ENVIRONMENTAL MANAGEMENT

Paper 8291/01

Lithosphere and Atmosphere

General comments

This October saw a significant increase in the size of the entry with Centres from South America, Africa, Southern Asia and Europe. Although the performance by candidates very much reflected past sessions, this time there were some inconsistencies. In *Section (a)* good marks were invariably achieved in **Question 1**, whilst **Question 2** on climate proved to be difficult. Similarly, in *Section B* the question involving weather events proved to be less popular and difficult. The majority of candidates made good use of the question data and responded well to the invitation to make use of personal experience of environmental issues. **Question 5** proved to be the more popular question in *Section B* with **Question 4** the least popular.

Comments on specific questions

Section A

Although the two questions in *Section A* are essentially data response it is important that candidates realise there are parts that require the use and application of knowledge. It was noticeable that more time was spent on the description of data rather than its analysis and application.

Question 1

Relatively few difficulties were encountered in answering this question and marks ranged from 10 to 19. The majority of candidates revealed a good understanding of renewable and non-renewable resources and responded well to the data.

(a)   The only significant problem in the section lay in identifying iron ore as the resource from which the steel used in car bodies is made.

(b)   The graph proved to be an effective resource for drawing out how rich and poor nations differed in their consumption of resources. Most candidates achieved a good balance between the resources needed for the secondary and tertiary sectors of rich nations and the dominance of primary activity in many poor nations.

(c)   This final part of **Question 1** proved to be an effective discriminator between candidates. Whilst most candidates accurately described trends in energy consumption they were less clear about the reasons underpinning the trends and the environmental consequences such trends continuing.

Question 2

Although an integral part of the syllabus, candidates continue to find questions on weather and climate difficult. With *Section (a)* data response questions covering weather map interpretation and processes relating to an anticyclonic condition in the Eastern Pacific, the question moved into the current environmental issue of urban pollution; in this case using Los Angeles as an example.

(a)   The interpretation and use of the weather map was very poorly answered by the majority of candidates. They revealed little understanding of either the arrangement of isobars on a weather map or the passage of air into a cyclone and out of an anticyclone. Part **(iii)** of this section was slightly better answered with some candidates mentioning calm conditions and clear skies.

(b) This was much better answered and came to the salvation of many candidates. Som~~e~~ ~~candidates~~ misread the first part of this question and replaced the prime causes of atmospheric p~~ollution~~ cars and industry), with why the pollution does not easily disperse. Parts **(ii)** and **(iii)** we~~re~~ better answered as the information contained in Fig. 2.2 enabled the majority of candida~~tes to~~ suggest reasons for smog lingering over Los Angeles and use personal experience to identify ~~and~~ explain the effects of such pollution.

Section B

Question 3

This question proved to be moderately popular and elicited a wide range of marks. The quality of answers in part **(a)** were similar to part **(b)**.

(a) The chart locating regions of mechanical and chemical weathering is commonly used and candidates found few difficulties in its description. In the main different forms and rates of weathering were accurately linked to precipitation and temperature. A better answer achieving six or more marks coupled accurate descriptions with references to processes such as freeze-thaw, exfoliation and deep chemical weathering. The weakest answers tended to wander around the chart linking temperature and/or precipitation to either mechanical or chemical processes without mentioning differing rates.

(b) As with part **(a)** there were considerable variations in quality, with the more successful answers using case studies as illustrations of land instability. Answers that reviewed the triggered movement of debris on slopes were more successful than those that elaborated upon earthquakes or volcanic activity.

References to cause and effect showed the widest variation in quality. Some candidates either provided a simplistic description of trigger mechanisms that encouraged ground movement or did not move beyond tectonic processes. Better answers developed case studies in which contributing factors such as ground water; slope gradients and human activity were well integrated into the topic.

The quality of the section on managing land instability was very dependent on the analysis of cause and effect. Accurate descriptions of landslip processes invariably led into effective management strategies.

Question 4

Although candidates find climate and weather questions difficult, the data in part **(a)** of this question did enable better answers than in **Question 2**. This was the least popular of the *Section (b)* options.

