ENVIRONMENTAL MANAGEMENT

| Paper 0680/11 |
| Paper 11 |

Key Messages

Candidates should:

- answer the question as set
- look carefully at the command word
- take into consideration the number of marks and writing space available
- give accurate data when describing graphs

General Comments

Most candidates appeared to finish the paper and very few questions were left blank.

Some candidates tried to make up for a lack of knowledge by writing excessively about the subject of the question without really answering the question. Repetition of the same point is a feature of these answers. On the other hand, candidates regularly handled the calculation questions well.

Comments on Specific Questions

Question 1

(a) (i) Many were able to come up with at least two suggestions about distribution, such as association with both tropics, the majority in Africa and the largely western location. Others, however, were content to make a list that did not gain full credit.

(ii) Most candidates did quite well on this, although a number needed to be more specific.

(b) (i) Most were able to suggest that deforestation or overgrazing are involved but did not capitalise on this suggestion by writing about soil erosion or some equivalent.

(ii) This question was not well answered, although most candidates were able to gain some credit by simply suggesting that trees should be planted. These candidates rarely went on explain how this would help in a precise enough way to gain any further credit. Terracing and contour ploughing were rarely seen and not well explained when they were.

Question 2

(a) (i) This was well known with most candidates giving a correct response.

(ii) Again, there were good answers to this question.

(b) (i) The ideas of carbon neutrality in the combustion of biomass compared to the combustion of fossil fuels were poorly understood. Having said this, it was pleasing to see some candidates use the term carbon neutral and explain how the carbon dioxide given off when wood is burned is taken back in again, in photosynthesis, by living plants.

(ii) This question was well answered.

(c) Some candidates were able to talk about the addition of nutrients to the soil by ash and how this might benefits crops.

Question 3

(a)(i) This was well answered.

(ii) Most candidates noted the fall in industrial emissions and many were able to offer some sensible explanation for it. Fewer were clear about the trend in domestic omissions. Candidates needed to look for an overall trend, not give a blow-by-blow account of changes. Those who did perceive that domestic has not changed a lot found it hard to come up with a plausible reason.

(b) There were some very good answers from about a third of candidates who gained full credit. However, many answers were vague and talked about harmful gases rather than naming them. The most common mistake was to be too vague about how the gas eventually forms an acid.

Question 4

(a)(i) The majority were able to answer this correctly.

(ii) Similarly, this proved easy for most candidates.

(b)(i) This was a challenging question but there were some pleasing answers. Many were able to comment on examples where drought status was extreme but production high. Some went on to state that this gives evidence of mismatch. Some gave unnecessary explanations for these facts. Fewer were able to point out matches, e.g. for Canada where drought status is no drought and production is high.

(ii) This was reasonably well done, with the most common errors being for bilharzia.

Question 5

(a)(i) More than half of the candidates answered this question correctly. Others needed to be more accurate.

(ii) A significant number of candidates missed out hydro-electric.

(iii) Many correctly suggested wave or tidal power.

(b)(i) This question was well answered.

(ii) A large majority of candidates gave the correct answer.

(iii) Some candidates talked about the conservation of fossil fuels, ignoring the word ore in the stem.

Question 6

(a)(i) This was question was done well by almost all candidates.

(ii) This question was not well answered. Vegetational succession is in the syllabus at 20.4. The commonest approach was to talk about changes that might come about due to climate alternations or soil depletion due to over-cultivation.

(b) This last question was poorly answered. Few candidates described well the idea of removing or reducing the abundance of weeds. Simple measures, such as manual removal, could have been suggested, together with the use of herbicides. Plant breeding, in the form of herbicide resistant forms of crops, could also have been mentioned.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/12 |
| Paper 12 |

Key Messages

Candidates should:

- answer the question as set
- look carefully at the command word
- take into consideration the number of marks and writing space available
- give accurate data when describing graphs

General Comments

Most candidates appeared to finish the paper and very few questions were left blank.

Some candidates tried to make up for a lack of knowledge by writing excessively about the subject of the question without really answering the question. Repetition of the same point is a feature of these answers. On the other hand, candidates regularly handled the calculation questions well.

Comments on Specific Questions

Question 1

(a) (i) Few candidates gained both marks for defining biodiversity. Some answers appeared to be defining an ecosystem.

(ii) The more successful answers used the continents and lines of latitude to describe the distribution of the biodiversity hot spots.

(b) (i) Many candidates seemed to be answering a different question, one about reasons why biodiversity is being lost around the world.

(ii) There were some good descriptions of biosphere reserves as a strategy for conservation of biodiversity. Few mentioned gene banks and a significant number just talked vaguely about stopping logging etc. The question asked for the description of a strategy.

Question 2

(a) (i) A number of candidates did not identify the energy source in the diagram.

(ii) Many answers did not refer to the cold water in the diagram being heated by contact with hot rocks. What the steam causes a turbine to do was also often unclear.

(iii) Most candidates were able to state the names of two alternative energy sources.

(b) (i) There were some muddled ideas seen, though many candidates could offer a clear definition.

