ENVIRONMENTAL MANAGEMENT

| Paper 0680/03 |
| Coursework |

Key Messages

- There were some interesting environmental topics investigated this series. These again showed the value to candidates of the opportunity to see sustainable issues in real life and in the context of their local areas.

- There were some projects that did not include a sufficient range of techniques to be able to formulate a sustainable management plan. The advice is always to start thinking about this at the start and then tailor the research to arrive at this final conclusion.

Comments on assessment criteria

Domain A

Domain A remains the strongest section. The majority of work showed that candidates were applying their knowledge from the course to their research in a competent fashion and this set them up admirably for the theory examinations.

Domain B

A wide range of techniques were used by most candidates, including some excellent first-hand practical work. Unfortunately this was not the case for all and some work contained insufficient detail to score well in either this domain or in **Domain C**.

Domain C

As often found previously, this was the weakest domain for many candidates. This was often the result of a lack of forward planning. It would help candidates to read the descriptors for this domain and ask themselves if they have fully considered the ultimate reason for their research, i.e. to produce a sustainable development plan.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/11 |
| Paper 11 |

Key Messages

Candidates should:

*   look carefully at the command word and the marks available
*   not waste time repeating the question
*   divide their time in order to finish the paper

General Comments

Those candidates who scored fewer marks overall often gained these by correctly answering questions that required calculations and short answer questions only.

Some candidates demonstrated a good knowledge and understanding of the topics, as well as the skills required to analyse data and photographs.

A few candidates tried to make up for their lack of knowledge by writing excessively about the subject of the question without really answering it. Extended writing needs to be practised.

Comments on Specific Questions

Question 1

(a) (i) Most candidates were able to name a plate moving north and an oceanic plate. A few seemed to misread the question and name two plates moving north.

(ii) The best answers stated that Australia is not on or near a plate boundary or that Australia is in the middle of a plate.

(iii) There were three marks available for this calculation. Most candidates were able to gain at least some credit by showing their working, even if their final answer was incorrect.

(b) There were many excellent, detailed answers explaining the reasons why some people choose to live near volcanoes. Some candidates' answers lacked the detail needed to gain all the credit that was available.

Question 2

(a) Most candidates gave clear explanations of how salt water is made into fresh water in the water cycle. The best answers began by clearly stating that when sea-water evaporates, the salts in it are left behind. The most common error was to talk about salty water evaporating and not make it clear salt did not also evaporate.

(b) (i) The majority of candidates gave the correct answer.

(ii) Few candidates explained clearly that there are two ways fresh water may not be safe to drink, pollution and water-related diseases with specific details.

(iii) Some candidates did not seem to have read this question carefully. It was about supplying water that is safe to drink to an African village. Good answers went further than supplying water and described how water could be made 'safe'.

Question 3

(a) (i) Most candidates supplied one correct word, usually ozone. A considerable number of answers transposed oxygen and nitrogen.

(ii) A number of candidates wrote extensively and exclusively about UV being a cause of global warming. However, there was some good understanding shown of how UV light can cause skin cancer and cataracts. Few discussed anything other than effects on humans despite the phrase 'life on Earth' in the question.

(b) (i) Few candidates were able to explain the harmful effect of lead particles entering the atmosphere when leaded petrol is burnt. This can lead to health problems and a number of candidates did write about low doses of lead causing brain damage to babies and children, resulting in lowered IQ and learning problems. Such answers were very rare though, with this proving to be a challenging question.

(ii) Some candidates were able to write convincingly about the environmental benefits of using ethanol. However, most answers focused, wrongly, on the idea that ethanol does not cause any pollution. The best answers were about ethanol being obtained from crops like sugar cane and being carbon neutral, and so causing less global warming.

Question 4

(i) Answers to this question ranged from excellent to weak and confused. The best answers described the effects of overgrazing, overcultivation (mention was made of monocultures) and deforestation. Full credit was gained by candidates with detailed descriptions of one misuse of the land, such as farmers cutting down trees.

(ii) The majority of candidates gave the correct answer.

(iii) Answers to this question were variable. The better answers described in detail the benefits of tree planting and terracing.

Question 5

(a) (i) The majority of candidates gave the correct answer.

(ii) Many candidates wrote about the low total crop yield in the developing country instead of suggesting reasons to explain it. Few answers focused on the lack of money to improve crop yield through the use of irrigation, new crop strains (high yielding and genetically engineered varieties) fertilisers, pesticides and farm machinery.

