ENVIRONMENTAL MANAGEMENT

Paper 0680/11

Paper 1

Key Messages

The syllabus should be comprehensively covered to ensure candidates do not needlessly lose credit for lack of simple knowledge.

It is important that candidates read the questions carefully.

Command words 'Explain' and 'Suggest reasons' require more than merely stating or describing.

General Comments

The standard of work was pleasing with good accounts and candidates showing reasonable knowledge across all areas of the syllabus. There was much less writing outside the spaces provided than in previous sessions. All candidates completed the paper and there was no indication that they were short of time.

Comments on Specific Questions

Question 1

(a) (i) Most candidates were awarded some credit for this.

(ii) Only a minority of candidates were able to give the correct answer, insolation.

(b) (i) Most understood what the question was asking, but often gave one inappropriate gas in the second part, thus losing some of the available credit.

(ii) Many candidates did not notice the word 'individuals' and so talked about actions which would be appropriate for local authorities or even national governments.

(iii) This question was quite well done; the main reason for any loss of credit was where a simple statement was given without a description.

Question 2

(a) (i) Many were able to spot the coastal nature of the distribution, but fewer noticed the clustered distribution pattern that earthquakes show.

(ii) Many gave a further description rather than explanation. A misunderstanding of these two very common command words is a major reason for loss of credit on this paper.

(b) (i) This was well answered with many gaining credit for pointing out the fertility of the soil.

(ii) Again, a well answered question, with the majority gaining some credit, usually for discussion about the relative predictabilities of the two events. Many fewer were able to note the widespread effects of earthquakes compared to volcanoes.

(iii) Candidates were able to come up with a wide range of possibilities here.

Question 3

(a) (i) This material seems to be well known by most candidates.

(ii) The majority of candidates were able to answer this correctly.

(b) (i) Most proved that they had the necessary skills to produce a simple pie chart.

(ii) A significant number were able to suggest that the reason was linked with the high level of irrigation but few were able to go on and gain full credit.

(iii) The poor knowledge of salinisation was shown here and a number of candidates did not attempt to answer. The most common error from those who were not simply guessing was to discuss desalination. Salinisation of soils is a key environmental issue and understanding of it is expected by the syllabus.

Question 4

(a) (i) Many candidates found this question difficult and ignored the requirement to describe two similarities and one difference. Candidates should be familiar with looking carefully at graphical material and describing which parts of a graph are similar to another one, and which parts are different from it.

(ii) Candidates found this to be the most difficult question on the paper. Very few candidates were able to express any ideas about the lack of control over the population of humans compared with that of animals. The idea underlying this is simple and well covered in the syllabus. Populations become limited by the environment, but there is no evidence that the human population has yet reached this stage – it is still growing exponentially.

(b) (i) Most were able to answer this correctly.

(ii) About half of the candidates were able to suggest good reasons.

(iii) Fewer were able to give an acceptable reason here, and many just quoted the reverse of what they had written in **(ii)**.

Question 5

(a) (i) The first four words were correctly selected by many candidates but fewer were able to correctly choose the last two words.

(ii) Many achieved full credit here. Some candidates were unable to score at all while other candidates were awarded partial credit for correct steps but arrows the wrong way round.

(b) (i) Most were able to suggest either pesticides or insecticides. The most common incorrect answer was fertiliser.

(ii) Few candidates were able to explain the environmental issues related to insecticide or pesticide use, which they are expected to be able to do. Many candidates appear to have confused this with fertilisers and eutrophication. A number of candidates appeared to have guessed at the answer.

(iii) Few noted the requirement to use the information in the food web diagram and just wrote generally about biological control. This shows the importance for candidates of practicing reading and answering examination questions

Question 6

(a) (i) This was a discriminating question so, as might be anticipated, few candidates were able to correctly.

(ii) This was well known.

(iii) Only a minority were able to score full credit here. Many lost credit because they used all three particles in their answers, thus getting the last one wrong. The instructions in the question may tell the candidates how many times to use the options, or, as in this case, the instructions may not mention this. Without specific instructions, candidates should then treat each question separately, and may find that they use an option more than once to answer the questions correctly.

(b) (i) The meanings of subsistence and commercial farming were well known, but unexpectedly, extensive and intensive were not.

(ii) A majority were able correctly to suggest fertiliser here.

ENVIRONMENTAL MANAGEMENT

Paper 0680/12

Paper 1

Key Messages

The syllabus should be comprehensively covered to ensure candidates do not needlessly lose credit for lack of simple knowledge.

It is important that candidates read the questions carefully.

General Comments

The standard of work was very pleasing with well written accounts and candidates showing good knowledge across all areas of the syllabus. There was much less writing outside the spaces provided than in previous sessions. All candidates completed the paper and there was no indication that they were short of time.

Comments on Specific Questions

Question 1

(a) (i) Almost all candidates correctly stated that the energy source used at **A** was wind power.

(ii) Most candidates were able to suggest a reason why the site in the photograph was a good location for wind power. The reasons the candidates gave mostly referred to altitude or being away from buildings.

(iii) Most candidates were able to name one fossil fuel, usually coal or oil (or fossil fuels in general), as contributing to both acid rain and global warming.

(iv) There were many detailed answers about the problems of nuclear energy. These usually focused on the difficulties involved in disposing of the radioactive waste and the health problems it could cause.

(b) (i) The exploding pie chart confused a few candidates.

(ii) Candidates who read the question carefully, noting the reference to 'people' and 'their daily lives' wrote accurately and at length scoring full credit.

Question 2

(a) (i) The unit of measurement, 'per thousand' was often missed out or misinterpreted as 'thousands' or a 'percentage'. Most candidates gained credit for stating, correctly, that infant mortality is decreasing. Some gained further credit for adding accurate detail. Others went on to give a reason for the decline but this was not required.

(ii) Most candidates recognised that life expectancy in the USA was increasing over the same period as infant mortality was decreasing. Again, some tried to give a reason for this although the question only required description. There was evidence of candidates sensibly drawing vertical lines on both graphs to enable them to add accurate detail, dates, rates and amounts to their answers.

(b) (i) This was a high scoring question with most candidates gaining full credit for ide factors were push factors and which were pull factors. A small minority confused push w

(ii) Candidates who read the question carefully gave answers about movement between urba rural areas. Of these a few got the direction the wrong way around.

Question 3

(a) (i) Most candidates gained credit for identifying carbon dioxide as a pollutant.

(ii) Very few candidates correctly matched all the pollutants and activities creating pollutants.

(iii) Most candidates knew that CFCs reduce the thickness of the ozone layer.

(iv) Although the question asked for two sources, some candidates gave more which is not always a good idea as an incorrect answer in the list could reduce the credit. A number gave answers about perfume and deodorants without the keys words that they were 'aerosols' or 'sprays'.

(b) (i) There were some excellent answers about the ozone hole letting in UV radiation that could cause cancer and cataracts. Some candidates incorrectly confused UV radiation with the action of greenhouse gases and global warming. A small number incorrectly appeared to think the ozone hole was connected with acid rain.

(ii) There were some detailed answers about strategies that have been used to reduce the problem of the ozone hole that linked the actions of governments, the development of HCFCs and HFCs and the Montreal protocol.

Question 4

(a) (i) The calculation for percentage increase was correctly executed by the better candidates, showing all the working. The numbers of tourists in 1990 and 2004 were often identified correctly, but errors were made in the calculation that followed.

(ii) There were some good suggestions of how tourism could bring money to Kenya and the purposes for which it could be used.

(b) (i) Some candidates simply copied out information given in the list of features of ecotourism and stated that they showed ecotourism, with little or no explanation as to how. Others gave good explanations giving specific ways in which the features listed in the paper showed ecotourism.

(ii) There was much detailed description of the conflict between ecotourists, who wished to protect the elephants, lions, leopards, buffalo and rhino, and the local people who wished to hunt them as a source of income. A small number of candidates wrote about tourists wanting to 'big game hunt'.