(ii) Some candidates did not answer the question but instead described alternative energy sources. There were also many vague references to pollution problems of using fossil fuels, but these are not worthy of credit without some qualification as to the nature of the pollution.

Question 3

(a)(i) Most candidates gained credit for plotting and completing the line graph. A number of candidates did not appear to use a ruler.

(ii) A number of candidates did not use data from all five graphs, some referred to the four graphs that were grouped together and others did not use data from any of the graphs. There were some excellent answers that used all five graphs.

(b) There were many detailed answers explaining how forest fires contribute to global warming that gained full credit.

Question 4

(a)(i) Most candidates correctly calculated the volume.

(ii) A small number of candidates wrote the headings from the table in the boxes provided instead of the figures from the bottom of the columns.

(b)(i) Some candidates were not specific enough in stating locations when answering this question. A few candidates made little reference to data from either map and gave limited responses about water shortages in undeveloped countries.

(ii) Although most candidates wrote about urban and rural areas, many explained that differences in water quality were to do with more educated people living in urban areas. The best answers explained that people in urban areas live closer together so it is easier to provide piped water that has been chlorinated and filtered in water treatment plants and that there are also sewage treatment plants.

Question 5

(a)(i) Most candidates answered this question well.

(ii) A small number of candidates named iron as a fuel. Most wrote about coal or oil. Many answers described in detail how coal was formed.

(b)(i) Some candidates found matching the lines on the graph with the correct descriptions challenging.

(ii) Few candidates gained full credit for discussing whether mineral resources can be used sustainably. Many answers were vague but there were good references made to recycling and the use of mineral alternatives.

Question 6

(a)(i) Some of the descriptions of the distribution of heather and bracken in the photograph lacked precision.

(ii) The best answers explained clearly how bracken competed with heather for sunlight, minerals and water. Weaker answers took information from the report but did not develop it.

(iii) Some candidates made sensible suggestions, such as biological control, herbicides and digging it up.

(b) There were many excellent answers explaining how fertilisers cause eutrophication.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/13 |
| Paper 13 |

Key Messages

Candidates should:

- answer the question as set
- look carefully at the command word
- take into consideration the number of marks and writing space available
- give accurate data when describing graphs

General Comments

Most candidates appeared to finish the paper and very few questions were left blank.

Some candidates tried to make up for a lack of knowledge by writing excessively about the subject of the question without really answering the question. Repetition of the same point is a feature of these answers. On the other hand, candidates regularly handled the calculation questions well.

Comments on Specific Questions

Question 1

(a) (i)   Candidates who lost marks here needed to study the key more carefully.

(ii)   Candidates performed well on this quesiton.

(b) (i)   Most candidates could find the answer from the graph.

(ii)   As above, this question was well answered.

(iii)   This question was poorly answered. This syllabus area needs to be stressed and learned. The question asked for the description of a strategy. Some candidates made vague suggestions.

Question 2

(a) (i)   This question was well answered.

(ii)   Some candidates were unable put together the clues they were given in the diagram and the stem. Weaker candidates talked about vague problems of pollution, ignoring the context given by the reference to the diagram of water movement. Candidates should take note when they are asked to use information in a diagram.

(b) (i)   Many candidates needed to learn more precisely the examples of water-related diseases from the syllabus.

(ii)   This question was poorly answered. We suggest considering covering this material in greater depth.

Question 3

(a) (i) Atmospheric composition was well known.

(ii) Candidates typically answered this question well.

(b) (i) Most were able to see past the fluctuations and state clearly that the overall trend is one of a steady rise over time.

(ii) Having said that the trend is a steady rise above, most candidates seemed unable to then go on and explain why this might be happening in terms of net addition of carbon dioxide due to fossil fuel combustion.

(iii) Few candidates were able to link to seasonal changes.

(c) There was a general failure to say anything about carbon neutrality when biomass is burned compared with combustion of fossil fuels.

Question 4

(a) Most knew about the biological origin or the need for pressure and lots of time in both. Fewer were able to discuss the differences.

(b) This unusual data handling question was well done by most candidates.

(c) (i) Again, a good proportion were able to describe the changes in this question.

(ii) Many candidates answered this question well.

(iii) Application of the knowledge of the problems of fossil fuels and how some of them might be solved by renewables was not well displayed in this question.

Question 5

(a) This question was reasonably well answered.

(b) Overall, only a limited knowledge of the adaptations of tundra plants was shown.

(c) (i) Most candidates were able to get some credit here for a minimum of two suggestions.

(ii) This question was typically very well answered with lots of sensible suggestions given.

Question 6

(a) A large majority of candidates recognised the evidence of the remains of living things.

(b) (i) There was a reasonable knowledge of the two types but it was not always well used to answer the question.

(ii) Similarly there was some good knowledge not always focussed on the question here.

(iii) Answers to this familiar topic were generally very good.