(iii) Answers to this question often resembled a list of things the developed country needed to do to increase its agricultural yields rather than how this was to be achieved.

(b) There were a few detailed answers to this question explaining that if farmland in a developing country was being used for biomass then less food crops would be grown. This would lead to food shortages and malnutrition and starvation.

Question 6

(a) (i) Some candidates showed they need to read the key with care.

(ii) Answers covered the full mark range. Some answers copied out the information provided. The better answers explained how intensive farming contributed the most to the list of seven impacts, by explaining how large amounts of capital and inputs relative to land area did the most damage in the production of high yields. There was reference to agrochemicals polluting rivers causing eutrophication and biomagnification, to monoculture and overproduction causing soil erosion and to irrigation leading to salinization. Other answers described traditional crop varieties disappearing as high yielding and genetically engineered varieties replaced them. Habitat loss as hedgerows and trees were removed to provide bigger areas to cultivate were also described well.

(b) Very few candidates were able to write specifically about the work of CITES, UNEP, WWF and IUCN. However, there was some understanding of the role of conservation organisations. Answers described the importance of educating people by providing information, undertaking research, setting up reserves for endangered species, e.g. National Parks and Biosphere Reserves, and working with governments to formulate laws.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/12 |
| Paper 12 |

Key Messages

Candidates should:

* look carefully at the command word and the marks available
* not waste time repeating the question
* divide their time in order to finish the paper

General Comments

Those candidates who scored fewer marks overall often gained these by correctly answering questions that required calculations and short answer questions only.

Some candidates demonstrated a good knowledge and understanding of the topics, as well as the skills required to analyse data and photographs.

A few candidates tried to make up for their lack of knowledge by writing excessively about the subject of the question without really answering it. Extended writing needs to be practised.

Comments on Specific Questions

Question 1

(a)   This question was well answered by most candidates.

(b)(i)   A good number of candidates achieved credit for some discussion about the number of species in forests, but few went on to discuss the variety within a species or across the whole ecosystem.

(ii)   The majority of candidates were able to come up with at least one activity leading to a reduction in biodiversity.

(iii)   Only some candidates were able to suggest good reasons for the conservation of biodiversity, including such things as the conservation of genetic resources, ecosystem services and aesthetic reasons.

Question 2

(a)(i)   Few candidates were able to precisely label this volcano.

(ii)   The majority of candidates simply described the distribution shown and made no attempt to explain it. Candidates should be helped to understand the meaning of command words in questions.

(b)(i)   A reasonable number of candidates were able to come up with sensible suggestions in this question. However, a significant number misread it and talked about what would have happened to the various people during the eruption, failing to notice that the individuals they were writing about still live on the island. This was most apparent in those answers which suggested that, for example, taxi drivers may have been killed in their cars.

(ii)   Most have a good understanding of the various reasons why earthquakes, which are widespread and unpredictable, cause more deaths than volcanoes.

Question 3

(a) This question was poorly answered. Many candidates displayed common misconceptions on this topic.

(b)(i) This question was quite well answered with the majority understanding how climate might influence the type of farming.

(ii) Most were able to suggest that water is the requirement and irrigation is the strategy being carried out. A few realised that this is centre pivot irrigation.

(iii) Most of candidates suggested a correct requirement that farmers could add.

Question 4

(a)(i) Most candidates found this question accessible.

(ii) A specific answer was required here as the rock type needed to be used in both industry and farming. Many candidates suggested limestone and two sensible uses.

(b)(i) This question was well answered, with many detailed accounts of the environmental problems caused when coal is burned.

(ii) A significant proportion of candidates misread the question and consequently wrote about actions which could be taken by a government to conserve fossil fuels. Those who realised that the focus was an individual were able to talk sensibly about the measures that such a person could take in their choices of transport, use of energy at home and insulation. Credit was given for suggestions about alternative energy use as long as they were feasible for individual.

Question 5

(a)(i) The majority of candidates realise that the Sun is the source of energy powering the water cycle.

(ii) A very large number of candidates showed that they had a good understanding of the stages in the water cycle on this question.

(iii) This is another example of a question where marks were lost due to inadequate reading of what was required. Thus, many candidates simply added arrows and failed to label them.

(iv) There were few good suggestions in answer to this question, the most common being some sort of rainwater harvesting system.

(b)(i) This question was answered correctly by nearly all candidates.

