula and offshore islands. South Georgia	Low, but threat of mass tourism to fulfil the pleasure periphery (hotel etc)	Agreed Measures (1964) Antarctic Treaty Visitor Guidelines (1994) Environmental Protocol (1998)	4 None present, possible for future. Ongoing
Global pollution e.g. (particulates)	Emissions of heavy metals and organic pollutants	Global	Likely to be very low in Antarctica but some pollution recorded e.g. in seals form DDT	Environmental Protocol (1998) for activities in Antarctica. Draft UN protocols to control emissions of heavy metals and persistent organic pollutants worldwide	9 Possible future threat

Note others possible. E.g. mode of governance, war, geopolitical conflict

L4	17-20	A well structured evaluation, which synthesises details of a range of threats and assesses the <u>relative</u> importance both in the <u>present</u> and <u>future</u>. Uses synopticity or parallel examples effectively.
L3	12-16	A structured statement with some evaluation of the importance of a range of threats. Will mention present and future but likely to be unbalanced. Some brief flashes of synopticity.
L2	7-11	Some structure in a statement of threats. Occasionally implies evaluation. Many offer a reasonable range or alternatively some depth in one or two of the key issues.
L1	1-6	Some generalised statements of some threats. No assessment of relative importance. Largely concentrates on present day. Descriptive.

3. Explain how these threats might be managed both globally and locally.

(20)

Information for examiners

- **Climate Change**. Expect synoptic details on Kyoto Protocol and carbon trading etc. Combined with details of National Policies on fossil fuel use. Clean technology and local Agenda 21 measures. Would also be relevant for the local scale (expect all sorts of energy and fossil fuel) management ideas. Transport strategies etc.

- **Ozone Hole**. Expect details on Montreal Protocol and CFCs and the local actions to manage CFCs eg fridge dumps/aerosols but expect less detail as not core specification.

- **Whaling and Sealing**. Much of measures are in place eg CCAS. Expect Green Peace style protest as result of whaling and possible discussion on the commercial/scientific restart of whaling. Some may argue that management of seals by culling is legitimate ecosystem management.

- **Tourism**. Expect global strategies using IAATO style information, combined with local management strategies in Antarctica on tourist management, especially footpaths etc and over concentration at key sites. Also expect development of ideas such as expedition style management on ships – visitor education.

- **Vessel operations**. May include details on double hulls as clearly there is a direct link to number of vessels in the Southern Ocean in the summer.

- **Research stations**. Expect full details of International guidelines and local sustainable management at all the bases for the various type of wastes. Some synopticity possible via local waste schemes studied.

- **Fishing**. Expect details of sustainable fisheries management including whole ecosystem management and improved policing of illegal fishermen/pirate fishing. Krill uptake quotas may be necessary. Also banning long lining could be important ie laws.

- **Global Pollution**. Expect details of global legislation and the movement towards more environmentally friendly farming locally for example integrated pest management or organic farming.

Note many answers possible but they must be feasible

L4	17-20	Well structured wide ranging knowledgeable explanation which looks at both global and local management actions. Showing synoptic understanding for some threats.
L3	12-16	Structured sound explanation which does touch on global and local management actions, but less balanced. Uses knowledge from course e.g. on climate change.
L2	7-11	Some structure in an account which looks at actions to address threats across several issues. May mention both scales by implication.
L1	1-6	One or two generalised ideas on addressing threats. Scale not really defined.

Quality of Written Communication

As many parts of the Issues Analysis can be answered via annotated tables, techniques matrices and bullet pointed summaries, Quality of Written Communication is additionally assessed as part of an overview of the overall quality and fitness for purpose of the whole report. The mark scheme for individual sections has criteria scales which do assess clarity of argument, structure, use of geographical terminology from across the course. The assessment looks at the degree to which the student can:

- organise the issues analysis to develop a clear and coherent and well evidenced sequence of enquiry
- write an integrated report which uses a form and style of writing appropriate to the task
- ensure the text is legible, and spelling, punctuation and grammar are accurate so that the message is clear.
- demonstrate effective synoptic understanding from the course.

10-8 marks	The report follows a clear and coherent enquiry sequence, and is written in a style which presents the complex subject matter effectively for the reader, with high standards of accuracy of spelling, punctuation and grammar. A professional report which uses evidence very effectively. Effective synopticity.
7-4 marks	The report shows some coherence and clarity in its enquiry sequence and is written in a style, which presents some aspects of the complex subject matter effectively to the reader. Spelling, punctuation and grammar are generally accurate. Not all sections are fit for purpose. Some evidence used with attempts at synopticity.
3-1 marks	Overall the report lacks a clear and coherent sequence. It is written in a rather basic style, which presents limited aspects of the complex subject matter effectively to the reader. Spelling, punctuation and grammar contain inaccuracies, several sections are not fit for purpose.