Question 5

(a) (i) Most candidates correctly identified 1974 as the year tuna population numbers started to decline. Other answers offered were 1975 and 1981.

(ii) The candidates who received no credit usually did not suggest a reason for the decline in tuna population numbers but instead looked for the answer on the graph. The most popular suggestion was overfishing.

(iii) Candidates showed detailed knowledge of strategies that might have stopped the decline in tuna population numbers, with many gaining full credit.

(b) (i) The best pie graphs were well executed with clear keys or clear sector labelling. There were some very poor pie graphs where candidates displayed each percentage as one degree on the graph, resulting in six sectors and some empty space.

(ii) The vast majority of candidates knew that tankers with double hulls reduced pollution at sea. Few wrote about pipelines and fewer still about laws against washing out cargo tanks at sea.

Question 6

(a) (i) Many candidates were able to identify 1950 to 1960 as the ten year period that was we average.

(ii) A large number of candidates had difficulty with this question. Many different incorrect answers were offered; periods of years, –60%, 40 years, 20 years, 2 years.

(b) (i) The best site for a dam was Y.

(ii) Few candidates were able to offer convincing reasons why the site they had chosen was better than the other two sites, even when they had chosen the correct site.

(c) Many candidates showed a thorough knowledge of water-related diseases and gained full credit for this question.

ENVIRONMENTAL MANAGEMENT

Paper 0680/13

Paper 1

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The standard of work was pleasing with good accounts and candidates showing reasonable knowledge across all areas of the syllabus. There was much less writing outside the spaces provided than in previous sessions. All candidates completed the paper and there was no indication that they were short of time.

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Question 2

(a) (i) Many were able to spot the coastal nature of the distribution, but fewer noticed the clustered distribution pattern that earthquakes show.

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(iii) The poor knowledge of salinisation was shown here and a number of candidates did not attempt to answer. The most common error from those who were not simply guessing was to discuss desalination. Salinisation of soils is a key environmental issue and understanding of it is expected by the syllabus.

Question 4

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ENVIRONMENTAL MANAGEMENT

Paper 0680/21

Paper 21

Key messages

- Read the questions carefully; read each question more than once; underline key question words, such as the command words which tell candidates what to do.

- Command words 'Explain' and 'Suggest reasons' require more than merely stating or describing. For example in **Question 1(b)(ii)**, stating 'cheap on land' and 'more expensive in deep water', taken from the graph in **(b)(i)**, were not enough for any credit. Candidates needed to give reasons why it was more expensive to obtain oil in deep water by explaining what made drilling there more expensive.

- Always support descriptions from graphs by referring to relevant values. Many answers to **Questions 1(b)(i)** and **2(a)(ii)** gained only partial credit because of the lack of supporting use of values from the graphs.

- Take careful note of the amount of available credit for the question. This is important in all questions worth lower credit, but becomes particularly important in higher credit questions. Depth and/or breadth of answers is achieved by looking for different reasons, or by elaborating more fully, which is sometimes helped by use of an example or examples. Questions which suffered from limited candidate coverage in relation to the amount of credit available in this examination included **Questions 1(a)(iii)**, **2(b)(iv)** and **2(d)(iii)**.

- When asked to give a view on a topic or issue, as in **Questions 1(g)** and **2(f)**, what matters is the explanation, not the personal opinion itself. It is important to concentrate on supporting one clearly expressed view. Candidates who referred to more than one viewpoint tended to limit the depth and value of their explanations.

General comments

The credit awarded for **Question 1** and **Question 2** was usually similar. This showed that candidates tended to carry forward the standard set in answering the first question into the second question. Only occasionally did a significant difference in candidate topic knowledge result in much higher credit for one of the questions. In this year's paper, this was more likely to be for **Question 2**.

There were no signs that candidates were under pressure to complete this paper on time, which gave the opportunity for good candidates to look back, and check that their answers matched question needs, and that they had written all that they could for the amount of credit available. Few questions were left unanswered, suggesting candidate familiarity with the topics covered. However, more candidates had difficulty with the questions about oil wells and mining operations in **1(a)(i)**, **(a)(iii)**, **(a)(v)** and **(b)(ii)** than with the other questions on the paper. From **1(c)(i)** onwards candidates seemed to be much more confident with their answers.

Questions which were generally well answered by candidates included most of the remaining parts of **Question 1** from **(c)(i)** onwards. Within **Question 2**, the best answered parts were those which followed directly from the source materials, whether the graphs in **2(a)(i)** to **(iii)** and **(b)(i)**, or people's comments in **(d)(i)** and **(ii)**, or spider diagram in **(e)(i)**. Many full and varied answers were seen to **2(d)(iii)** and to **2(e)(ii)** and **(iii)** from candidates who clearly understood the focus of each of these questions.

In **Question 2**, issues in answering were due more to lack of depth and elaboration than to misunderstanding of the question. Examples of this which fell short of gaining all of the available credit, were most common in **2(b)(iv)**, **2(d)(iii)** and **2(e)(ii)** and **(iii)**. The exception as far as understanding was concerned was **2(c)**. Here, only a few candidates showed that they understood the significance of the world

fertility rate being higher than the population replacement rate, and that the increases in wo shown followed from this.

Comments on specific questions

Question 1

The location of gas in the diagram of the oil trap had to be known in **(a)(i)**; it could not be guessed. In **(a)(ii)**, most answers gained credit. In **(a)(iii)** only a few candidates were awarded full credit by referring to the rock layout and the significance of the anticline (or upfold). Some drifted away from the question with information about the process of oil formation itself.

In **(a)(iv)**; some slight variations on the measurement were allowed, provided that candidates showed on the diagram that were measuring the depth of the top of the oil deposit closest to the surface. A few made no attempt to measure and answered 1400 for the sea bed or 1600 for maximum depth shown.

Credit in **(a)(v)** was most often for references to storms at sea. The more serious problems of bringing well blow outs or explosions under control when deep on the sea bed compared with operations on land were more rarely seen. The result was that partial credit was more common.

The fact that costs of producing oil in the Middle east were the cheapest was recognised by almost all candidates in **(b)(i)**. The candidates who stated this without any reference to actual costs from the diagram gained only partial credit. Comparing ranges of values, or equivalent maximum and minimum costs, were more effective for gaining full credit than just stating the range of costs in the Middle East by itself. Information on the diagram in part **(i)** suggested some of the reasons useful for answering part **(ii)**. The differences in costs between drilling on land and in the sea, and between shallow and deep water locations, needed to be explained and not just stated. Quite a few candidates misunderstood the difference between the question focus on costs of production and money to be made from marketing and selling according to amount of oil in the country.

The quality and fluency of most candidates' answers improved markedly from **(c)(i)** onwards. Many looked at the pie graphs with sufficient care to recognise that the largest consumption was in Asia-Pacific and not North America. Most gained full credit in **(c)(ii)**. A few candidates misunderstood the differences between 'importers' and 'exporters', whilst others felt that four world regions needed to named in each column, so that they repeated either North America or Latin America in both. Answering part **(iii)** was often answered well by explaining how valuable and versatile a fuel oil is. Breadth was given in some candidates answers by noting the mismatch between areas of great oil production and consumption. Successful answers to **(c)(iv)** depended on candidates giving broader than Africa only answers. Using the map usually gained credit. Candidates generally linked exporters with importers, such as Middle East with Europe and North America, and Latin America with Asia-Pacific.