ENVIRONMENTAL MANAGEMENT

Paper 0680/21

Paper 21

Key Messages

- Candidates need to be precise in their answers. Vague statements where candidates state something is 'affected' are not enough for credit. They need to say how it was affected.
- Resources such as diagrams and photographs are important. While most candidates study them, a few seem to answer questions with no reference to the relevant resource.

General Comments

Candidates scored slightly higher marks on **Question 2** than on **Question 1**, possibly because **Question 2** contained more short answer parts and data / graphical questions. Nearly all the candidates attempted all the questions and completed the paper. Candidates need to be aware of the meaning of command words. This particularly applies to the command words 'describe' and 'explain'. There is a tendency to just write a brief list or add explanation when description is required. Some candidates describe or list when explanation is needed. Examinations are pressured situations, but a little time spent making sure they understand what the question requires will be beneficial.

Comments on Specific Questions

Question 1

(a) (i) Good answers provided a sense of what the climate was like, particularly noting the cold winters and the low annual precipitation along with reference to changes supported by data from the climate graph. Some weak candidates quoted data giving no indication that they understood what the climate was like.

(ii) Low precipitation was the main problem, but comparatively few stated this. Many said it was too cold or the growing season was too short, but there is a seven-month growing season which is sufficient for many crops.

(b) This was generally answered well, with detail on rate of decline, size and direction of retreat of the sea. Weaker candidates stated little more than the fact that the Aral Sea had shrunk.

(c) (i) Most candidates scored well on this question. Those that lost marks missed labels on the axes and / or did not draw the *y*-axis to scale.

(ii) Good candidates realised that 90% of the water was taken before reaching the Aral Sea and then performed the relevant calculation.

(iii) This was a difficult question, though many earned credit for mentioning evaporation. Candidates needed to use the information provided within part **(c)** to state that evaporation exceeded the flow of water into the Aral Sea.

(d) (i) Most candidates explained eutrophication and its effects, also salinity and poisoning, but with comparatively little reference to the ecosystem. Several restated the information provided that the climate had been affected without stating how this would affect the ecosystem.

(ii) The most frequent correct answers concerned the reduction in fish catch and the effects this had on the people. Many thought they lost drinking water – it has never been a source of fresh water

because of salinity. Few made references to decline in agriculture as rainfall decreased or health problems from the poisons.

(e) (i)   A few trees were left on the slope, but comparatively few candidates noted these as the natural vegetation.

(ii)   The best candidates recognised the signs of soil erosion and gave some indication of how it had happened, though few noted the deep gullies. Weaker candidates were unable to identify that soil erosion had taken place,

(iii)   The command word was 'explain'. Some candidates just gave brief comments or a list such as terracing or contour ploughing. Some credit was given for such answers, but they needed to go on to explain how these could reduce soil erosion.

(iv)   Most candidates gained credit for stating 'loss of fertility' but they needed to go further to explain the effects on the population of the area. Very few mentioned the problem of river floods due to soil being washed into, and reducing the capacity of, rivers.

(f)   This was a challenging question but many candidates scored well. The best candidates understood the concept of sustainability and argued, using examples, that farming could increase production in a sustainable way. Candidates also realised that providing food for the growing world population would be extremely difficult without adding to environmental problems, i.e. they looked at both sides of the argument. Some good answers were seen that discussed the problems of food supply from the point of inequality and loss of food before it could be eaten and that solving these problems would allow sustainable farming to feed the world population. Weaker answers stated that it could and then gave reasons that conflicted with sustainability. Marks were awarded based on the quality of the response.

Question 2

(a)   Many candidates achieved full credit, though some confused habitat and population.

(b) (i)   A minority of candidates did not attempt this question. Care needs to be taken as not all questions have answer lines. Many candidates that attempted this scored well.

(ii)   Many candidates got this correct, though it is apparent that weaker candidates either did not understand the term or did not take sufficient care to extract the relevant figure from the graph and table.

(iii)   This proved an easy question for most candidates.

(iv)   Some candidates stated 'summer' without thinking about what the graph was showing, i.e. that temperatures were low when rainfall was low, so that must be winter or cool season.

(v)   Only about half the candidates appeared to recognise that this was a question about the natural vegetation of a savanna climate. There was much reference to crops and general quality of growth instead of grass and leaves. Some seemed to suggest that trees and bushes only existed in the wet season. Good answers mentioned the colour of the vegetation. The best answers mentioned the lack of leaves or, alternatively, the presence of leaves appropriate to the season.

(vi)   Most candidates realised that the amount of rainfall was the main factor.

(c) (i)   Most candidates noted that the elephants visited the area for water.

(ii)   Most candidates answered this question well.

(iii)   Many candidates identified that increased destruction to the vegetation would reduce the food available for other herbivores and thus their predators. Loss of habitats for insects was rarely mentioned.

(d)   Some good candidates noted that the WWF was a nature conservation organisation, while many wrote about the fact that elephant populations were already under threat or faced extinction in some parts of Africa.

(e) (i)   A number of candidates were imprecise. Some weaker candidates selected the wrong figure from fact sheet.