(ii) About half of candidates were able to come up with sensible suggestions here.

Question 6

(a)(i) Simple mistakes such as failing to label the axes or using a non-linear *y*-axis were the main reasons any loss of marks in this question.

(ii)   Some candidates misread the question and wrote about various aspects of family planning, having not noticed the keyword other. Those who saw this were able to write in detail about government policies, the education of women and the provision of good pensions.

(b)   This proved to be a very demanding question but was well answered by some of candidates and therefore discriminated. Candidates who took each of the quotes and suggested how eco-tourism might affect the problem performed well.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/13 |
| Paper 13 |

Key Messages

Candidates should:

*   look carefully at the command word and the marks available
*   not waste time repeating the question
*   divide their time in order to finish the paper

General Comments

Those candidates who scored fewer marks overall often gained these by correctly answering questions that required calculations and short answer questions only.

Some candidates demonstrated a good knowledge and understanding of the topics, as well as the skills required to analyse data and photographs.

A few candidates tried to make up for their lack of knowledge by writing excessively about the subject of the question without really answering it. Extended writing needs to be practised.

Comments on Specific Questions

Question 1

(a) (i)   Descriptions of the distribution proved difficult for candidates.

(ii)   Candidates found it difficult to suggest relevant characteristics of coniferous trees in the taiga. This question proved to be one of the most difficult on the paper.

(b) (i)   A majority of candidates were able to suggest at least one cause of deforestation, but too many left it at that, even though the word 'two' was in bold.

(ii)   Many candidates were unable to come up with even one sensible suggestion in answer to this question. The main strategy that most suggested was simply stopping cutting down trees, which is not a sustainable management technique.

Question 2

(a) (i)   Only a minority of candidates were able to state wave energy.

(ii)   Many candidates found this question challenging.

(iii)   The advantages and disadvantages of hydroelectric power projects seem to be fairly well understood by candidates and they performed well on this question.

(b)   Only a few candidates could make good suggestions about what sustainability means in relation to the limpet and HEP projects. This area should be clarified for candidates.

Question 3

(a) (i)   Nearly all candidates were able to gain full credit on this question.

(ii)   Many candidates limited themselves to a description and made no attempt whatsoever at an explanation for the trend they described. This may be an example of not reading the question carefully.

(b)(i)   This proved to a challenging question. The role of temperature inversion in worsening pollution in urban centres was not well understood.

(ii)   Many answers could not get beyond the idea of stopping people from doing things that caused pollution. Such attempts are often too vague to gain credit. Actual strategies are needed such as carpooling, the use of public transport, cycling or walking, etc.

Question 4

(a)(i)   A significant proportion of candidates did not correctly answer this question correctly.

(ii)   Again this proved to be a very discriminating question, with only a small number of candidates able to gain full credit. Few candidates referred to the map as the question asked.

(iii)   This topic is usually easy for candidates. However, on this occasion many students did not seem to possess the knowledge to answer the question.

(b)   Contrastingly, candidates showed quite detailed knowledge of the causes of overfishing.

Question 5

(a)(i)   A lack of a clear understanding of the phrase organic matter may have led to the rather poor performance on this question.

(ii)   A majority of candidates were able to realise water is needed in photosynthesis and obtained by plants from the soil.

(iii)   While most candidates were able to state ways in which desert soils could be improved, overcultivated soils proved more problematic.

(b)   The syllabus lists a number of strategies for soil conservation, but these were rarely quoted by candidates in answer to this question.

Question 6

(a)(i)   Despite being given a choice of answers only about half of candidates scored full credit.

(ii)   This question proved to be very discriminating with just under a third able to gain full credit.

(b)(i)   This was a very wide ranging question and many candidates were able to make lots of suggestions about the effects.

(ii)   Around half of candidates were able to make a sensible suggestion to this question.

ENVIRONMENTAL MANAGEMENT

Paper 0680/21
Paper 21

Key Messages

Candidates should:

- ensure they have revised all parts of the syllabus before going into the exam
- read the question carefully and answer the question as set
- write as clearly as they can, especially when answering the longer questions

General Comments

Overall the wording of questions and the topics covered were well understood. They tested, and elicited responses appropriate to the capability of each candidate.

Marks were mainly lost when candidates did not recognise that more detail was needed. Answers should be more specifically answering the question that was set and not necessarily those the candidate was expecting or had prepared.

Comments on Specific Questions

Question 1

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

   (ii)   Where candidates had not been successful it was because they had not written all the hazards.