Part **(d)** posed few problems. Most candidates answered correctly in **(d)(i)**. The best answers in **d(ii)** came from those who focused well on the question theme of 'higher risk for penguins than for other sea birds'. The calculations in **(d)(iii)**, a few candidates became tangled in complex calculations, which led to a wide array of incorrect answers, including some answers which did not show an increase in survival rates. Part **d(iv)** proved to be marginally more difficult than other parts. Some candidates jumped ahead to part **(f)** and incorrectly attempted to use information about what has been done to reduce spills from oil tankers. They missed the main theme of the question about improvements in penguin survival rates, which could be related to higher levels of preparedness and knowledge of both people and authorities in South Africa. Some perceptive answers were seen, including how the cleaning of penguins could be achieved just by using simple items in everyday use.

The fact that one part of the graph had already been completed made the candidate's task easier in **(e)(i)**. The most common reason for failing to gain full credit was a lack of tanker names against the bars drawn in. Most candidates provided the basic answer to **(e)(ii)**, that well spills were unlimited in amount until stopped, whereas tanker capacity was limited by size. Full credit was awarded when candidates explained more. Answers which mentioned the uncontrolled nature of well explosions and blow outs were more successful than those in which candidates attempted to use information about tankers and their hulls from part **(f)**. Part **(f)** itself was typically well answered. Most candidates were able to make good use of the measures stated by adding additional comment towards the themes in both parts of the question. In both part **(f)** and part **(g)**, the amount of credit awarded depended on the breadth and depth of answers given. Continued improvements in technology were the basis of many answers to part **(g)**. Merely stating this without further

support resulted in only minimal credit being awarded. Many of the better answers in part (g candidates who expressed the view that it would not be possible to prevent more spills, when they this with reference to physical and human reasons why marine oil spills will always occur.

Question 2

Almost all candidates gave the correct answer to part **(a)(i)**. In **(ii)** the same number of candidates scored partial credit and full credit. Few failed to recognise the speeding up of world population growth since 1950. For full credit, some reference to appropriate values from the graph was needed. Careful study of the graph suggested that 7 times was a better answer than 6 or 8 times in part **(iii)**.

The best answered part of **(b)** was part **(i)**. The majority of candidates shaded in the spaces between the two lines and identified food surplus and shortage. This was not always followed up as good answers to **(ii)** and **(iii)**, although sometimes the issue was more expression than understanding. A simple statement was needed in **(ii)**, e.g. that food supply increased at a constant rate while population increased more quickly; some candidates seemed to look for more complicated answers. It was rare for candidates not to gain at least partial credit in **(iii)**.

Part **(iv)** discriminated on the basis of depth and breadth of responses. For example, virtually all candidates who chose irrigation understood that it was the transfer of water to crops to make them grow better and yield more. Some filled two or three lines stating this without explaining any more. Elaboration by referring either to when and where irrigation needed to be used (such as in dry climates, dry seasons), or to methods of irrigation, was included in good answers. Another successful approach was to refer to an example. In answers given about chemical fertilizers, candidates who named examples of nutrients that could be added to the soil by using inorganic fertilisers gave superior answers. Some candidates misunderstood the differences between chemical fertilisers and pesticides; answers referring only to pesticides did not answer the question. The higher scoring answers to **(b)(iv)** came from candidates who stated the basic answer and developed it with specific information, for each of the three improvements chosen.

The key to answering part **(c)** well was to understand fertility rate and replacement rate, and the relationship between them. Once a candidate realised that a difference in the rate of 0.5 existed, the rest of the answer followed easily on from this. A rate higher than the replacement rate explained the stated increase of 80 million people per year, as well as the expected increase of 2.44 billion people by 2050. Without understanding the relationship, candidates stated instead of explaining. Many candidates began in the middle with the 80 million increase and referred to fertility rate and replacement rate as two separate items.

In part **(d)(i)**; some candidates incorrectly stated the range (8–11) and others 11 (possibly because it was the most common). Only those candidates who took no notice of the phrase 'these people' in the question failed to find two different reasons in **(d)(ii)**; they gave answers such as 'for work' which were needed in the next part. The best answers to part **(iii)** came from those candidates who looked for a range of reasons, mainly for high birth rates, although reasons for low death rates were often referred to as well, and were equally valid. Reasons most commonly referred to were the economic and social value of children in rural areas, the poor state of female education, and the strength of religious and cultural objections to family planning. Specific references to countries, and/or religions, enhanced the quality of answers in which they were used. Much less credit was gained by answers which focused on just one reason, such as falling or low death rates, or the economic value of children; such answers were too narrow to be effective. Candidates who used the same reasons given by the Rajasthan families restricted the space given to them to include answers that were relevant to the question.

Candidates who homed in on the theme of improved technology to feed the world's growing population in **(e)(i)** mentioned the item from the labels in the spider diagram which showed improved technology, and then commented on this in relation to food output. They were awarded full credit. Candidates found doing this easier for cutting down forests for use as farmland and for fishing out the oceans for food, than for dams and aquifers. The answers that were awarded least credit came from candidates who over-relied on the information stated in the spider diagram, adding only minimal further comment. Responses to **(e)(ii)** ranged from excellent, which concentrated on the environmental consequences of deforestation, over-fishing, large dams and draining aquifers, to more general answers on the theme of unsustainable activities without specific references. The most detailed answers were for the non-sustainable consequences of deforestation and over-fishing. There were also some well balanced answers including changing river ecologies below large dams as well as problems for future water supply in areas heavily reliant on ground water.

Part **(iii)** was consistently the best answered part of **(e)**. Sustainable methods of forest ma d fishery protection were widely known. Many candidates referred to two different methods for ea fully met the needs of this question. Dams and aquifers, as elsewhere in the question, were cho often. Smaller scale dams, and replacement of aquifer use by sea water desalination, were the me referred to most often in answers. With limited further elaboration, these were often awarded half credit.

Virtually all candidates attempted an answer to part **(f)**. Some went little further than rephrasing the information given to them in the question, usually the gloomy view, and this was awarded no more than minimal credit. From others who took the gloomy view, the most convincing answers referred to the fact that people in some parts of the world were already suffering from drought and food shortages. African countries were mentioned the most. Well explained views such as these were worth full credit. Such candidates believed in human destruction of nature as the basis for their pessimistic point of view. There were also many optimists. Answers that were awarded minimal credit relied on the argument for continued improvements in technology, without elaboration. In answers worth full credit, hopes for the future were justified by references to the possibility for further agricultural improvement from GM crops, at the same time showing understanding that there was already more than enough food produced in the world to feed everyone, even if not always available where needed. Such candidates were usually champions of human invention and ingenuity. As stated at the beginning of the report, each viewpoint was equally acceptable, and marked on the basis of the quality of explanatory support.

Overall, many candidates managed starter answers, without including the extra detail needed to make sure they gained all of the available credit. The strongest performances were from candidates who were able to keep giving full and relevant answers, with the amount of detail tailored to the amount of available credit.

ENVIRONMENTAL MANAGEMENT

Paper 0680/22

Paper 22

Key messages

- Read each question more than once; underline key question words, especially the command words which tell candidates what to do. Question instructions most frequently missed in this examination were 'What is similar about the tracks followed by cyclones' in **1(d)(ii)**, and 'Using both diagrams' in **2(b)(ii)**.

- Take careful note of, and work towards, the stated number of available credit for the question. For higher scoring questions, it is not just a matter of filling all the lines left for answering; it is highly likely that a variety of points are needed, or that reference to an example is made, instead of sole reliance upon repeating one idea or theme. Questions which suffered most from limited coverage in relation to the amount of credit available in this examination were **2(f)(ii)** and **2(f)(iii)**. Many were just starter answers, such as the much greater importance of renewables in the three north European countries than in total world energy consumption for minimal credit in **2(f)(ii)**, without any supporting use of percentages from the graphs.

- Command words 'Explain' and 'Suggest reasons' require more than merely stating or describing.

- Always support descriptions from graphs by referring to relevant values, for example in questions like **1(b)(iii)**, **2(a)(ii)** and **2(f)(ii)**.

