ENVIRONMENTAL MANAGEMENT

Paper 5014/11

Paper 1

Key Messages

Candidates should ensure that specialist terms contained within the syllabus are used accurately. Similarly, the accurate use of language by candidates when giving explanations is a suggested area for future focus.

Candidates should use the number of marks allocated to a question as an indication of the depth and range of response that is required.

General Comments

Candidates generally showed a good understanding of the range of topics covered by the question paper.

Greater accuracy in the completion and labelling of graphs would increase the total mark of some candidates.

Many candidates were able to use appropriate technical terms, however some were less able to explain or define these terms where this was required within a question.

Comments on Specific Questions

Section A

Question 1

(a) (i) An opening question requiring the plotting of a bar on the graph. Most candidates performed well.

(ii) This was a simple correlation process for all but the weakest candidates.

(iii) A data question, using an application of the graphs. Most candidates answered clearly.

(b) (i) A longer question requiring a range of responses. Better candidates related to both the government and the people.

(ii) Common responses highlighted the lack of suitable industry or similar aspects relating to low demand. The citing of other issues, such as lack of electricity/power was rare.

Question 2

(a) (i) Extraction of data from the information in a graph, this was a fairly straightforward task. A small range was allowed.

(ii) The date was clearly marked and this tested the understanding of the graph's format. Most candidates did well.

(iii) Most candidates performed well on this question.

(iv) Distinct ways were required, which was challenging to some candidates.

(v) This question was not an issue for the stronger candidates.

(b) Explanations rather than simple statements were needed to achieve full credit.

Question 3

(a) Strong candidates were able to complete this task well. Weaker candidates listed the locations.

(b) (i) Weaker candidates were not able to give the range.

(ii) This set of questions required the candidates to understand the implications of the data on a range of activities or situations. While the concept of the location being cold was commonly recognised, the impact was not as well understood.

(iii) The link between the temperature in this location and the issue of increased carbon dioxide concentrations was not always made by the weaker candidates.

(iv) A challenging question for less able candidates, who were challenged to name other gases and had difficulty in explaining their importance.

Question 4

(a) This simple task was completed by most candidates.

(b) (i) A simple comprehension question from a body of text, which was attempted well by all candidates.

(ii) While the candidate was requested to circle an answer, other forms of indication were also accepted. Few problems were encountered.

(c) (i) A range of explanations were accepted, although credit was lost by merely stating reasons rather than explaining the issue.

(ii) Marks were awarded if answers clearly related to overpopulation, some candidates gave confused or incomplete explanations.

(d) (i) Responses typically linked to the likelihood of settlement or impact on traditional migration patterns. Most candidates applied their knowledge well.

(ii) This was less well answered than part **(i)**, the issues of compaction and pollution due to waste were not well recognised.

Section B

Question 5

(a) (i) Most candidates were able to correctly interpret the data to name the most widely used energy source.

(ii) Most candidates used the markings on the outside of the circle to arrive correct answer.

(iii) Most candidates supplied a comparison, for example with nuclear power, as well as merely a ranking or citation of a specific figure from the table. Many candidates were successful in this approach.

(b) (i) The descriptive skills required for this question proved challenging for some candidates. The best responses typically included the fact that there is not even distribution of coal reserves around the world and described the overall distribution.

(ii) The best answers contain the need for a source material, heat and pressure and an indication of the timescale.

(iii) Most candidates who attempted the question correctly plotted the values for the three fuels. The most common loss of credit was due to a lack of accurate labelling.

(c) (i) Successful responses to this question utilised the diagram to good effect. There was some confusion evident over the roles and operation of the turbine and the generator.

(ii) The majority of candidates did well here. Some responses were quite generic in terms of their statements and thus missed the opportunity to gain full credit. While candidates focused on issues relating to pollution issues from named gases, few described issues relating to the siting of the power station itself.

(d) (i) Most candidates were able to name two continents. Some simply stated 'America'.