(ii)   Most candidates gained full credit, usually for 'none in the north', 'few in the west' along with some statement about the distribution in the south. Some candidates need to be more precise in their descriptions of locations.

(iii)   The majority of candidates obtained at least some credit, usually concerned with hunting bans. This was developed by the better candidates in terms of protection and government commitment to stop poaching.

(f) (i-iv)   Candidates answered most of these questions correctly. Weaker candidates struggled with part **(iv)**. Careful study was required.

(v)   This question required knowledge and thought. Quite a few candidates gave answers explaining why birth rates were high in many developing countries. Better candidates understood that this was to do with factors improving life expectancy and the fact that there were many women of child-bearing age.

(vi)   This question offered candidates the opportunity to think about why an increasing human population is putting ever increasing pressure on the environment. The best answers explained in detail a number of key environmental issues. Others need to take notice of the command word, 'explain'. Such candidates tended to list with little or no explanation.

ENVIRONMENTAL MANAGEMENT

Paper 0680/22

Paper 22

Key messages

- Accuracy in reading graphs is an important skill that will benefit candidates in examinations.
- Candidates do need to think about their answers. Time spent on interpreting and using resources will increase the credit that can be awarded.
- When answering questions such as **1(e)** and **2(g)** candidates should try to look at reasons for and against and reach a conclusion based on evidence.

General Comments

Both questions were answered to a similar high standard, with certain question parts causing some difficulty for all but the best candidates. Nearly all candidates completed all the questions. A few wrote at unnecessary length on some part questions so that they were obviously short of time as they attempted the last few parts of questions. Consequently their answers were often brief and lacked the usual level of thought. The number of marks and the space provided for responses are good indicators of the length of response needed to answer the question.

Candidates scored highly on questions where data or graphs were involved. However, two part questions of this type had low success rates, **Question 1(a)(iii)** because of a lack of accuracy when looking at the graph and **1(c)(iii)** due to not reading the question.

Comments on Specific Questions

Question 1

(a) (i) A number of candidates did not answer the question as set. They either described the route of the Ganges or described the pattern of rainfall. The majority of candidates found plenty to write about and gained credit.

(ii) Most candidates gained credit for identifying the positive relationship. Only a few gained full credit by noting that the rise and fall in flow occurred a month or so after the rise and fall in rainfall.

(iii) This was another question where accurate study of the graph was required. Only a few obtained full credit by noting when the flow exceeded 25 000 m^3 per second. Those that gave a shorter period could be awarded only part credit.

(iv) Candidates scored well on this question.

(b) (i) Most candidates correctly interpreted the resource.

(ii) Roughly half the candidates gave the correct answer. A few ignored the 'million'. Other candidates used the wrong figures or could not calculate 3%.

(iii) There were many clues to the answers to this question in the resource, these were used by better candidates. Others ignored the information provided and struggled to gain much credit. Several included salt water in their answers.

(c) (i) Some candidates counted the oil spills in the ocean instead. They needed to read the question with care.

(ii) Weaker candidates simply gave a list by ocean or continent. Good answers noted the clusters to the south of North America and around the coast of Europe. They also noted that most occurred close to coasts, in the Northern Hemisphere or in the Atlantic.

(iii) This question proved challenging. Candidates often wrote about icebergs or storms and ignored the possibilities that most spills occurred on shipping routes between oil exporters and oil importers. Another good suggestion was that they happened where there was oil extraction from beneath the sea.

(iv) Some excellent answers were seen here. Many knew about the impact on light entering the water and its implications for photosynthesis and the food chain. They also were aware of how oil affects fish gills and the feathers of birds.

(d) Most pie graphs were accurately drawn, though some candidates need to be more careful, especially where the percentages are quite small.

(e) In **5(d)** candidates were provided with information about sources of marine pollution. Most ignored this useful information. Some answers were not directed at the question and discussed overfishing, for example. A considerable number wrote at length about oil pollution with little about why international cooperation was needed to tackle the problem. To achieve the top level candidates need to realise that the oceans are linked and currents spread pollution across all the oceans. Good answers also showed awareness that all countries, even landlocked ones contribute. They then concluded that a small number of nations controlling pollution will have limited effect as their seas will continue to be polluted from sources outside their control. Candidates need to think to answer such questions well.

Question 2

(a) (i) Candidates need to be accurate in reading figures from graphs.

(ii) Nearly all candidates identified the correct temperature, though they were less likely to be accurate in stating how many years ago the highest temperature occurred.

(iii) The positive relationship was stated by most for part credit. Comparatively few identified the current anomaly for further credit.

(b) (i) A few candidates overlooked this question. The vast majority completed the graph accurately.

(ii) Many candidates explained that burning fossil fuels was the reason. Few mentioned that fossil fuels contain a high percentage of carbon.

(c) (i) The answer of 4 billion or doubled was given by most. A few forgot the 'billion' and gave 4 alone.

(ii) Weaker candidates simply gave a list, often with inaccuracies as they misread the graphs. The best answers noted, for example, that all continents had increased their emissions, Europe only a little, Asia by a vast amount and that continents such as Africa or Oceania had doubled or trebled their emissions. This illustrates the importance of describing rather than listing.