- When asked to give a view on a topic or issue, as in **Questions 1(e)(iii)** and **2(b)(iii)**, what matters is the explanation, not the personal opinion itself. It is important to concentrate on supporting one clearly expressed view. Candidates who referred to more than one viewpoint tended to limit the depth and value of their explanations.

General comments

Usually there was little difference between the credit awarded for each of **Questions 1** and **2**. This showed that candidates tended to carry forward the standard set in answering the early questions into the later questions. Only occasionally did a significant difference in candidate topic knowledge result in much higher credit for one of the questions which was as likely to be for **Question 2** as for **Question 1**. Pressure of time to complete the paper was not an issue. Some candidates successfully continued their answers into the blank spaces beyond the lines left for answering, or onto one of the blank pages at the end of the booklet. This helped to maintain the good balance between the total credit for **Questions 1** and **2**. Candidates showed good familiarity with the topics examined.

Some candidates misinterpreted question needs, such as in **1(a)(i),** or failed to give the depth or breadth in their answers that were required for the available credit, as in **1(e)(ii)**. Most candidates managed to give at least starter answers to the majority of questions, which kept the credit accumulating. Totally wrong answers were rare. The one obvious exception to this was from candidates who answered **1(b)(i)** by using a bar graph to show temperature. Likewise, throughout **Question 2** there was a consistent accumulation of credit. The main discriminator between candidates was the extent to which they extended their answers in line with the amount of credit available. For those who failed to develop their answers, minimal credit was commonly awarded to the responses for **2(a)(ii)** and **2(f)(ii)**.

Comments on Specific Questions

Question 1

Incorrect reading of the question led to many half credit answers as candidates concentrated on naming weather instruments instead of the weather elements recorded in **(a)(i)**. Some candidates lost credit for naming wind vane and anemometer because they did not distinguish between wind direction and wind speed. However, candidates could be given credit for rain gauge and sunshine recorder because the weather element was part of the name of the instrument. Plenty of others gave the short, accurate answers. The answer 'sunshine hours' was the least likely to be known. The clearest answers to **(a)(ii)** almost invariably began with the name of the instrument, either maximum and minimum or Six's thermometer. Whether the answers earned full credit depended on the amount of further detail given about the thermometers, and on the accuracy of the description about how readings from them were taken. credit could not be given for concentrated on describing how the highest and lowest temperatures of the day are used in further calculations of daily mean and range.

Drawing a bar graph to show temperature was incorrect in **(b)(i)**; the convention in such climate graphs is for the precipitation to be shown as a bar graph and the temperature to be shown as a line graph, which should be known by candidates. The most accurate line graphs were drawn by those candidates who placed the dot for temperature in the centre of the column for each of the months. Those who placed the values on the lines to the left or the right drew graphs which were not quite as accurate and were given almost full credit, provided that all the plots were accurate (they nearly always were) and linked by a line. Most answers to **(b)(ii)** were correct, although a few candidates stated the extremes (25 and 29) without working out the range and stating 4 °C. The best answers to **(b)(iii)** came from candidates who clearly recognised the two season rainfall regime, wet summer and dry winter. Less good, and often worth only minimal credit, were answers in which candidates worked through the year from January to December describing when and whether it was dry or wet. Answers which did not gain any credit were responses in which candidates did not do much more than pick out the two months with lowest and highest rainfall. Most showed themselves to be aware of higher rainfall and more cloud reducing temperatures in June and July compared with April in **(b)(iv)**.

Those candidates who used both temperature and rainfall, and directly related these to opportunities for crop growing, gave the best answers to **(c)(i)**. For example, some related high summer rainfall to the possibilities for storing water for the dry season and/or to the good conditions for rice cultivation. Less convincing were answers based on 'high rainfall all year' as good for crop growing, since rainfall amounts were clearly inadequate for crop growing during the months of January to April, especially with these high tropical temperatures. Most selected accurately in **(c)(ii)**, although a few reversed their choices. Good understanding of differences between subsistence and commercial farming were confirmed by the majority of accurate answers to part **(iii)**. The available credit for the question meant that more than the basic difference of 'for the family' and 'for sale' was needed; most elaborated further about differences in the size or scale of farming operations between them. Monoculture, for export, and ownership by large companies were the three characteristics of plantation farming mentioned most in answers to **(c)(iv).** Some supported their answers by naming examples of crops, or some of the many inputs. However, some answers were more about commercial farming in general rather than plantation farming in particular and were worthy of little credit.

A majority of candidates found part **(d)** more difficult than part **(c)** had been. In the tropics was often the first scoring point for candidates when answering **(d)(i)**. The best descriptions included references to both oceans and names of adjacent countries; references to cyclone formation in the Indian and Pacific Oceans were usually more precise than to those in the Atlantic. Candidates needed to work harder for the credit in **(d)(ii)** because they were asked to focus on what was 'similar' about the tracks followed. Most missed the basic point that initial movement was from east to west. More candidates commented on movement away from the Equator or towards the poles. Correctly stating clockwise movement in the northern hemisphere and anticlockwise in the southern hemisphere did not meet the "similar" theme of the question; those who referred to a circular movement, or to tracks turning or bending with movement away from the Equator, successfully adapted their answers to meet the question theme. The best answers to **(d)(iii)** came from candidates who recognised that the key to answering was high sea water temperatures at the end of the northern summer. Any further elaboration about why this led to air rising enabled full credit to be gained. Some less credit-worthy answers were more about the formation of the Asian monsoon, and differences in pressure between land and sea, than about individual cyclone formation.

Those candidates who began their answers to **(e)(i)** by stating that cyclones bring strong winds and heavy rainfall gave consistently the best answers. In these answers candidates found it easy to follow up with the

resulting dangers for humans from the destruction of buildings and trees, and from flooding a Those who made no mention of the physical problems could still gain credit for how loss of life occurred; however, many of these answers lacked depth and precision. The majority of candidates g least partial credit on this question by making good use of the information provided. In **(e)(ii)**, the which accounted for the differences in loss of life from cyclones between the Philippines and Japan inclu poverty and wealth, level of technology, degree of preparedness and organisational efficiency, although mos of these were inter-related. Candidates needed to include references to at least two of them to gain all the available credit. The best answers made direct comparisons between the two countries throughout. Answers which were all about one of the countries usually implied differences without fully stating them. A clearly stated view was the main feature of the fully credited answers to **(e)(iii)**. Both likely and unlikely were equally acceptable answers; what mattered was the quality of the support. This support was usually stronger for one clear view, because general statement such as 'improvements in technology' could be elaborated upon by reference to what really mattered, such as greater coverage by weather satellites, or improved computer models, or more effective communications with people in areas likely to be affected.

What was important in **Question 1** was consistent performance and therefore regular accumulation of credit. The greatest loss of credit was often to part **(d)**. Candidates showed good familiarity with the topics being examined.

Question 2

Most candidates knew that oil, coal and natural gas were the fossil fuels in the pie graph in **(a)(i)**. Some candidates left natural gas un-shaded or incorrectly shaded nuclear power. In part **(ii)**, half credit answers were more common than full credit answers; having stated a percentage between 75 and 100 per cent for fossil fuels, most candidates failed to look for further descriptions that could have led to gaining the remaining credit. Answers within the range of 25 to 27% were accepted in part **(iii)**.

The purpose of the shafts in a coal mine were better known than for the towers in **(b)(i)**. Surface towers hold the lifting gear and supply the mine with ventilation and other essential services. Some candidates knew this, but a significant number incorrectly believed that the towers were used for either storing or processing the coal. In **(b)(ii)**, answers which gained almost full credit, based on what could be seen in diagram **A**, were predominant. The instruction in the question to make use of **both** diagrams was missed in many cases, although diagram **B** was sometimes used to support the answer of modern mine in part **(iii)**. A choice of old coal mine in this part was difficult to explain given the presence of so much large machinery.