(ii) A more challenging question than part **(i)**, fewer candidates were able to give a valid reason for their choice.

(iii) Strong candidates were able to give a full description, citing the gases involved and their origin as well as the processes happening in the atmosphere.

(iv) Few good, full answers were seen. Many responses contained repetition of the same point and time would have been better spent citing new material.

(e) This was attempted well by most of the candidates. Quality of responses varied greatly. Better responses gave a balanced view across a range of issues. Those focussing on one aspect were more limiting.

Question 6

(a) (i) The majority of candidates attempted this question, utilising the markings on the pie graph effectively.

(ii) Few candidates cited the seasonal issues relating to working a clay soil, i.e. before it becomes too hard and dry, or too wet which will have an impact on structure.

(b) (i) Most candidates had some success with this question, although few gave sufficient breadth to achieve full credit.

(ii) Some candidates limited their answer and did not give a description of the impact or result of the issue they stated, e.g. removal of trees causes habitat loss.

(c) (i) Only the stronger answers identified that the banks, by slowing the rate of water flow, increase the potential for infiltration.

(ii) Some candidates were able to describe the impact of contour ploughing. Fewer answers understood the role of land reform or rural development programmes.

(d) (i) Most candidates correctly completed this question.

(ii) Similarly, there were few difficulties with this question.

(iii) This question required candidates to describe the overall trend rather than a section by section evaluation of the yield. The stronger answers described the overall trend, using data appropriately.

(iv) A minority of candidates did not read the scales accurately to the centre of each cross, allowance was made in the following question if this occurred.

(v) This was a fairly straightforward calculation, allowing any error carried forward from the previous question and most candidates performed well.

(vi) Most answers identified that there was a correlation. Strong responses also backed up observations with carefully selected data.

(e) Most candidates attempted this question, although there was sometimes a focus on genetically modified organisms (GMOs), rather than the impact of the Green Revolution on the population and the economy.

(f) Most candidates obtained at least some credit, often responses focused on only one aspect. Some factual inaccuracies and sweeping statements expressed in absolute terms about fertilisers limited a few answers. There were some excellent answers seen by examiners.

ENVIRONMENTAL MANAGEMENT

Paper 5014/12

Paper 1

Key Messages

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General Comments

Candidates generally showed a good understanding of the range of topics covered by the question paper.

Greater accuracy in the completion and labelling of graphs would increase the total mark of some candidates.

Many candidates were able to use appropriate technical terms, however some were less able to explain or define these terms where this was required within a question.

Comments on Specific Questions

Section A

Question 1

(a) (i) Generally answered well, this opening question was accurately plotted. Correct shading of the bar was required.

(ii) A relatively straightforward calculation question, attempted well by most candidates.

(iii) A question requiring a comparison. Marks were typically lost for not considering both regions.

(b) A range of reasons were accepted, growth in overall population and industrialisation being the most commonly quoted.

(c) Similarly, a range of reasons were accepted; the majority stating global warming issues, few relating to the issues of coal mining waste.

(d) (i) Most highlighted the lack of reliability of the source or the visual impact of the installations.

(ii) Less well articulated; some explanations were too vague to be credited.

(iii) Poorly understood by weak candidates. Most linked their answers to the small-scale burning of animal waste rather than the use of sources such as timber.

Question 2

(a) (i) A relatively simple interpretation of data from the diagram causing few issues for candidates.

(ii) A more challenging question which discriminated well between the stronger and weaker candidates. Some descriptions were too vague, for example ‘Tasmania’ without any clarification.

(b) Some candidates focused on the potential run-off into the sea and omitted to consider issues such as the high temperature or evaporation rates.

(c) (i) An opportunity for candidates to demonstrate their knowledge of farming in dry conditions. The strongest candidates were able to describe a range of techniques.

(ii) This question, requiring application of knowledge, posed few issues for the majority of candidates.