   (iii)   A significant proportion of candidates simply used the terms long- and short-term without being specific to either event or timescale.

(b) (i)   This question was well answered by almost all candidates.

   (ii)   This question was well answered by many candidates who talked about the epicentre and the fact that earthquakes occurred as a result of movement of plate boundaries.

   (iii)   The most common mistake, when made, was 9.3.

   (iv)   Many candidates performed well on this question. Almost all had calculated the correct number of earthquakes.

   (v)   Some candidates showed they did not understand what was meant by risk in their answers to this question.

   (vi)   Candidates typically produced the graph well. However, some had used different scales, which did not match up to the bars already plotted. Occasionally the *y*-axis wasn't labelled.

   (vii)   Some good answers were seen by Examiners. Candidates had appreciated the difference in terms of density of population and preparations in advance, including how medical facilities would ensure that more people were saved.

(c) (i)   Some candidates knew that the water was warmer, a few knew the exact temperature needed for cyclone formation. However, the majority only talked about air temperatures.

(ii) Few knew that the water temperature was at its highest.

(iii) This was very well answered; many saw that the Philippines were closer to the source.

(d)(i) Almost all candidates performed well in this question, achieving full credit.

(ii) Similarly this question was very well answered.

(iii) Many candidates used the source material. However, this was to varying outcomes with responses that ranged from poor to excellent.

Question 2

(a)(i) This question was generally well responded to, although a few candidates were unable to complete the divided bar graph and annotate the key.

(ii) Most candidates were able to answer both sections correctly for lakes and rivers. Many knew that water from glaciers was clean, although they talked in the glacier disadvantage very generally about having to melt the glacier to get the water and some talked about loss of habitat for animals.

(iii) Many scored the majority of the credit for impermeable and permeable rocks. Full credit was rare although several other labels were possible.

(iv) Many candidates demonstrated a lack of basic knowledge of aquifers and understanding of the problems and solutions of extracting water from them.

(b)(i) Most candidates were able to identify the countries correctly. Credit was lost in some answers for not quoting values; however this was generally well answered.

(ii) This question was very well answered.

(c)(i) This question posed little difficulty for candidates.

(ii) Most candidates who answered this question correctly used the energy and different salt content of water in their answers. However some gave no reasonable suggestions.

(iii) This was well answered, especially regarding the fact that desalination would be expensive.

(iv) There were many correct answers although mistakes were made.

(v) Many candidates were able to relate the wealth of these countries to their oil production and the use of this for energy.

(vi) Candidates found this question difficult and vague comments about fresh water running out were given.

(d)(i) Candidates who talked about trickle drip and clay pot irrigation methods knew that these methods targeted the plant roots.

(ii) Most candidates were able to quote salinisation and knew how this affected crop production. Leaching and eutrophication were also discussed by candidates who performed well on this question.

ENVIRONMENTAL MANAGEMENT

Paper 0680/22

Paper 22

Key Messages

Candidates should:

- ensure they have revised all parts of the syllabus before going into the exam
- read the question carefully and answer the question as set
- write as clearly as they can, especially when answering the longer questions

General Comments

This paper provided candidates with the opportunity to demonstrate the knowledge and skills required by the syllabus. Candidates were also encouraged to discuss and explain their views on some current environmental issues. Answers were generally well written, though some candidates might have given more detail for the questions with higher marks.

Comments on Specific Questions

Question 1

(a) (i)   A few candidates read the timeline accurately, many gave information from the timeline irrelevant to the question asked. Despite this many candidates gained some credit for quoting values.

(ii)   Most candidates could answer this question. However while hunting was often well described, gatherer was frequently confused as groups gathering to go hunting.

(iii)   Over the two sections of the question many candidates expressed the correct ideas but some failed to recognise the word 'only' in the second section of the question.

(iv)   Few candidates connected irrigation with dry areas and gave generalised answers about plants needing water.

(v)   There were many excellent drawings of irrigation methods, though some candidates did not label their sketch making their drawings less able to be interpreted.

(vi)   Most candidates gave a good answer for this question.

(vii)   Few candidates explained sufficiently the sustainability of their chosen irrigation methods.

(b) (i)   Some candidates joined the points on the graph instead of drawing a line of best fit.

(ii)   Some candidates had difficulty identifying the required period of time on the graph.