Many candidates gave four reasons in **(c)(i)**; if only three different reasons were found, 'safety standards ignored' was the one most likely to be missed. For an effective explanation in **(c)(ii)**, candidates needed to demonstrate clear knowledge of opencast mining, so that they could emphasise effectively why the problems referred to in the newspaper report either did not apply or applied less than in deep mining. Those candidates who incorporated breadth into their answers to part **(iii)**, by referring to factors other than safety standards such as age and physical condition of mines, gained more credit. Answers based solely on safety standards and their enforcement tended to gain partial credit. Nevertheless, with sufficient depth it was possible to gain full credit using this line of reasoning, especially if examples of countries were given in support. Part **(c)** was in generally well answered by candidates.

Sulfur dioxide and oxides of nitrogen were the gases needed for answering **(d)(i)**. They were widely known. Carbon dioxide was incorrectly included in quite a number of answers – acid rain as an environmental issue only includes additional acids to the natural carbonic acid produced by carbon dioxide in the air. Carried by the wind to other countries was the most frequent and correct line of answering to **(d)(ii)**. The best answers to part **(iii)** began with a clear statement about how the trees in Sweden were shown to be different from those in the UK. Following from this was an impressive range of reasons, referring to wind carried pollution from coal fired power stations, causing increased soil acidity, faster leaching of soil nutrients such as calcium and potassium, and their replacement by more harmful manganese and aluminium. Incorrect responses were made by candidates who attempted to explain the greater presence of trees in terms of differences in climate and biomes between the warm UK and cold Sweden.

Candidates who covered flue gas desulfurisation and/or the use of catalysts to remove nitrogen gained credit in **(e)(i)**. Some candidates tried to go wider than the question set by answering in terms of renewable sources replacing coal which earned little or no credit. In part **(e)(ii)**, many candidates relied only upon making the basic point about the difficulty of reaching agreements between countries, without further elaboration about differences in national interests or wealth between countries. There were some more perceptive answers, in which a broader look was taken at attempted international agreements; these included references to the limited success of any agreements reached at climate change summits.

In part **(f)(i)**, many candidates gave the correct answer, but some gave 75%, having not geothermal power as one of the renewable sources. Occasionally the answer given was 0% wh surprising. In **(f)(ii)**, almost all candidates began by establishing the greater importance of renewab these three north European countries compared with total world energy consumption. Many filled, or ne filled, all the lines in doing this. However, they made no attempt to elaborate more fully, taking into accoun the amount of credit available. Others were more successful when they used percentages from the graph to support the 100% for Iceland already used in the first part of the question, with 97% for Norway and 53% for Sweden. Also a few successfully approached the answer from the limited fossil fuel use for electricity in Norway and Sweden. The graphs could have been more fully used to convert the many minimal scoring answers into higher scoring answers. Most candidates followed one line of answering. Sometimes it was related to the higher cost of renewables compared with fossil fuels, and they related this to countries' levels of development. The theme used most frequently was of specific physical needs, supported by outline references to two or three examples of renewables. Answers in which candidates used a variety of reasons, such as the two mentioned above plus references to a country's own fossil fuel resources, stood out as being clearly superior. Even better were those in which candidates regularly included names of countries as examples, which allowed them to make their points even more strongly. The result was that lower scoring answers were much more common than those which gained higher or full credit, even though virtually all candidates understood the type of answer needed, and knew something about three or four different types of renewables.

Overall some of the starter answers could have converted into higher credit answers if more candidates had done as the better candidates did and matched answer detail to the amount of available credit.

ENVIRONMENTAL MANAGEMENT

Paper 0680/23

Paper 23

Key messages

- Read the questions carefully; read each question more than once; underline key question words, such as the command words which tell candidates what to do.

- Command words 'Explain' and 'Suggest reasons' require more than merely stating or describing. For example in **Question 1(b)(ii)**, stating 'cheap on land' and 'more expensive in deep water', taken from the graph in **(b)(i)**, were not enough for any credit. Candidates needed to give reasons why it was more expensive to obtain oil in deep water by explaining what made drilling there more expensive.

- Always support descriptions from graphs by referring to relevant values. Many answers to **Questions 1(b)(i)** and **2(a)(ii)** gained only partial credit because of the lack of supporting use of values from the graphs.

- Take careful note of the amount of available credit for the question. This is important in all questions worth lower credit, but becomes particularly important in higher credit questions. Depth and/or breadth of answers is achieved by looking for different reasons, or by elaborating more fully, which is sometimes helped by use of an example or examples. Questions which suffered from limited candidate coverage in relation to the amount of credit available in this examination included **Questions 1(a)(iii)**, **2(b)(iv)** and **2(d)(iii)**.

- When asked to give a view on a topic or issue, as in **Questions 1(g)** and **2(f)**, what matters is the explanation, not the personal opinion itself. It is important to concentrate on supporting one clearly expressed view. Candidates who referred to more than one viewpoint tended to limit the depth and value of their explanations.

General comments

The credit awarded for **Question 1** and **Question 2** was usually similar. This showed that candidates tended to carry forward the standard set in answering the first question into the second question. Only occasionally did a significant difference in candidate topic knowledge result in much higher credit for one of the questions. In this year's paper, this was more likely to be for **Question 2**.

There were no signs that candidates were under pressure to complete this paper on time, which gave the opportunity for good candidates to look back, and check that their answers matched question needs, and that they had written all that they could for the amount of credit available. Few questions were left unanswered, suggesting candidate familiarity with the topics covered. However, more candidates had difficulty with the questions about oil wells and mining operations in **1(a)(i)**, **(a)(iii)**, **(a)(v)** and **(b)(ii)** than with the other questions on the paper. From **1(c)(i)** onwards candidates seemed to be much more confident with their answers.

Questions which were generally well answered by candidates included most of the remaining parts of **Question 1** from **(c)(i)** onwards. Within **Question 2**, the best answered parts were those which followed directly from the source materials, whether the graphs in **2(a)(i)** to **(iii)** and **(b)(i)**, or people's comments in **(d)(i)** and **(ii)**, or spider diagram in **(e)(i)**. Many full and varied answers were seen to **2(d)(iii)** and to **2(e)(ii)** and **(iii)** from candidates who clearly understood the focus of each of these questions.

In **Question 2**, issues in answering were due more to lack of depth and elaboration than to misunderstanding of the question. Examples of this which fell short of gaining all of the available credit, were most common in **2(b)(iv)**, **2(d)(iii)** and **2(e)(ii)** and **(iii)**. The exception as far as understanding was concerned was **2(c)**. Here, only a few candidates showed that they understood the significance of the world

fertility rate being higher than the population replacement rate, and that the increases in wo shown followed from this.

Comments on specific questions

Question 1

The location of gas in the diagram of the oil trap had to be known in **(a)(i)**; it could not be guessed. In **(a)(ii)**, most answers gained credit. In **(a)(iii)** only a few candidates were awarded full credit by referring to the rock layout and the significance of the anticline (or upfold). Some drifted away from the question with information about the process of oil formation itself.

In **(a)(iv)**; some slight variations on the measurement were allowed, provided that candidates showed on the diagram that were measuring the depth of the top of the oil deposit closest to the surface. A few made no attempt to measure and answered 1400 for the sea bed or 1600 for maximum depth shown.

Credit in **(a)(v)** was most often for references to storms at sea. The more serious problems of bringing well blow outs or explosions under control when deep on the sea bed compared with operations on land were more rarely seen. The result was that partial credit was more common.

The fact that costs of producing oil in the Middle east were the cheapest was recognised by almost all candidates in **(b)(i)**. The candidates who stated this without any reference to actual costs from the diagram gained only partial credit. Comparing ranges of values, or equivalent maximum and minimum costs, were more effective for gaining full credit than just stating the range of costs in the Middle East by itself. Information on the diagram in part **(i)** suggested some of the reasons useful for answering part **(ii)**. The differences in costs between drilling on land and in the sea, and between shallow and deep water locations, needed to be explained and not just stated. Quite a few candidates misunderstood the difference between the question focus on costs of production and money to be made from marketing and selling according to amount of oil in the country.