(a) The diagram of changing weather conditions in a valley proved to be a useful prompt. Most candidates obtained valuable marks by simply restating the weather conditions labelled on Fig. 4.1. The main difficulty and therefore discriminator in quality lay in linking the conditions to insulation rates and local changes to atmospheric pressure.

(b) With tropical cyclones or hurricanes and typhoons being topical there should perhaps have been more responses to this question. Through the use of studied examples this question fell into three sections; characteristics, effects and hazard management.

Noticeably few candidates fully described the characteristic features of hurricanes: essentially two phases of torrential rainfall and very strong winds broken by a central calm 'eye'. There were however some accurate descriptions of the origins of tropical cyclones. The effects of these events needed to include the impact of strong winds, storm surges and flooding. For this, recent well-documented events in Eastern Asia and Florida provide more than enough information.

The final part of this essay involving the strategies that could be used to reduce the damage caused by tropical cyclones was quite well answered. There were some very thorough descriptions of storm monitoring, evacuation procedures, flood prevention and post-event restoration.

Question 5

This proved to be the most popular question and was wide ranging in both the content of responses quality of answers. Unusually part **(b)** received better coverage than part **(a)**.

(a) Good quality answers achieving six marks or more identified two natural processes or a single process that contributed to two forms of rural degradation. Some candidates referred to more than two processes thereby wasting time and the weakest answers either dwelt upon tectonic activity or the impact of human activity without mentioning natural processes.

(b) The majority of candidates produced good quality answers to the question. For most, the impact of urban growth meant a spread of atmospheric pollution, traffic congestion, noise and the removal of ecological systems. Better answers also referred to the loss of rural land, disruptions to local drainage and river pollution.

The small number of weaker answers made the mistake of only concentrating upon issues within the urban area rather than the area surrounding it. Perhaps understandably so, all answers only mentioned negative impacts and ignored some of the positive developments that have taken place around some urban areas e.g. increased prosperity, managed parks, traffic management etc

Conclusion

There are many very encouraging points to be learned from this examination. The increased entry seems to reflect an increasing interest in, and concern for environmental issues for which this examination provides an interesting avenue. Answers are certainly enriched by candidates who make good use of local case studies. Finally, now that we are into the second year of this new examination, Centres seem to making excellent use of past experience and past examination papers. Essays this year were of a high standard, hopefully reflecting more practice and increased awareness of the expectations of the examination.

ENVRIONMENTAL MANAGEMENT

| Paper 8291/02 |
| Paper 2 |

General comments

In previous sessions candidates seemed to have a greater affinity with the content of paper 2 and consequently marks for this paper have slightly exceeded paper 1. In contrast this Novembers paper shows no such pattern. Not only were marks for paper 2 spread over a much wider range but some candidates exceeded their paper 1 performance by over 10 marks and others did less well, occasionally by the same amount. Like paper 1 marks for *Section A* were roughly the same as **Section B**.

Comments on specific questions

Section A

Question 1

The majority of candidates made a good attempt at this question. Most candidates achieved between 12 and 18 marks with the better performance being in the first half of the question. This question focused upon the passage of water within a drainage basin and, using data on the River Nile, issues related to drainage basin management

(a)   Few major difficulties were experienced in this part and most answers achieved between 6 and 9 marks. In particular, most candidates expressed a good understanding of the seasonal variations in flows and transfers within a drainage basin.

(b)   There was quite a large variation in quality to the answers relating to the impact of the Aswan Dam. For most, the direct effects and objectives of the scheme were well understood and candidates found few difficulties in using the data. Part **(iv)**, however proved to be an effective discriminator between weak and strong candidates. Most answers made some reference to sediment deprivation producing less fertile conditions and the problems of relocating people. However only a small number understood that once a delta is deprived of sediment, rates of erosion would exceed deposition. A second weakness was that a significant number of candidates dwelt upon economic and social advantages rather than disadvantages.