(iii)   It was important to read this question carefully, in that the question was about rate of change, to get the correct answers from the graph. Many candidates misinterpreted what was required.

(iv)   Many candidates answered well but some did not know, or make clear, the difference between the Green Revolution and GM crops.

(v)   Again it was important to read the question carefully to extract the correct information from the graph for the explanation, not all candidates did this.

(c) (i) This question was generally well answered with good use of the values given in the graph.

(ii) Many candidates drew a correct pie graph and filled in the key but a significant minority were unable to do so.

(iii) This question was generally well answered.

(iv) There were some very good answers to this question with some strong suggestions.

Question 2

(a) (i) Candidates were required to read accurately from the divided bar graph, not all of them did.

(ii) Most candidates correctly described the difference between green and blue water.

(iii) The bar graph posed problems for some candidates while many understood what was required.

(iv) Few candidates calculated this correctly.

(v) Very few candidates could answer this question.

(vi) Those candidates that read the question carefully gave a good answer.

(b) (i) Many candidates gave the correct answer, those that didn't failed to notice that the question was about total water consumption and so tried to answer the question by talking about the different sectors.

(ii) Most gave good answers for this question, even if their answers to **(b)(i)** were not creditworthy.

(iii) Most candidates could see that water use by the agricultural sector was more than that used in other sectors.

(c) (i) Many candidates could answer this question, though a few were too vague.

(ii) Similarly to **(c)(i)** many candidates described well, while others were too vague.

(iii) Many candidates gave relevant reasons for the variations in water use.

(d) (i) Those candidates that knew what salinisation was answered well. Many candidates did not know how salinisation occurred.

(ii) Few candidates gave a good answer to this question.

(e) (i) Many candidates could only identify one of the relevant diseases.

(ii) Many candidates did not explain correctly why stagnant water increased the incidence of the diseases for farmers.

(iii) This question was generally well answered.

(iv) Many candidates did not express their views clearly and explain them fully. Though there were some very good answers to this question.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/23 |
| Paper 23 |

Key Messages

Candidates should:

- ensure they have revised all parts of the syllabus before going into the exam
- read the question carefully and answer the question as set
- write as clearly as they can, especially when answering the longer questions

General Comments

This paper provided candidates with the opportunity to demonstrate the knowledge and skills required by the syllabus. Candidates were also encouraged to discuss and explain their views on some current environmental issues. Some answers were reasonably well written, though some candidates might have given more detail for the questions with higher marks. The basic mathematical skills required were occasionally lacking.

Comments on Specific Questions

Question 1

(a) Most candidates could accurately identify all the stages of the water cycle.

(b)(i) Many candidates could plot these bars accurately but a significant minority did not attempt this simple bar graph. Presumably the use of negative numbers was unfamiliar to them.

(ii) A number of candidates could not calculate this, although most tried.

(iii) Despite the number of different reasons that could have been used there was poor performance on this question, which required thought about why forest should be increasing in some continents.

(c)(i) and **(ii)**
Both these questions were well answered by the overwhelming majority of candidates.

(iii) This question was well answered by most, although some failed to achieve full credit by giving a limited answer.

(d)(i) This question was worth three marks but few gave enough detail to gain all the credit.

(ii) The focus here needed to be on the state of the river, not on the volume of water produced over all. Many candidates missed this point.

(iii) Many candidates could answer this well.

(iv) This was another three mark question for which many did not give enough description for full credit. However, many gained partial credit.

(e)(i) Partial credit was common here, usually for the idea of fertiliser being washed into rivers by rain. The idea of famers using fertilisers was less often given.

(ii) Most candidates could state that algae blocks light. Few could then relate that to the effect on

plants in relation to a lack of photosynthesis

(iii)   Similar to **(e)(ii)**, the fact that oxygen decreased was commented on but there was vagueness about why that should kill fish.

(iv)   Many candidates had a good try at this. Most achieved partial credit, usually with reference to reducing the use of fertilisers and better disposal of sewage.

(f)   This question required extended writing as a debate, this proved to be a challenge for most candidates. This is a necessary skill so candidates need more opportunity to improve their evaluation and debating skills.

Question 2

(a)   There were many vague answers given here with little precision in terms of location and little reference to the 'ring of fire'.

(b) (i)   Almost every candidate could get this right.

(ii)   Nearly all candidates stated the correct country.

(iii)   Most candidates recorded the correct order.

(c)   A variety of reasons were suggested correctly by many candidates.