(d) A challenging question for most candidates, few were able to clearly describe the impact of atmospheric pressure and air movement, typically addressing one and omitting the other.

Question 3

(a) (i) Using the information in the table, most candidates were able to identify two distinct pieces of information which demonstrated that the production system was intensive.

(ii) Most candidates referred to characteristics of the area relating to river valleys, fewer identified the benefits of alluvial soils or any reference to fertility.

(b) (i) A range of techniques were credited for working.

(ii) The need to feed a rising population was cited by the majority of candidates.

(c) A longer response question, some incorrectly focused on genetic modification, although many others did refer to high-yielding varieties. Opportunities for double cropping and more than one harvest per year were not commonly mentioned.

Question 4

(a) (i) Most candidates were able to make an accurate estimate and choose the correct value.

(ii) A question which was challenging for many candidates. Most responses which received credit were accurate descriptions in relation to the rest of the tropical rainforest.

(iii) Most candidates were able to identify the link between deforestation and vicinity to the most densely populated areas**.**

(b) (i) While there was some confusion as to the term, most were able to identify the use of the rainforests for obtaining food. A few identified the sourcing of medicinal plants.

(ii) There was some confusion in attempting to answer this question. While the reasons may have been known by a number of candidates, the explanations were often poorly articulated.

(c) This was attempted by most candidates, some responses lacked clarity. Key terms such as ‘biodiversity’ and ‘habitat’ were used but many resultant scenarios were quite extreme; extinction of the species was a common expectation.

Section B

Question 5

(a) This was answered correctly in most cases.

(b) (i) Utilising the diagram provided, candidates needed to identify specific plate boundaries. Most candidates were successful. The most common error was attempting to name the type of boundary.

(ii) This was a more complex descriptive question, which some candidates found challenging. Many answers described specific locations but were weaker on describing overall distribution.

(iii) Most candidates made good use of the diagram in their descriptions, although some did misinterpret the diagram and concluded that the plates were moving apart.

(c) (i) Using the photograph, most candidates were able to identify that these conditions favoured farming due to the fertility of the soils.

(ii) Many candidates were able to name causes of problems but stopped short of explaining the issue as requested in the question.

(iii) Wide ranges of responses were credited as candidates provided a number of solutions to the issue.

(d) (i) Most candidates made good use of the diagram and performed well.

(ii) Candidates were able to agree or disagree with the statement. Relatively few gave pros and cons. Most candidates identified that there were four marks available so gave a good number of reasons. In weaker answers, these were simply re-statements of previous points made.

(e) (i) Utilising the passage, most candidates were able to find three causes of the flooding. This showed good exam technique.

(ii) Again, using information from the text, most candidates were able to provide a correct answer to this question.

(iii) There was lack of clarity in responses to this question, with few answers identifying that urbanisation will increase the number of impermeable surfaces and thus increase surface run-off.

(f) Most agreed with the statement, citing issues such as poor education or the availability of technology. Few candidates covered a wide range of reasons, rather focussing on one or two aspects.

Question 6

(a) (i) Using the map, most candidates were able to identify the relationship between hot deserts and their proximity to the Equator and the tropics.

(ii) Some candidates did not read the question and did not complete the rainfall graph. Those that attempted this question usually did so successfully.

(iii) Many identified the months with the highest rainfall. Relatively few identified that overall annual rainfall was low. Data use was required to obtain full credit.

(iv) Most candidates performed well on this question.

(v) This relatively simple calculation caused few issues.

(vi) Most candidates were able to see the relationship between the temperature and rainfall and state this clearly to obtain credit.

(b) (i) Most candidates had few problems identifying a producer and a consumer from the food web.

(ii) The majority of candidates understood the implications of a change to the food web for other species. There were a wide range of scenarios often resulting in credit.

(c) (i) Despite clear instructions in the question and emboldening of the word ‘before’ a number of responses did not answer the question but compared the scenario with the ‘after’ picture. Another common error was failure to focus on the adaptions to vegetation. Full credit required the candidate to describe and to explain these.