The quality and fluency of most candidates' answers improved markedly from **(c)(i)** onwards. Many looked at the pie graphs with sufficient care to recognise that the largest consumption was in Asia-Pacific and not North America. Most gained full credit in **(c)(ii)**. A few candidates misunderstood the differences between 'importers' and 'exporters', whilst others felt that four world regions needed to named in each column, so that they repeated either North America or Latin America in both. Answering part **(iii)** was often answered well by explaining how valuable and versatile a fuel oil is. Breadth was given in some candidates answers by noting the mismatch between areas of great oil production and consumption. Successful answers to **(c)(iv)** depended on candidates giving broader than Africa only answers. Using the map usually gained credit. Candidates generally linked exporters with importers, such as Middle East with Europe and North America, and Latin America with Asia-Pacific.

Part **(d)** posed few problems. Most candidates answered correctly in **(d)(i)**. The best answers in **d(ii)** came from those who focused well on the question theme of 'higher risk for penguins than for other sea birds'. The calculations in **(d)(iii)**, a few candidates became tangled in complex calculations, which led to a wide array of incorrect answers, including some answers which did not show an increase in survival rates. Part **d(iv)** proved to be marginally more difficult than other parts. Some candidates jumped ahead to part **(f)** and incorrectly attempted to use information about what has been done to reduce spills from oil tankers. They missed the main theme of the question about improvements in penguin survival rates, which could be related to higher levels of preparedness and knowledge of both people and authorities in South Africa. Some perceptive answers were seen, including how the cleaning of penguins could be achieved just by using simple items in everyday use.

The fact that one part of the graph had already been completed made the candidate's task easier in **(e)(i)**. The most common reason for failing to gain full credit was a lack of tanker names against the bars drawn in. Most candidates provided the basic answer to **(e)(ii)**, that well spills were unlimited in amount until stopped, whereas tanker capacity was limited by size. Full credit was awarded when candidates explained more. Answers which mentioned the uncontrolled nature of well explosions and blow outs were more successful than those in which candidates attempted to use information about tankers and their hulls from part **(f)**. Part **(f)** itself was typically well answered. Most candidates were able to make good use of the measures stated by adding additional comment towards the themes in both parts of the question. In both part **(f)** and part **(g)**, the amount of credit awarded depended on the breadth and depth of answers given. Continued improvements in technology were the basis of many answers to part **(g)**. Merely stating this without further

support resulted in only minimal credit being awarded. Many of the better answers in part (c) [illegible] candidates who expressed the view that it would not be possible to prevent more spills, when they [illegible] this with reference to physical and human reasons why marine oil spills will always occur.

Question 2

Almost all candidates gave the correct answer to part **(a)(i)**. In **(ii)** the same number of candidates scored partial credit and full credit. Few failed to recognise the speeding up of world population growth since 1950. For full credit, some reference to appropriate values from the graph was needed. Careful study of the graph suggested that 7 times was a better answer than 6 or 8 times in part **(iii)**.

The best answered part of **(b)** was part **(i)**. The majority of candidates shaded in the spaces between the two lines and identified food surplus and shortage. This was not always followed up as good answers to **(ii)** and **(iii)**, although sometimes the issue was more expression than understanding. A simple statement was needed in **(ii)**, e.g. that food supply increased at a constant rate while population increased more quickly; some candidates seemed to look for more complicated answers. It was rare for candidates not to gain at least partial credit in **(iii)**.

Part **(iv)** discriminated on the basis of depth and breadth of responses. For example, virtually all candidates who chose irrigation understood that it was the transfer of water to crops to make them grow better and yield more. Some filled two or three lines stating this without explaining any more. Elaboration by referring either to when and where irrigation needed to be used (such as in dry climates, dry seasons), or to methods of irrigation, was included in good answers. Another successful approach was to refer to an example. In answers given about chemical fertilizers, candidates who named examples of nutrients that could be added to the soil by using inorganic fertilisers gave superior answers. Some candidates misunderstood the differences between chemical fertilisers and pesticides; answers referring only to pesticides did not answer the question. The higher scoring answers to **(b)(iv)** came from candidates who stated the basic answer and developed it with specific information, for each of the three improvements chosen.

The key to answering part **(c)** well was to understand fertility rate and replacement rate, and the relationship between them. Once a candidate realised that a difference in the rate of 0.5 existed, the rest of the answer followed easily on from this. A rate higher than the replacement rate explained the stated increase of 80 million people per year, as well as the expected increase of 2.44 billion people by 2050. Without understanding the relationship, candidates stated instead of explaining. Many candidates began in the middle with the 80 million increase and referred to fertility rate and replacement rate as two separate items.

In part **(d)(i)**; some candidates incorrectly stated the range (8–11) and others 11 (possibly because it was the most common). Only those candidates who took no notice of the phrase 'these people' in the question failed to find two different reasons in **(d)(ii)**; they gave answers such as 'for work' which were needed in the next part. The best answers to part **(iii)** came from those candidates who looked for a range of reasons, mainly for high birth rates, although reasons for low death rates were often referred to as well, and were equally valid. Reasons most commonly referred to were the economic and social value of children in rural areas, the poor state of female education, and the strength of religious and cultural objections to family planning. Specific references to countries, and/or religions, enhanced the quality of answers in which they were used. Much less credit was gained by answers which focused on just one reason, such as falling or low death rates, or the economic value of children; such answers were too narrow to be effective. Candidates who used the same reasons given by the Rajasthan families restricted the space given to them to include answers that were relevant to the question.

Candidates who homed in on the theme of improved technology to feed the world's growing population in **(e)(i)** mentioned the item from the labels in the spider diagram which showed improved technology, and then commented on this in relation to food output. They were awarded full credit. Candidates found doing this easier for cutting down forests for use as farmland and for fishing out the oceans for food, than for dams and aquifers. The answers that were awarded least credit came from candidates who over-relied on the information stated in the spider diagram, adding only minimal further comment. Responses to **(e)(ii)** ranged from excellent, which concentrated on the environmental consequences of deforestation, over-fishing, large dams and draining aquifers, to more general answers on the theme of unsustainable activities without specific references. The most detailed answers were for the non-sustainable consequences of deforestation and over-fishing. There were also some well balanced answers including changing river ecologies below large dams as well as problems for future water supply in areas heavily reliant on ground water.

Part **(iii)** was consistently the best answered part of **(e)**. Sustainable methods of forest management and fishery protection were widely known. Many candidates referred to two different methods for each one, and

fully met the needs of this question. Dams and aquifers, as elsewhere in the question, were often. Smaller scale dams, and replacement of aquifer use by sea water desalination, were th referred to most often in answers. With limited further elaboration, these were often awarded half cr

Virtually all candidates attempted an answer to part **(f)**. Some went little further than rephrasing information given to them in the question, usually the gloomy view, and this was awarded no more tha minimal credit. From others who took the gloomy view, the most convincing answers referred to the fact that people in some parts of the world were already suffering from drought and food shortages. African countries were mentioned the most. Well explained views such as these were worth full credit. Such candidates believed in human destruction of nature as the basis for their pessimistic point of view. There were also many optimists. Answers that were awarded minimal credit relied on the argument for continued improvements in technology, without elaboration. In answers worth full credit, hopes for the future were justified by references to the possibility for further agricultural improvement from GM crops, at the same time showing understanding that there was already more than enough food produced in the world to feed everyone, even if not always available where needed. Such candidates were usually champions of human invention and ingenuity. As stated at the beginning of the report, each viewpoint was equally acceptable, and marked on the basis of the quality of explanatory support.

