ENVIRONMENTAL MANAGEMENT

Paper 5014/11

Paper 11

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 questions and the topics covered were understood to some level. Marks were mainly lost when candidates did not recognise that more detail was needed. Answers should be more specific in answering the question that was set and should take note of the number of marks available for each question.

Comments on Specific Questions

Section A

Question 1

(a) These questions required candidates to demonstrate understanding of a set of bar charts. Candidates performed well.

(b) This required a description of advantages and few candidates managed enough detail to score full credit.

(c) In these questions there was a need to suggest appropriate alternative energy types. The desert regions were answered well by most candidates while equatorial climate regions proved more challenging.

Question 2

(a) This started with a simple interpretation of a map and was answered well by many candidates. Some candidates lacked precision in their description of the distribution. Relating this to climatic conditions was well answered in part **(iii)**.

(b) Candidates knew that mosquitos breed in water. The description of advantages and disadvantages of draining swamps in part **(ii)** was not as well answered by many candidates. However it was well understood why people would sleep under nets in part **(iii)**.

Question 3

(a) Many candidates understood the graph and could perform the calculation. Extrapolating was also carried out well. The role of plankton as the primary producer proved more challenging for many.

(b) Some candidates were missing detail in their answer to part **(i)** and this was the main reason for marks being lost. Candidates also found it difficult to explain how this would reduce food supplies in part **(ii)**.

Question 4

(a) The bar was drawn accurately by many candidates. Comparing the two time periods in part **(ii)** was carried out less well.

(b) Candidates were tested on their understanding of reasons for urbanisation in this question and they performed well.

(c) Most could describe how the new city could be made sustainable with reference to cars but many were less able to do so for the other three factors.

Section B

Question 5

(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 6

(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 5014/12

Paper 12

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. There appeared to be some distinct gaps in the knowledge of a few candidates.

Comments on Specific Questions

Section A

Question 1

(a) Most candidates did well on this question but surprisingly some mistakes were made and some candidates even used letters that were not on the map.

(b) (i) Some good answers were given here. There was a tendency to emphasise volcanoes and not just the plate boundaries.

(ii) Very few could explain how the plate margins could produce metamorphic rocks as well as the igneous rocks.

(iii) Many candidates showed a lack of knowledge as to why geothermal energy is available.

Question 2

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

(ii) Most candidates could compare the two figures asked for.

(iii) Most candidates performed well on this question.

(iv) This question was focused on why there is a serious problem. Many candidates did not address this and gave vague answers which did not say why it was a problem.

(b) (i) Many good answers were given here but the common loss of credit was due to not explaining that young fish have to grow up to maturity to be able to breed if the fish population is to increase.

(ii) Most could recognise the problems caused by the measures suggested. Some candidates were too vague in their answers.

Question 3

(a) (i), (ii) and (iii)
These questions were all answered correctly by many candidates and presented little difficulty.

(b) Most candidates found it difficult to identify and describe a reason for the difference.

(c) (i) Most answers could explain the change in use of CFCs.

(ii) Most here could not identify the issue of lead in petrol. Many thought that catalytic convertors could be used to filter out lead from exhaust gases.

Question 4

(a) A significant number of candidates did not make it clear how this was calculated. Other answers referred to no calculation at all.

(b) (i) and (ii)
Both these questions were answered correctly by most candidates.

(iii) It was clear here that many candidates did not know how to calculate population growth.

(c) (i) Many here did not read the question but gave a reason as to why death rates have changed instead of describing what the change is.

(c) (ii) Many good answers were given here. Some candidates showed they did not read the question properly and failed to give reasons for sudden small increases.

(d) Many candidates did not know about the demographic transition model in sufficient detail.

Section B

Question 5

(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 6

(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 5014/21

Paper 21

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 5014/22

Paper 22

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