Question 2

Most candidates made a good attempt at this question with marks ranging from 8 through to 19. Significantly the data provided in parts **(c)** and **(d)**, encouraged some lengthy and knowledgeable responses on human impact on natural systems.

(a)   Providing clear definitions of terms is something candidates occasionally find difficult. On this occasion, whilst *biodiversity* and *trophic level* received accurate definitions, there was some confusion over *biomass*; the latter requiring reference to the mass of <u>dry</u> organic matter.

(b)   Candidates seem to be well versed in the characteristics of food chains and webs and few problems were encountered in part **(b)**.

(c)   This section was concerned with the impact of modern farming upon biodiversity. The diagrams aimed to provide candidates with various changes that would occur in a rural landscape including; increasing field size, removal of hedgerows, use of pesticides and mechanisation. In different ways each of these changes would effect a reduction in biodiversity. Although the majority of candidates picked up these points and achieved high marks some referred to factors that were not present in the diagrams. Thus the impact of urban areas, industry and motor vehicles could not be rewarded.

(d) Although there were some full responses to this final section, it did prove to be ~~the~~ discriminator between strong and weak candidates. High quality answers elaborated ~~the~~ sequence of events that would lead to soil erosion and desertification in a warm arid ~~climate~~. Weaker answers either omitted one of the effects or were unclear about the physical proc~~ess~~ that would follow the clearance of land for agricultural purposes.

Section B

Unlike previous sessions the three questions in this section were of equal popularity with **Question 5** proving to be the more difficult. Again the majority of candidates responded well to the data in each of the section *a*'s and where necessary made effective use of local knowledge or case studies.

Question 3

This question focused upon the demand that people make of natural landscapes and the effectiveness of National Parks in conserving areas of ecological importance.

(a) Most candidates focused upon the three conflicts of interest. The best answers viewed these conflicts of interest as interactive and developed quite lengthy and evaluative discussions. Weaker but still effective answers treated each conflict of interest as a distinct topic. It was pleasing that the three terms: *community needs*, *conservation* and *public enjoyment* were accurately used.

(b) For many candidates this question was familiar territory. The only difference with previous questions involving National Parks was that this time the concern was specifically with conserving areas of ecological importance. Strong answers were quite clear about conserving ecological systems and used a variety of local examples to develop their answers. A small number of weaker answers were more concerned with landscape conservation rather than ecology.

The main weakness in a significant number of answers lay in describing and evaluating the strategies National Parks adopt to conserve wildlife and vegetation. These include:

- the areas designation as a National Park
- its public management policies (e.g. public access, information, ecotourism, honeypots, restrictions, education)
- its role in maintaining research (sssi's), preservation and conservation,

Good answers developed these points whilst weaker either omitted these points or couched them in very general terms.

Question 4

Local marine and oceanic environments are currently under immense threat from human activity, and therefore, topical. This question moved from an analysis of the management issues associated with the Baltic Sea to the broader issues of oceanic pollution and how their ecosystems can be conserved.

(a) The map of the Baltic Sea gave most candidates the opportunity to describe why managing pollution is difficult. Whilst good marks were obtained through reference to the various forms of pollution the reasons for creating management difficulties were not always explained. Some candidates ignored the points such as: rivers cross international boundaries, the Baltic Sea is bordered by eight contributing countries and the sheer scale of the problem.

(b) Better candidates took on board oceanic pollution and developed a good range of threats to ecosystems by human activity invariably including: oil spillage, over fishing, coral reefs and river pollution. Unfortunately some weaker answers repeated information related to the Baltic Sea and seemingly ignored the question requirements of oceanic issues and their ecosystems.

Question 5

(a) Although table 5.1 presented information on environmental concerns in an unusual form most candidates made a good attempt at analysis/describing it. To most candidates there were clear differences between industrialised and developing countries as well as within groups of nations.

(b) Although this type of question has been set before this question proved to be the m[...] [...] this year's paper. Whilst most answers recognised the need for a global commitment [...] the Earth's biosphere, candidates were not specific about the contributions made by [...] agreements and pressure groups.