(d) (i)   Most could say that there was danger but had a problem in giving a precise reason why that might be the case.

(ii)   Answers here were stronger when discussing the effects on people rather than on the economy, but both aspects were required. Most candidates gained partial credit with very few giving enough description to gain full credit.

(iii)   Candidates showed a very low ability to draw an accurate graph. The major error was the use of non-linear scales. Many candidates could benefit from more time being spent on this skill.

(iv)   Many candidates displayed poor mathematical skills here, with an inability to calculate a percentage. Some did not attempt the question.

(v)   Many ideas could be credited here and most candidates managed to score well.

(e) (i)   This graph was an easy task for most candidates.

(ii)   Most candidates gave the correct answer to this question.

(iii)   This was another question which required an extended piece of writing and most gave a reasonable answer. Most were able to relate their answer to sanitation problems.

(f) (i)   Most displayed some knowledge about the way malaria is transmitted by mosquitos but many lacked further detail.

(ii)   There were some good answers here but some candidates were unsure how to prevent the spread of malaria.

ENVIRONMENTAL MANAGEMENT

Paper 0680/41
Paper 41

Key Messages

Candidates should:

* read the introduction to the questions carefully
* make use of numerical information in answers, for instance to state the difference between two samples
* make sure both axes of a graph being plotted are fully labelled with units
* use information given at the beginning of the paper to help support answers

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one state, Orissa, of India. 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 pattern of this paper is 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) Candidates gave a good range of reasons why farmers did not want special economic zones set up in Orissa. The loss of land, possible pollution of farming land and loss of livelihood were cited most often.

(b)(i) The table was correctly completed by nearly all candidates.

(ii) The total yield of both varieties of coconut was correctly calculated by nearly all candidates.

(iii) Nearly all the candidates made correct statements about the claims made by each farmer about their coconut crop. To gain maximum marks a candidate needed to use some of the data given in part **(i)** or **(ii)** to support one of their statements. A significant minority did not do this.

(c)(i) Nearly all the candidates correctly marked the trees on the base map.

(ii) Most candidates realised that any numbers above fifty had to be rejected so the next three trees were correctly selected.

(iii) The trees from part **(ii)** were correctly identified in nearly every case.

(iv) A significant minority of candidates realised that the sampling method was random so the candidate did not select the trees, the sampling method should be applied in the same way for the whole study. Some candidates just said the trees were close together anyway which did not answer the question.

(v) Candidates usually suggested at least one way the study could have been improved.

(d) (i) Most candidates attempted the calculation, unfortunately some candidates did not select the appropriate data to produce a correct answer.

(ii) Candidates gave a wide range of sensible answers about costs to wholesalers and market stall holders.

(e) (i) Candidates were asked to draw and label a harvesting plan for a small coconut garden. There were many different ways of dividing up the garden and devising a sequence of harvesting. There were some clear answers that gained maximum credit. However, this was a demanding question so there were many answers that would not have provided a regular supply of coconuts.

(ii) Nearly all candidates presented a graph that was plotted correctly. A significant number of candidates failed to label the *y*-axis.

(iii) The pattern of the graph was clearly and correctly described by most candidates.

(iv) Nearly all candidates correctly stated the month with the highest and lowest average price. A very small number of answers stated the numerical value rather than naming the month.

(v) Many answers displayed an understanding of the factors that might increase or decrease the price of a commodity, in this case coconuts. There were some answers suggesting that prices might decrease when fewer coconuts were produced.

(f) (i) Most candidates presented two further questions as asked.

(ii) Candidates gave rather generic answers to this sampling question rather than thinking about the context for this particular situation.

(iii) Nearly all candidates understood the findings shown in the table and could express four separate ideas clearly.

(g) (i) Nearly all candidates produced a table, although it is expected that a ruler is used to draw straight lines. Most tables could record three plots but a significant number did not separate out sections to record the five different crops.

(ii) Few candidates explained the significance of leguminous plants.

(iii) Few candidates seemed to recognise any differences between the two plots and relied on one plot producing more coconuts than another.

Question 2

(a) Most candidates decided that producing charcoal from coconut shells was not sustainable whereas in fact it is. There were very few answers that attempted to describe the concept that the activity is essentially carbon neutral.

(b) There were some good answers to explain how a farmer could improve income from the garden in future. However, some candidates need to use information given in combination with their own ideas and not just rely on repeating given information without any further explanation or qualification.