(ii) Most candidates were able to pick up the cues from the pictures to attempt a reasonable answer to identify the impact of solar panels.

(iii) Some candidates found challenge in looking at the issue on a governmental level, citing instead benefits to individuals rather than those of national importance. However, some good responses by the stronger candidates were seen.

(iv) Most answers focused on the challenges of poor weather, although few described issues relating to the space needed and the impact this might have on the population.

(d) (i) Some candidates had difficulty giving an accurate definition of this term.

(ii) The most common error here was to represent the blowing away of soil too early in the process. Other candidates tended to perform well.

(iii) This question was quite poorly answered. Few candidates provided explanations although they identified some impacts.

(e) Most candidates made a good attempt at the question, although the focus of some responses was very narrow. There was some confusion over the use of fertilisers.

ENVIRONMENTAL MANAGEMENT

Paper 5014/21

Paper 2

General Comments

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

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

Candidates should:

- remember to label the axes of graphs
- read questions carefully and identify the command word, e.g. describe, explain
- take into account the marks for each question.

Comments on Specific Questions

Question 1

(a) The question asked why there was an increase in demand for agricultural products. Candidates often commented on the increase in population and food exports. However, a significant minority of candidates repeated the information given without any additional comment.

(b) Most candidates managed to describe two or three differences in climate between the wet and the dry zone.

(c) (i) Few candidates explained that there would be sufficient rainfall for seeds to germinate or for the growth of plants. Some candidates only stated the rainfall data given in the table.

(ii) Most answers lacked the detail needed.

(iii) There were some good, clear and logical answers to explain why there would be little soil erosion between April and August. However, many answers lacked the detail needed to gain full credit.

(iv) Many comments were too vague to be an explanation of a sustainable method of farming.

(d) (i) Many candidates could perform the first part of this calculation. A minority of candidates were able to calculate the final answer in a second step.

(ii) Most candidates suggested that increased demand increased the value of milk. Some candidates also mentioned the volume of the milk.

(iii) Most candidates selected the correct year. Only some candidates could suggest possible reasons.

(e) (i) Nearly all the candidates plotted the data. However, a key or a label on the *y*-axis was not provided in a significant number of cases.

(ii) The patterns on the graph were usually well described.

(iii) Candidates generally found it difficult to suggest more than one reason for the changes in the quantity of maize produced.

(f) Most candidates were able to clearly explain how each measure stated in the question would help Sri Lanka become self-sufficient in milk production. The breeding of imported cows with local cows to improve the milk yield was only suggested occasionally.

Question 2

(a) (i) Most candidates completed a correct calculation.

(ii) Many candidates appreciated the meaning of the term 'related jobs' but some candidates could not go on to give appropriate examples.

(iii) There was a wide range of credit-worthy answers given.

(b) (i) A minority of candidates tried to describe the impact of rocks on the marine environment.

(ii) A minority of candidates identified the idea of saving on transport costs or time as well as the idea that the sand would have to be dumped elsewhere if it was not used.

(c) (i) Most candidates provided a workable key and showed three schools and two green spaces on their plan. However, some candidates did not provide services on their plan.

(ii) Candidates gave a range of ideas about building or servicing the city to reduce pollution. Only a small number of candidates gave enough examples to gain full credit.

(d) Most candidates appreciated that the increased cost of the loan would reduce the investment in new jobs.

(e) (i) Only some candidates identified that the researcher could fill in the questionnaires for illiterate people.

(ii) Many candidates did not give a clear answer to show they understood methods of representative sampling.

(iii) Some candidates did not give a clear answer to show how to summarise data from questionnaires.

(iv) Most candidates read carefully the information given and presented suitable questions that could have been used in the questionnaire.