Overall, many candidates managed starter answers, without including the extra detail needed to make sure they gained all of the available credit. The strongest performances were from candidates who were able to keep giving full and relevant answers, with the amount of detail tailored to the amount of available credit.

ENVIRONMENTAL MANAGEMENT

Paper 0680/03
Coursework

General comments

An excellent range of environmental issues continue to be investigated, allowing candidates to explore the real application of environmental issues in their own local areas. Most Centres continue to provide thorough comments to allow for ease of moderation.

Comments on specific questions

Domain A

Candidates continue to show a good ability to apply their knowledge acquired from the course to real problems in their local environments.

Domain B

There was again some excellent first-hand experimentation carried out, with some thorough reviews of the literature. The quality of candidates' research skills continues to be good and demonstrates the value of enabling them to carry out their own piece of investigative work.

Domain C

Many candidates could put together a reasonable number of alternative choices available to solve the problems being explored. The ability to assess these choices and put them together into a reasoned strategy for future sustainability was less well demonstrated.

ENVIRONMENTAL MANAGEMENT

Paper 0680/41

Alternative to Coursework

Key Messages

Candidates should work through past papers to practise making the best use of the information given for each question.

Candidates should practise giving specific points about whether or not human activities in the environment are sustainable or not. This is fundamental to this syllabus and candidates should be used to selecting and developing specific points rather than giving vague answers related to lifestyle. In some cases activities will be sustainable and in other cases the activity will be unsustainable. In each case candidates should become skilled at identifying and explaining the reasons for the sustainability, or otherwise, of the activity.

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.

Comments on specific questions

Question 1

(a) Most candidates suggested a sensible reason for migrating to Cairo.

(b) (i) Most candidates could correctly select the greatest and smallest differences from the table of information.

(ii) Many candidates found it difficult to give reason for the increase in ill health. A suggestion that the increased pollution caused more infections was not given credit without further qualification explaining the link between a specific type of pollution (e.g. smog linked to acid rain) and damage to, for example, the lungs, leading to increased probability of e.g. respiratory infections. There were, however, sensible statements given about overcrowding leading to increased illness.

(iii) The layout of additional questions was usually very good and most were relevant to the task set.

(c) (i) Most candidates gave a clear and correct reason why the data collection for this plan may not be reliable. Simple statements such as 'only collected data for three hours' were not given credit.

(ii) Nearly all the candidates appreciated that much more data would be collected by this plan and that the random nature of the selection was helpful.

(iii) Most candidates gave correct reasons why this plan could be used for comparing different settlements.

(d) (i) This question required a selection of factors from the table of information given. C... correctly selected green vegetables and use of soap as the factors that differed mo... settlements.

(ii) Many candidates did not seem to appreciate that the green vegetables provide an important sup... of vitamins to allow normal growth.

(iii) Most candidates recognised that there was improved health in settlement 3 but they did not always clearly explain that reducing the transfer of bacteria reduced the rate of disease.

(e) Candidates often made good suggestions as to how the authorities could help to improve health, but to gain full credit there needed to be some explanations as to why these suggestions would work.

Question 2

(a) (i) Most candidates successfully described how the location of Cairo increased the risk of pollution. There were a small number of inappropriate suggestions such as sand blowing in from the desert.

(ii) Nearly all the candidates identified that the winds were weakest at this time of year.

(iii) Some candidates found it difficult to explain why high pressure increased the risk of pollution, although they were often able to give sufficient points to be awarded credit.

(b) (i) Most candidates did not identify the fact that in less than 24 hours very few particles would have been collected or that collection of samples would be easier to organise for the scientist. The idea of a fair test was not given credit on this occasion as every aspect of the experiment had clearly been designed as a good fair test already.

(ii) All candidates counted the particles correctly.

(iii) The majority of candidates calculated the average correctly without rounding the answer up to the next whole number and so gained credit.

(c) (i) The concept of reliability was clearly understood by a significant number of candidates. Suggestions about calculating averages were given credit, but vague suggestions about being able to compare locations were not creditworthy in this context.

(ii) Provided supporting reasons from the data were given, candidates could answer either 'yes' or 'no' – the credit was for the reasoning and explanation. Candidates gave a wide range of sensible reasons demonstrating their ability to inspect data carefully and draw conclusions.

(iii) As in past papers the graphs were nearly always carefully constructed, although some candidates did not label both axes carefully.

(iv) Most candidates correctly and clearly described the pattern of results (without attempting to describe every data point). There were some instances of the North and South being muddled up and a small number of descriptions were so general that they could not be given credit.

(v) Most candidates described or referred to the prevailing wind blowing in the appropriate direction.

(d) (i) Many candidates gave correct answers for this calculation. Even if this answer was incorrect, candidates often went on to give the correct answer for the next question.

(ii) The Examiners were pleased to see that correct answers were not rounded up.

Question 3

(a) (i) All the ideas covered by the mark scheme were given regularly by candidates. There were number of inappropriate suggestions such as solar powered cars.

(ii) This question required candidates to think about reasons why making an activity illegal would no be helpful. Some candidates gave excellent, thoughtful answers, however, others did not seem to have read the question carefully and did not appreciate that garbage burning only made a very small contribution to air pollution.

(b) (i) A significant minority of candidates tried to answer this question by just repeating information given without contributing any of their own thoughts; this did not gain credit. All the ideas on the mark scheme were seen regularly.

(ii) Candidates often found it difficult to give a specific reason why an activity is or is not likely to be sustainable. This idea is at the heart of the examination and yet many answers were vague comments about a modern way of life rather than picking up specific ideas. There was plenty of information in the paper from which candidates could draw ideas. A minority of candidates did well here.

(iii) Most candidates successfully explained why rice production was being encouraged.

(c) This question required candidates to use the source information to develop ideas as to what developments should be allowed in the future and what restrictions should be put in place. There was a wide range of approaches to this open-ended question, and all the ideas suggested in the mark scheme were seen in candidate answers. Nearly all the candidates made a sensible attempt to explain their thoughts rather than just copy some of the source information.

ENVIRONMENTAL MANAGEMENT

Paper 0680/42
Alternative to Coursework

Key Messages

Candidates should work through past papers to practise making the best use of the information given for each question.

Candidates should practise giving specific points about whether or not human activities in the environment are sustainable or not. This is fundamental to this syllabus and candidates should be used to selecting and developing specific points rather than giving vague answers related to lifestyle. In some cases activities will be sustainable and in other cases the activity will be unsustainable. In each case candidates should become skilled at identifying and explaining the reasons for the sustainability, or otherwise, of the activity.

General comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Nigeria. 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.

Comments on specific questions

Question 1

(a) (i) Most candidates demonstrated a good knowledge of the processes involved in eutrophication. They usually presented the order of events correctly, and only a very small number of candidates attempted to answer the question by just repeating information already given

(ii) Many candidates gave suitable information from the table to support their answer so maximum credit was often awarded.

(b) A wide range of push or pull factors were suggested as reasons for migration and they nearly all gained credit. Only a very small number of candidates failed to provide an answer.

(c) (i) Nearly all the candidates attempted the calculation but not all arrived at the correct answer of 100%.

(ii) Most candidates gave a clear and correct reason to explain the nutritional value of fish.

(d) (i) Nearly all the candidates plotted the data in a suitable graphical form. A few omitted the labels on one or both axes.

(ii) Most candidates gave a correct answer to quantify the difference in growth of the two groups of fish.

(iii) This question required a sensible description of the trends for both groups of fish. A good number of candidates gained full credit as their descriptions were an accurate reflection of the data. Vague statements such as ‘there is an increase’ or ‘one is bigger’ were not considered to be precise statements and were not given credit unless further qualified.

(iv) Candidates had to think about why the fish grew at different rates. There were ma that arrived at an appropriate answer by varied lines of reasoning.