Pressure groups can include local organisations as well as work done by the WWF and [...] Greenpeace. The Rio agreement reinforced in Buenos Aires in 1995 was primarily concerned with sustainable development. It contained measures for species protection, conserving all ecological elements and the need for international cooperation. Any evaluation of this protocol hinges upon the ability and willingness of nations to enforce its recommendations.

Conclusion

As already stated candidate performance in this hydrosphere and biosphere did not contain the parity with paper 1 as shown in previous sessions. However, the positives far outweigh the negatives. Most candidates continue to express a sensitive and knowledgeable understanding of these environmental systems and their theoretical understanding is frequently backed up by excellent use of case studies or local knowledge. Examiners continue to be impressed by the quality of written English from such a wide range of candidates, particularly as it may be a second language.

It is still important that candidates are given plenty of practice in answering both data response questions as well as writing essays. At the moment there are few signs of essays being planned and the data response questions in **Section A** occasionally appear rushed. **Sections A** and **B** carry the same total marks and deserve equal attention.

ENVIRONMENTAL MANAGEMENT

> **Paper 8291/03**
>
> **School Based Assessment**

General comments

Centres are to be congratulated on both the variety of environmental management projects submitted and the high quality of their assessment. It is pleasing that, for the majority of Centres, candidates are being made aware of the assessment criteria in the syllabus and the final reports reflect this contribution to their planning.

Barring a few comments to be made within the more specific section that follows, the examiners have only one general criticism; a small number of project reports were excessively long i.e. well over 3000 words. This component contributes 20% of the marks for the final assessment and it is important that these candidates try to make their write-up more succinct. This can often be achieved by reducing the general background material and confining descriptions and explanations to the data that has been collected, collated and presented.

Comments on specific assessment criteria

Skill C1: Research and planning.

Most candidates provided a clear statement of intent, as either the title of the report or as an introductory statement. Although variable in quality, the more succinct research reports contained a question or hypothesis. However some reports had an open-ended title e.g. "Pollution in urban areas of...", and inevitably became lengthy. The important point is that data collected for an investigation based on a question or hypothesis provides the candidate with the opportunity solve a problem or agree or disagree with the initial statement. As a result a clear conclusion and evaluation based on the data can be written.

The remaining elements of Skill C1 were completed with varying degrees of success. Most submissions contained a valid expression of the principle underpinning the topic and although varied in detail, appropriate methods were outlined; in most cases effectively testing the hypothesis. It is important that the methods receive justification through a brief explanation After all if the explanation indicates that a particular method might not be practical or needed, it should not be used.

As guidance this section of the report should be in the region of 500 words in length.

Skill C2: Data collection and presentation.

As in previous sessions, this skill area was the strongest part of most projects with a significant number of candidates achieving the nine marks available. Although a wide variety of techniques were used, the most successful reports contained a combination of tables, graphs and photographs. In many cases the analysis of data can be improved by reducing the volume of descriptive text by using figure references e.g. 'Fig. 1 shows....'.

It would be worthwhile to consider about 900/1000 words for this section.

Skill C3: Conclusions and evaluation

Like former examination sessions this proved to be the weakest element of the project report. Too many candidates view a conclusion as being either something that solely refers to future trends or makes a broad hypothetical statement. Whilst these have their place, a conclusion should draw together the main features of the research and in the case of a hypothesis make and justify a statement of agreement or disagreement. The need for reference to the results of the research is clearly stated in the Syllabus (C3b) "Knowledge of environmental principles used to explain trends and patterns in own results".

Finally an evaluative assessment should review the limitations and areas of success of the report. This gives the candidate the opportunity of self-evaluation. Limitations in the research and content report should be described supported by reference to possible improvements. Similarly areas of can be pointed out; with of course a brief justification.

This section of the report should be in the region of 500/600 words.

General Conclusion

All the portents from this session seem to be positive. Centres and their candidates regard this element of the examination as making a worthwhile contribution to understanding and analysing environmental issues. The vast majority of candidates seem to enjoy their research and certainly put an enormous amount of work into the presentation of their report; the examiners certainly enjoyed reading them.