(c) Candidates were evenly split between those who thought the plan was a good or bad idea. Candidates that selected one of the given facts and then presented their own ideas as to why this might be a good or bad idea often gained full credit. Answers that relied too heavily on the information given only gained limited credit.

ENVIRONMENTAL MANAGEMENT

| Paper 0680/42 |
| Paper 42 |

Key Messages

Candidates should:

- read the introduction to the questions carefully
- make use of numerical information in answers, for instance to state the difference between two samples
- make sure both axes of a graph being plotted are fully labelled with units
- use information given at the beginning of the paper to help support answers

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Columbia. 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 pattern of this paper is 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 understood this question and were able to suggest how free trade could benefit the population of Colombia with ideas such as more jobs, an improved standard of living and more foreign exchange.

(b) (i)   Candidates who showed their working were often able to gain partial credit even if their answer was incorrect.

(ii)   Many candidates suggested that the human population had increased, so the piangua harvest increased because more food was needed.

(c) (i)   This was a question about using the same sampling method so the results in the two villages could be compared. Some candidates wrote about the data needing to be accurate.

(ii)   Most candidates produced creditable line graphs.

(iii)   Most candidates identified the decreasing trend for partial credit. Those who described how the decrease was different in the two villages gained further credit.

(iv)   Although many candidates decided the communities would select method three, others seemed to think they could have a mixture of methods. Some candidates did not support their answer effectively using the information provided.

(v)   Some candidates were not able to describe a survey to find out if collecting piangua at least 4.5 cm long would affect their populations.

(vi)   Some candidates described plans for the sustainable harvesting of fish or crops. Consequently their plans were not appropriate for piangua and gained few marks. Candidates need to refer to the source information on the paper.

(d) (i)   Candidates were more successful with their suggestions for reasons to explain the poor pay received by piangua collectors. There was reference to profit, dealers, middlemen, stall holders, markets, cleaning, distribution, packaging and a shortage of jobs on the coast.

(ii)   Most candidates gained at least partial credit for this question. They were able to explain that the insects, such as female mosquitoes, could be vectors carrying malaria, dengue or chikungunya and that the disease is passed on when they bite people.

(e) (i)   The majority of candidates completed the table showing the results for one bag of piangua correctly.

(ii)   Many creditable reasons were suggested to explain why the some of the piangua in the collectors' bags were less than 5 cm in length. Answers included the failure of collectors to measure all the piangua, measuring them wrongly, not having a measuring instrument and deliberately collecting small piangua to earn more money.

(iii)   Some candidates wrote vague answers about not all the bags being the same when they needed to focus on the need for a reliable answer, or the scientist having the data to work out an average.

(iv)   Most candidates recognised that if people did not buy the small piangua they would not be a market for them. This meant the small ones would grow larger and reproduce.

Question 2

(a) (i)   Some candidates found this calculation difficult, but those who showed their working were often able to gain partial credit.

(ii)   There were some convincing explanations of the smog that occurs in Bogotá during the day. The better answers described how a temperature inversion or mountains around Bogotá causes the pollution from buses, cars and industries to be trapped in a lower layer of air.

(iii)   Most candidates suggested that the size of the boards and tape were the same. Some did not read the question carefully and wrote about using a microscope, others about the weather or the bus routes being the same.

(iv)   Nearly all the candidates gained full credit for drawing a table to show the results of the air pollution experiment. The calculations were often correct but credit was lost for not drawing a table and/or having one unsuitable heading e.g. 'results after the bus strike'.

(v)   Many candidates calculated the average number of particles before and after the strike correctly.

(vi)   The calculations for the percentage decrease in particles were less successful.

(vii)   There were detailed answers suggesting ways of reducing air pollution in Bogotá in the future with many candidates gaining full credit. The most popular suggestions included fitting catalytic converters to buses, having fewer buses in the city, using biofuels instead of diesel and riding bicycles.

(b) (i)   The majority of candidates completed the total rainfall for three months correctly.

(ii)   Many candidates had difficulty in clearly explaining that when the rainfall was highest the air quality was better as it contained fewer pollutants. Few candidates supported their answer with data from the table.

(iii)   Most candidates correctly identified the three-month periods with the highest and lowest hospital admissions.

(iv)   The reasons for possible differences in hospital admissions for severe breathing problems were often vague. The better answers referred to pollutant particles such as nitrogen oxides in the air

and diseases such as asthma, bronchitis and lung cancer increasing admissions. Then in the months with higher rainfall the admissions decreased because the rain washed the pollutants out of the air.