(iii) One of the key words in the question was 'strategies'. Examiners credited actions that could be interpreted as strategies, such as replacing fossil fuels with renewables for electricity generation. Similarly promoting the use of public transport gained credit, but individual actions such as travelling by bus or walking could not be seen as strategies.

(d) (i) This question was answered well.

(ii) As with the above question, candidates had little problem answering this question.

(e) (i) Many candidates gained full credit, usually for stating something about the removal of the soil, the use of explosives to loosen the rock and the use of machinery to load the rock onto trucks.

(ii) Most candidates answered the question well with loss of habitats, noise and dust from explosions and machinery, and the pollution of water bodies frequently seen. Some candidates wrote about reclamation so did not answer the question.

(f) (i) The fact that this form of electricity generation does not emit carbon dioxide / greenhouse gases was written by nearly all candidates. Candidates who thought about the resource realised that the reduction in transport of raw materials was an environmental benefit and so gained further credit.

(ii) Reasons against a nuclear power station were stronger than the reasons in favour. Good answers included the possibility of employment, reliable electricity supply and improvements to local infrastructure.

(g) Quite a lot of candidates started by agreeing or disagreeing with the statement. They then went on to give evidence in support of their decision and frequently ignored counter arguments. Some, if arguing against, would add a sentence stating renewables were better, usually without giving reasons. There was no correct answer; responses were marked on the quality of the argument and those in the top level made some attempt to look at both sides and reach a conclusion based on the evidence in their responses.

ENVIRONMENTAL MANAGEMENT

Key Messages

- Accuracy in reading and plotting graphs is an important skill that will benefit candidates in examinations.
- It is essential that candidates read the questions carefully. There were some answers given that were not related to the question set. A number of candidates underlined key command words which helped them focus on what was required.
- Descriptions, for example of location and impacts of cyclones, need to be more than just a brief list.

General Comments

Candidates responded better to **Question 1** than **Question 2**, even though the questions on gas and oil proved difficult. There seemed to be a lack of knowledge among many candidates of syllabus sections 1.4 and 3.1 on which these part questions were based.

Graphical questions continue to be well answered by candidates, for instance **1(a)(i)** and **1(e)(i)**. Candidates also scored well on the short answer parts of **2(b)**. Some questions, other than those mentioned above, also proved difficult. These were on a variety of topics within the Atmosphere section of the syllabus, notably causes of cyclones, the importance of the ozone layer and the continued presence of CFCs in the atmosphere.

Comments on Specific Questions

Question 1

(a) (i) Nearly all candidates correctly identified the year.

(ii) Candidates generally scored well on this question, identifying changes over the time period and quoting relevant data from the graph in support. Some weaker candidates tried a year-by-year approach. Such answers do not describe trends and so cannot gain credit.

(iii) Many good suggestions were seen, with answers based on overfishing and implementation of quotas being the most frequent.

(b) (i) Many correctly carried out the calculation. Some selected the wrong figures from the newspaper report.

(ii) The best candidates provided developed answers dealing with loss of income for fishermen and also for associated industries such as fish processing and transport. The impact on food supply / diet was also commonly provided. Weaker candidates needed to think beyond the basic response of 'loss of jobs'.

(iii) Some candidates tried to deduce an answer without reference to the information provided.

(iv) Good answers explained that such a method meant that young tuna or by-catch could be returned to the sea alive. Some excellent answers noted that being caught in nets causes creatures such as dolphins and turtles to drown.

(c) (i) Many candidates answered this correctly.

(ii)   Only the best candidates recognised this common oil and gas trap.

(iii)   Answers were often vague or lacking in detail. With 4 marks available, candidates should realise that 'the decomposition of dead plants and animals' will not gain full credit. Better answers included the burial by sediment and the role of heat and pressure over millions of years.

(iv)   Few candidates had good knowledge of the use of seismic surveys to identify rock structures that could possibly contain gas and / or oil.

(d)   As the map shows the Kudu gas basin is under the ocean, responses that suggested lorries or trains could be used to bring the gas to the coast were not credited. This is a good example where candidates did not stop to think about their answer.

(e) (i)   Many candidates accurately completed the pie graph and key. The main reason why some candidates did not score maximum marks was a lack of accuracy. Examiners apply some leniency for the very small sectors, but with the marks every 10% around the graph candidates should be able to identify the extent of each sector.

(ii)   Most candidates gave the correct answer. Some candidates were unable to identify the fossil fuels from the list, most commonly including nuclear.

(f)   Good candidates realised that solar power does not produce electricity when it is dark and that it is expensive. Some candidates thought the weather would be too cloudy, even though the question stated that much of Namibia is a desert.

(g)   Weaker answers started by agreeing with the statement and then provided a one-sided argument with no thought as to possible problems. Better answers covered the reasons for and against and gave a conclusion based in their evidence. There was no single correct answer, though the most thoughtful responses concluded that such methods were unlikely to meet energy needs unless vast areas of agricultural land was given over to growing crops for fuel with the consequent reduction in food supply.