ENVIRONMENTAL MANAGEMENT

Paper 5014/22

Paper 2

General Comments

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

Candidates should:

- remember to label the axes of graphs
- read questions carefully and identify the command word, e.g. describe, explain
- take into account the marks for each question.

Comments on Specific Questions

Question 1

(a) (i) Most candidates gained at least one mark for suggesting that protein can improve the health and nutrition of Sri Lanka's population. Vitamins and energy were also mentioned.

(ii) Many candidates suggested that weak immune systems were the cause of respiratory conditions and diarrhoea being serious conditions in young children, and that these could be fatal. A number of candidates wrote about environmental pollution in Sri Lanka and water-related diseases.

(iii) Most candidates suggested that the diet of mothers could be a cause of low birth weight. Smoking by the mother and premature birth were also suggested as causes.

(iv) A large number of candidates gave malnutrition as a cause of children being underweight. Others wrote about lack of protein.

(v) About half the candidates correctly completed the table with calculations and correct rounding and categories given in many cases.

(vi) Some answers made good use of the information in the table.

(b) (i) Some candidates suggested that plans two and three would be better instead of answering the question by pointing out that plan one only involved visiting one family.

(ii) Many candidates identified that weighing the eggs was better than counting them. Others wrote vague answers.

(iii) Most candidates completed the table accurately.

(iv) Nearly all the candidates who gained the mark suggested random sampling with a few proposing systematic sampling

(v) There were some answers to this question that were too vague for credit to be awarded. Other candidates answered well.

(c) A significant number of candidates wrote that feeding chickens on household waste was not sustainable arguing that it made the chickens a source of infection/disease that could be transmitted to people.

(d) (i) Some candidates performed the calculation to work out the chicks that did not survive to lay eggs. The missing step in this method was to subtract this number from the original 900 000 chicks to arrive at the correct answer.

(ii) Many candidates suggested that the chickens would die.

(e) (i) There was a tendency to copy out information from the factsheet without any added comments from some candidates.

(ii) Some answers described how the villagers were asleep when some predators were active. There were thoughtful answers about the lack of huts and enclosures and there being too many chickens, chicks and eggs for the villagers to monitor.

(iii) There were many relevant references to reduction in the gene pool, loss of biodiversity and the local male bird becoming extinct. Some candidates suggested that as the improved hens would take little care of their chicks many more eggs and chicks would be taken by predators.

Question 2

(a) There were some confused answers from some candidates who did not seem to appreciate that the new tax did not apply to maize grown in Sri Lanka. Many candidates wrote that the farmers would begin to grow maize.

(b) (i) Over half the candidates calculated the correct percentages of dead weevils.

(ii) Temperature was often suggested as a factor the scientist should have controlled in the experiment.

(c) (i) Many candidates wrote that the 0.0 g of powder used on one maize cob was as a control by the scientist or described how it was a way to see if weevils died without the use of leaf powder.

(ii) Nearly all the candidates gained some credit for plotting the graph, with many gaining full credit. The plots were usually correct with some mistakes made with the axes, either not labelling both or mislabelling them.

(iii) Only some candidates correctly described the pattern on the graph in sufficient detail.

(iv) Some candidates did not draw a line on the graph to show the likely effect of using 10.0 g of leaf powder. Those that did were generally successful.

(d) (i) Most candidates positioned the sample locations correctly on the plan.

(ii) There were a few strange answers to this question. These included quadrat, quadrant and scattered.

(iii) Most candidates calculated the percentage of dead weevils correctly.

(iv) Few candidates were able to suggest that wind and rain in the maize field meant fewer weevils died or similar.

(v) Few candidates suggested that the leaf powder could not be used as a natural pesticide because it is expensive or might kill beneficial insects.

(e) (i) The list of equipment inspired some interesting experiments to find out if leaf powder could reduce the wastage of stored maize. The time set in the question was frequently ignored in the proposed method.

(ii) The tables designed to record the result of the experiments described in part **(i)** sometimes did not cover the six weeks of the experiment.