(e) (i) Most candidates agreed with the question that eating the lagoon fish might be dang However, they found it less easy to give a specific creditworthy reason. A vague reference pollution without specifying a specific pollutant did not gain credit here. As usual with opinion based questions, it was the reasoning that was credited rather than the opinion.

Question 2

(a) (i) Only a minority arrived at the correct answer. In some cases the candidates tried to calculate how many kilograms were collected and others made calculation errors.

(ii) This activity is sustainable because the sand will continue to be replaced by the action of erosion and the river flow. Collection by hand rather than machine could not deplete this resource. Any damage to other organisms is not going to lead to local extinction. There a few very good answers but the majority of candidates did not seem to appreciate that the activity was sustainable. This is an important idea – not all human activities are unsustainable.

(iii) Candidates often failed to express the idea that, by making the specified method of sand collection illegal, the government could control the extraction, sell licences and gain revenue from the activity, or that the divers were in great danger whilst conducting the collection.

(b) (i) Most candidates correctly suggested why some months were better than others for block making. However, only the candidates who had carefully inspected the data given correctly stated the best and worst months.

(ii) All the alternatives stated in the mark scheme were given, but only a minority suggested that lack of money to invest in increased production might be a reason.

(iii) Most candidates made sensible suggestions about the environmental or economic reasons, although a minority either gave the same reason twice, gave reasons unconnected with the environmental or economics, or, occasionally, left the question blank.

(c) (i) Most candidates correctly described an aspect of the illustration that showed that irrigation could take place.

(ii) Many candidates failed to realise that the question was about the benefits of composting. There were many inappropriate references to using the crop waste as animal fodder but the question clearly states 'composting' (which is not used as a preparatory method for making animal feed). Some candidates suggested gaining nutrients for crop growth and saving on the cost of fertiliser usually gained full credit as long as the explanation was intelligible.

(iii) Candidates' knowledge of the causes of malaria was generally good, although the means of transmission to humans was often not clearly stated.

Question 3

(a) The layout of additional questions was usually very good and most were relevant to the task set.

(b) (i) Nearly all candidates correctly calculated the differences and completed the table.

(ii) Virtually all the candidates attempted to rearrange the data in a better order inside a drawn table with headings. The distances were usually placed in ascending or descending order with units in the table heading.

(iii) Most candidates made a clear and correct statement about the relationship between pH and distances from the cement factory.

(c) (i) Most candidates suggested a sensible factor that the student should have kept the sa

(ii) Most candidates realised that the cement dust does alter spinach growth and gave a reason for this.

(iii) Sensible additional measurements were usually suggested.

(d) This question required candidates to use the source information to develop ideas as to what developments should be allowed in the future and what restrictions should be put in place. There was a wide range of approaches to this open-ended question and all the ideas suggested in the mark scheme were seen in candidate answers. Nearly all the candidates made a sensible attempt to explain their thoughts rather than just copy some of the source information.

ENVIRONMENTAL MANAGEMENT

Paper 0680/43

Alternative to Coursework

Key Messages

Candidates should work through past papers to practise making the best use of the information given for each question.

Candidates should practise giving specific points about whether or not human activities in the environment are sustainable or not. This is fundamental to this syllabus and candidates should be used to selecting and developing specific points rather than giving vague answers related to lifestyle. In some cases activities will be sustainable and in other cases the activity will be unsustainable. In each case candidates should become skilled at identifying and explaining the reasons for the sustainability, or otherwise, of the activity.

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.

Comments on specific questions

Question 1

(a) Most candidates suggested a sensible reason for migrating to Cairo.

(b) (i) Most candidates could correctly select the greatest and smallest differences from the table of information.

(ii) Many candidates found it difficult to give reason for the increase in ill health. A suggestion that the increased pollution caused more infections was not given credit without further qualification explaining the link between a specific type of pollution (e.g. smog linked to acid rain) and damage to, for example, the lungs, leading to increased probability of e.g. respiratory infections. There were, however, sensible statements given about overcrowding leading to increased illness.

(iii) The layout of additional questions was usually very good and most were relevant to the task set.

(c) (i) Most candidates gave a clear and correct reason why the data collection for this plan may not be reliable. Simple statements such as ‘only collected data for three hours’ were not given credit.

(ii) Nearly all the candidates appreciated that much more data would be collected by this plan and that the random nature of the selection was helpful.

(iii) Most candidates gave correct reasons why this plan could be used for comparing different settlements.

(d) (i) This question required a selection of factors from the table of information given. Only a minority correctly selected green vegetables and use of soap as the factors that differed most between settlements.

(ii) Many candidates did not seem to appreciate that the green vegetables provide an imp of vitamins to allow normal growth.

(iii) Most candidates recognised that there was improved health in settlement 3 but they did not a clearly explain that reducing the transfer of bacteria reduced the rate of disease.

(e) Candidates often made good suggestions as to how the authorities could help to improve health, but to gain full credit there needed to be some explanations as to why these suggestions would work.

Question 2

(a) (i) Most candidates successfully described how the location of Cairo increased the risk of pollution. There were a small number of inappropriate suggestions such as sand blowing in from the desert.

(ii) Nearly all the candidates identified that the winds were weakest at this time of year.

(iii) Some candidates found it difficult to explain why high pressure increased the risk of pollution, although they were often able to give sufficient points to be awarded credit.

(b) (i) Most candidates did not identify the fact that in less than 24 hours very few particles would have been collected or that collection of samples would be easier to organise for the scientist. The idea of a fair test was not given credit on this occasion as every aspect of the experiment had clearly been designed as a good fair test already.

(ii) All candidates counted the particles correctly.

(iii) The majority of candidates calculated the average correctly without rounding the answer up to the next whole number and so gained credit.

(c) (i) The concept of reliability was clearly understood by a significant number of candidates. Suggestions about calculating averages were given credit, but vague suggestions about being able to compare locations were not creditworthy in this context.

(ii) Provided supporting reasons from the data were given, candidates could answer either 'yes' or 'no' – the credit was for the reasoning and explanation. Candidates gave a wide range of sensible reasons demonstrating their ability to inspect data carefully and draw conclusions.

(iii) As in past papers the graphs were nearly always carefully constructed, although some candidates did not label both axes carefully.

(iv) Most candidates correctly and clearly described the pattern of results (without attempting to describe every data point). There were some instances of the North and South being muddled up and a small number of descriptions were so general that they could not be given credit.

(v) Most candidates described or referred to the prevailing wind blowing in the appropriate direction.

(d) (i) Many candidates gave correct answers for this calculation. Even if this answer was incorrect, candidates often went on to give the correct answer for the next question.

(ii) The Examiners were pleased to see that correct answers were not rounded up.

Question 3

(a) (i) All the ideas covered by the mark scheme were given regularly by candidates. There were a small number of inappropriate suggestions such as solar powered cars.

(ii) This question required candidates to think about reasons why making an activity illegal would not be helpful. Some candidates gave excellent, thoughtful answers, however, others did not seem to have read the question carefully and did not appreciate that garbage burning only made a very small contribution to air pollution.

(b) (i) A significant minority of candidates tried to answer this question by just repeating info without contributing any of their own thoughts; this did not gain credit. All the ideas o scheme were seen regularly.

(ii) Candidates often found it difficult to give a specific reason why an activity is or is not likely to sustainable. This idea is at the heart of the examination and yet many answers were vague comments about a modern way of life rather than picking up specific ideas. There was plenty of information in the paper from which candidates could draw ideas. A minority of candidates did well here.

(iii) Most candidates successfully explained why rice production was being encouraged.

(c) This question required candidates to use the source information to develop ideas as to what developments should be allowed in the future and what restrictions should be put in place. There was a wide range of approaches to this open-ended question, and all the ideas suggested in the mark scheme were seen in candidate answers. Nearly all the candidates made a sensible attempt to explain their thoughts rather than just copy some of the source information.