Question 2

(a) (i)   Many candidates missed the most obvious point, that cyclones form over the oceans. Some good descriptions were made, particularly concerning the relationship to the tropics. Weaker answers often just listed Atlantic. Greater precision is needed.

(ii)   A few candidates deduced that warm water was needed for cyclone formation.

(b) (iii)   Some candidates seemed to find this question challenging. Careful study of the map shows that the cyclone moved from The Philippines to Vietnam or travelled west or west-north-west.

(ii)   Nearly all candidates correctly gave the answer 'over 251 kph'.

(iii)   Many candidates noticed the decrease in the wind speed.

(iv)   The best answers covered a range of impacts from loss of property to loss of life. Such answers described, whereas weaker answers need to be developed from a brief list.

(v)   Those who knew the impacts tended to be the candidates who did best on this question. Responses ranged from the small-scale boarding doors and windows to government-scale actions of predicting, warning and providing evacuation and shelters.

(c)   Many candidates completed the text correctly. For others the main difficulty was in identifying that ozone concentrations were small or low close to the Earth's surface. Others missed out on marks due to a lack of accuracy in reading the graph so that incorrect figures were given for the maximum concentration and its height.

(d)   Candidates rarely provided detailed answers here. Only a small proportion knew that ozone was important in absorbing UV radiation and that this radiation can cause skin cancer and damage eyesight. UV radiation also impairs photosynthesis, so the absorption of UV radiation by the ozone layer is vital to life on Earth.

(e) (i) As the ozone hole was $0\,km^2$ in 1979, all that was required was to accurately identify the size of the ozone hole in 1993.

(ii) This was an example of many candidates not reading the question sufficiently carefully. A considerable number of candidates described the changes from 1975 onwards and had little space left to write about post-1993 changes. Those who described the changes over the correct period usually observed the sudden drop and increase around 2002 and the fact that overall there had been little change. A few picked out the trend of a small decline in recent years.

(f) (i) Most graphs were accurately drawn with a correct scale and labels on both axes. It was a lack of labels and in some cases a non-linear scale that caused some candidates to miss out on credit.

(ii) Good candidates knew that CFCs are long lasting, or that the chlorine in them remained in the atmosphere for many years. Some realised that CFCs are still present in many refrigerators or air conditioning units and that these are released when the appliances are discarded and broken up. Weaker candidates had few ideas on the subject beyond that there is still some very limited production.

(iii) Comparatively few candidates knew that CFCs are also greenhouse gases.

(g) There were several irrelevant answers that did not focus on the question. Weaker candidates wrote little and their responses were often a list of causes of atmospheric pollution with many inaccuracies. Many candidates started by agreeing or disagreeing with the statement and then finding it hard to support their statement with evidence. The best answers tried to look at both sides of the discussion and tended to agree that it would always be a problem, though the fact that fossil fuels will run out one day offered some hope for the atmosphere. A few even referred to international environment conferences and agreements. As in part **1(g)** there was no single correct answer. Responses were marked on the quality of the discussion.

ENVIRONMENTAL MANAGEMENT

> **Paper 0680/03**
>
> **Coursework**

Key Messages

- A good range of environmental investigations were seen and the enthusiasm that candidates have for their local environment was clear.
- Some pieces of coursework did not contain enough of a plan for sustainable development of a limited resource to score marks in **Domain C**. The message continues to be to get candidates to start thinking about this before they start their work. The candidates need guidance on this from the outset.

Comments on Assessment Criteria

Domain A

This continues to be a strong element, demonstrating that the teaching has covered the necessary processes for candidates to be able to ground their investigation in theory. This sets them up admirably for the examinations.

Domain B

Candidates tend to carry out a wide range of techniques and this demonstrates their conscientious approach to their own investigation. Unfortunately there were some rather limited investigations, which were no more than a class practical. A range of sources would have been better.

Domain C

This continues to be the weakest domain and was often due to the lack of forward planning. The problem was often an inability to look ahead to see what the consequences are in terms of the chosen topic with reference to sustainable development.

ENVIRONMENTAL MANAGEMENT

Paper 0680/41

Alternative to Coursework

Key Messages

Candidates should:

- use the information given in the paper to support answers
- plot graphs carefully with both axes fully labelled with units
- take careful note of the mark allocation for each question

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Belize. Many candidates understood and made good use of the source material and their written responses were clearly expressed. The mathematical and graphical questions did pose some difficulties for a minority of candidates.

Candidates had no problems completing the paper in the time available.

Overall the demand of this paper was very similar to past papers and Centres should work through past papers to help candidates see how to make the best use of the information given for each question.

Comments on Specific Questions

Question 1

(a) (i)   Most candidates gave at least one impact of hurricanes on the economy of the country. Some candidates described the impact on humans, which did not answer the question.

(ii)   Most candidates realised that relatives would be able to send money.

(b) (i)   Most candidates described the benefits of adding manure to the planting hole appropriately.