(c) (i) Candidates who read the question carefully and focused on the fact that the questionnaire was to find out how frequent and how severe breathing problems are in Bogotá devised some relevant questions. There were also some good examples of layouts with a sensible range of answers. Some candidates suggested questions that were not linked to breathing problems.

(ii) Few candidates suggested how questionnaires could be used to monitor changes in the air quality in Bogotá in the future. Many candidates seemed to be answering a different question, possibly one about what could be done to reduce air pollution in Bogotá

ENVIRONMENTAL MANAGEMENT

> **Paper 0680/43**
> **Paper 43**

Key Messages

Candidates should:

- read the introduction to the questions carefully
- make use of numerical information in answers, for instance to state the difference between two samples
- make sure both axes of a graph being plotted are fully labelled with units
- use information given at the beginning of the paper to help support answers

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Honduras. 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 pattern of this paper is 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)   Candidates gave a good range of reasons why people might be underemployed in Honduras.

   (ii)   There were a wide range of problems identified due to underemployment.

(b) (i)   Most candidates gave clear answers to suggest what would happen to the populations of bullseye fish and pelicans. Only a small number of candidates suggested both populations would increase due to a limitless supply of shrimps.

   (ii)   Nearly all the candidates made comments about shrimp farming. However, it was not always clear as to why a stated activity was not thought to be a sustainable activity. The loss of habitat for many species was not suggested by more than a minority of candidates.

   (iii)   Candidates gave good answers about how shrimp farming might be controlled so that could be a sustainable activity.

(c) (i)   The graph was plotted successfully by nearly all candidates. The most common mistake was to forget to label the *y*-axis.

   (ii)   Some candidates wrongly suggested that the pond had less shrimp from the start. However most candidates realised the stocking density was the same for all ponds so they correctly suggested either lack of algae to eat or disease reduced the shrimp numbers.

   (iii)   Most candidates excluded one pond as instructed and correctly calculated the average mass.

(iv) A significant minority of candidates correctly suggested that the average would not be representative if this pond had been included. The idea was expressed in a variety of ways that gained credit.

(d) (i) Most candidates realised that a high protein diet made shrimps grow faster, or with only algae they would not grow fast enough.

(ii) Candidates sometimes gave sensible answers to identify the risks of high density shrimp farming. They nearly all could see that the reward might be a greater profit.

(e) (i) Nearly all the candidates correctly stated the years for highest shrimp harvest.

(ii) Nearly all candidates gave good descriptions of the pattern shown on the graph for the Americas and Honduras.

Question 2

(a) (i) Most candidates made a clear distinction between near surface extraction and underground shaft mining. They often focussed on the fact that underground mining is potentially more dangerous for miners. However, there was only limited consideration of the need to remove large quantities of overburden and the large area needed for open-pit mining. Removal of vegetation or habitat was rarely considered.

(ii) A wide range of appropriate suggestions were made here, all the points on the mark scheme were seen regularly.

(b) (i) Most candidates did not appear to think through the effect of rainfall on the waste pile. The X should have been placed at the lowest point of the profile.

(ii) Most candidates described the pattern of results shown by the survey. Only a minority of candidates accurately commented on the fact that between 50-60 metres there was less or no further increase in bare ground and height of plant.

(iii) This question required candidates to describe accurately how to carry out the survey between P and Q. The Examiners read many responses that lacked significant details that would have been necessary to carry the work out and produce the data given in the question.

(iv) This proved to be a challenging question with only some candidates giving one other measurement the student could have recorded.

(v) Most candidates made a good suggestion as to how to improve the survey.

(c) (i) Most candidates gave the correct sequence of water samples from least to most contaminated.

(ii) Many candidates could clearly explain the need for a control dish.

(iii) Most candidates made sensible suggestions for factors that should be kept the same.

(iv) Very few candidates managed to read all four concentrations from the graph correctly although most managed to read two concentrations correctly.

(v) Many candidates completed the correct sequence on the diagram.

(d) This question proved to be demanding for many candidates. Few candidates reported the differences in rainfall. There were also very few comments about the need to record plant growth at different times of the year.

(e) Most candidates felt that more antimony mining should not take place. General reasons about pollution were cited. There were very few candidates who felt that the pollution from waste piles would be very limited, as shown by the survey data. Equal credit was given for valid statements supporting either view.