(ii)   Only a few candidates made full use of the data from the table. Nearly all candidates correctly suggested that as planting density increased so did the yield. All the other points on the mark scheme were seen but only thoughtful candidates gave several of these answers.

(iii)   Most candidates managed to give one sensible answer as to why planting at the highest density would not be suitable for many farmers. All the points on the mark scheme were seen but only a few candidates managed to gain full credit.

(iv)   A wide range of answers were given, only a minority of candidates gave one of the correct answers.

(v)   The role of legumes was clearly described by many candidates.

(c) (i)   Some candidates completed the table incorrectly as they did not appreciate that the mass of the bowl needed to be taken into consideration.

(ii)   Candidates nearly always calculated a percentage of the papaya that could be eaten. Only a small number were incorrect even when allowing for a mistake in part **(i)**.

(iii) Nearly all candidates correctly identified some of the equipment needed. However, many did not list sufficient items to gain full credit.

(iv) Many candidates correctly commented on the need for care with the knife. Credit was not given for suggestions such as get an adult / teacher to do it or use a blunt knife.

(v) Nearly all candidates made two suggestions worthy of credit.

(d) (i) This question asked candidates to suggest the benefit to the government of encouraging papaya farming. Most candidates could give one reason. Some candidates drifted on to thinking about farming from the farmer's point of view which could not gain credit here.

(ii) Many candidates gave reasonable answers here.

(iii) Questions about plant breeding are often answered with vague or inaccurate terms. Developing new crops by selective breeding or genetic engineering is an important topic.

(e) (i) Most candidates correctly identified that the papaya flesh would be long lasting but most failed to develop their answers further.

(ii) Most candidates gave good reasons as to why dry papaya flesh production might not be profitable.

(iii) Most candidates gave a description of subsidies and gained credit.

(iv) Many candidates rather lost sight of the key point of the question about sustainability of production. The fact that plants could be used that were resistant to diseases was suggested by some.

Question 2

(a) (i) Candidates who carefully considered the information given completed a transect line at the correct position. A significant minority repeated one of the transect lines already given on the diagram which could not gain credit.

(ii) Many candidates gave good reasons for carrying out plan three.

(iii) Most candidates plotted the graph accurately. There are still some candidates who do not fully label both axes so maximum credit cannot be awarded.

(iv) The pattern of the data was frequently well described.

(v) Candidates that gave careful consideration to the statements about biodiversity and the data given gave answers that gained credit. Unfortunately some candidates just assumed that cutting down trees would reduce biodiversity.

(vi) Candidates often only gave rather vague suggestions as to how to find out more about biodiversity around power lines. They only needed to describe some suitable survey methods to gain the marks for this question.

(b) (i) The candidates often gave good answers as to why the project was an example of sustainable development.

(ii) Most candidates appreciated that the costs of building the dam had to be recovered from the cost of electricity.

(iii) Candidates gave logical answers to support either point of view. The candidates that appreciated that the macaw was only locally extinct gave the best answers.

(iv) A significant minority of candidates appreciated that dams cause siltation behind. Candidates who just stated that water would be used up did not gain credit.

ENVIRONMENTAL MANAGEMENT

> **Paper 0680/42**
>
> **Alternative to Coursework**

Key Messages

Candidates should:

* use the information given in the paper to support answers
* plot graphs carefully with both axes fully labelled with units
* take careful note of the mark allocation for each question

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Guatemala. Many candidates understood and made good use of the source material and their written responses were clearly expressed. The mathematical and graphical questions did pose some difficulties for a minority of candidates.

Candidates had no problems completing the paper in the time available.

Overall the demand of this paper was very similar to past papers and Centres should work through past papers to help candidates see how to make the best use of the information given for each question.

Comments on Specific Questions

Question 1

(a) (i) The majority of candidates readily understood the positive effects of an increase in world demand for cardamom.

(ii) Nearly all candidates were able to do this calculation.

(iii) The question proved difficult for most candidates. This was the control experiment to compare with the effect of an acid on seed germination.

(iv) Many candidates realised that farmers might think the process would be very time consuming for very little gain. All the points on the mark scheme were seen regularly.

(b) The 'heavy metal' part of the question was ignored by many candidates.

(c) Most candidates appreciated that the mineral nutrients would recover and the seedlings would then grow well.

(d) (i) The advantage of using two sets of trays was appreciated by most candidates.

(ii) Most candidates could see that measuring the seedlings on two separate days was an advantage. Most of the other marking points were only given by a small number of candidates.

(iii) Most candidates gave a list of pieces of information that were relevant to the methods described. Most candidates obtained most of the available credit in this question.

(e) (i) The graphs were usually plotted correctly. However some axes were not fully labelled.

(ii) The pattern of the graph was often described adequately. To just state that there is an increase in seedlings was not sufficient, the plateau needed to be described as well.

(iii) Those candidates who had responded well to the previous two questions often gave the farmer correct advice. Answers needed to contain quoted figures.

(f) (i) The command word 'calculate' meant that one temperature value must be subtracted from another to give the correct answer. Some candidates identified the two values but did not perform the subtraction.

(ii) Candidates performed well on this question.

(iii) Most gave the loss of crops as a possible effect of high rainfall. Descriptions of surface run-off leading to erosion were rare by comparison.

(g) (i) This question required an understanding of the process and effects of selective breeding. A small number of candidates described this well. Many could not move far beyond the source material given.

(ii) This was a question requiring some knowledge of genetic engineering. Some candidates could describe the process of genetic engineering in outline.

Question 2

(a) Many candidates suggested sensible disadvantages of the power generation methods. There did seem to be some confusion about geothermal energy as it was regularly suggested this could only be developed in volcanic regions.

(b) Most candidates realised that the north of the country was remote and mountainous. The additional cost to supply and small population were the most frequent suggestions.

(c) (i) There was a lack of detail given in the proposed methods for a survey of biodiversity. The importance of being able to identify the plant species was not appreciated by many candidates and the methods were frequently confused.

(ii) The best answers stated the survey should be repeated beside other power lines in similar forests. Vague answers about repetitions were not sufficient for credit.

(d) (i) Most candidates correctly identified the time of lowest demand. Some candidates needed to inspect the graph with greater care.

(ii) Most candidates realised that most of the population would be at home and suggested sensible reasons for an increase in electricity consumption.

(iii) This question was a demanding one as the question required arguments to persuade the government rather than individuals. If candidates appreciated that reducing demand was likely to be more cost effective than generating more electricity they usually continued to make some of the other points on the mark scheme.

(e) (i) Most candidates gave a correct answer.

(ii) Most candidates directed their questions towards electricity supply and gave respondents reply options. This question was generally done well by candidates.

ENVIRONMENTAL MANAGEMENT

Paper 0680/43

Alternative to Coursework

Key Messages

Candidates should:

- use the information given in the paper to support answers
- plot graphs carefully with both axes fully labelled with units
- take careful note of the mark allocation for each question

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Egypt. Many candidates understood and made good use of the source material and their written responses were clearly expressed. The mathematical and graphical questions did pose some difficulties for a minority of candidates.

Candidates had no problems completing the paper in the time available.

Overall the demand of this paper was very similar to past papers and Centres should work through past papers to help candidates see how to make the best use of the information given for each question.

Comments on Specific Questions

Question 1

(a) Most candidates correctly calculated the population of Cairo.

(b) (i) Most candidates suggested at least one reason why traders could not work during flooding. All the points on the mark scheme were seen regularly.

(ii) Most candidates gave sensible reasons.

(c) Many candidates found it difficult to identify factors that might decrease the rural population in the future.

(d) (i) Most candidates realised that the sample in plan one would not be a representative one.

(ii) The advantages of plan three were quite well described by a majority of candidates. All the points in the mark scheme were seen regularly.

(iii) Candidates were asked to provide one further question about air quality. Only a small number of candidates gave a question that was so close to one already presented it that could not gain credit.

(iv) Candidates could frequently describe how the data from a questionnaire may be processed.

(v) Burning garbage was the most frequently stated source of air pollution.

(vi) Most candidates recognised that cold air was an important factor. However, only a small number of candidates gave convincing answers.

(e) Candidates found it difficult to suggest how the air quality predictions could be used either by city authorities or the population.

(f) (i) Most candidates could appreciate the need to keep the areas near the Nile for farming rather than housing.

    (ii) Only a small number of candidates appreciated that the housing expansion was only going to take place into empty desert.

    (iii) A significant minority of candidates did not attempt the question. Candidates need to read the question with care.

(g) Some candidates gave sensible reasons from the photograph as to why this was a planned housing development. Others made suggestions that were too vague in their description to be given credit.

(h) Candidates usually gave good descriptions of the services needed for a new housing development.

Question 2

(a) (i) The graphs were usually correctly plotted. Some axes were not fully labelled.

    (ii) The pattern of wheat production was usually correctly described.

    (iii) Only a minority of candidates made the link between low production and the need to import more to feed the population.

    (iv) The percentage increase in production was correctly calculated by only a small number of candidates.

    (v) Candidates appreciated the need for food security, giving sensible reasons as to why the government wanted to increase wheat reserves.

(b) (i) Candidates found it easy to select facts from the data given to support the faster growth of sakha wheat.

    (ii) The table was usually completed correctly.

    (iii) Most candidates found this question challenging.

    (iv) Most candidates referred to the protein content of bread.

    (v) Only a small number of candidates appreciated that the data from one season needed to be checked with the data from the next growing season.

    (vi) Many candidates did not clearly express the idea that farmers would not want nitrogen-containing fertiliser to be wasted due to its cost or the possibility of environmental damage due to fertiliser draining off the field.

(c) Some candidates gave good details in a logical order to describe the events leading to eutrophication. There were other candidates who made statements that were too vague to gain credit.

(d) Only a minority of candidates gained full credit for their suggestions as to how genetically modified wheat might benefit farmers in the future.