

ENVIRONMENTAL MANAGEMENT

Paper 0680/12

Paper 12

Key Messages

Candidates should:

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

General Comments

Weaker candidates often gained credit by giving correct answers to questions that required calculations and short written answers.

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

Some other candidates tried to make up for their lack of knowledge by writing excessively about the subject of the question without really answering it.

Comments on Specific Questions

Question 1

- (a) (i) Some candidates gave examples of organisms such as caterpillar and bird. The question asked for 'the feeding type'.
- (ii) Some advantages were not expressed well. Disadvantages about competition were usually stated more clearly.
- (b) (i) Most candidates identified the country with the highest and lowest increase in vitamin A.
- (ii) Some candidates wrote about the importance of vitamin A instead of using the information in the graph to answer the question. In some answers, data taken from the graph was too vague when the information provided by the axes could have been used to give more convincing answers.
- (iii) Most candidates gained at least some credit for describing the protection genetic engineering might give to plants. There were detailed answers referring to resistance to pests, diseases, herbicides and drought.

Question 2

- (a) (i) There were many methodical answers that gained full credit.
- (ii) Answers covered the full mark range with some excellent explanations of how a cyclone forms.
- (b) Many candidates could suggest why Cyclone Phailin caused fewer deaths than Cyclone Paradip. The most common reasons given were differences in cyclone strength, forecasting and evacuation.

Question 3

- (a) (i) The majority of candidates gave the correct answer.
- (ii) The answers to this question ranged from excellent to very vague generalisations. The better answers started at the Earth's surface and systematically described how the temperature increased, decreased or remained constant. Statements were supported with specific details of altitude and temperature.
- (b) (i) Most candidates were able to write about CFCs and ozone depletion. Few wrote convincingly about the role of chlorine. Quite a large minority discussed global warming in this context.
- (ii) Many candidates were able to explain how ultraviolet light causes mutations, cancer, sunburn and cataracts.

Question 4

- (a) (i) The better answers described the fluctuations in price between 1 US\$ and 3 US\$ per kg between 1989 and 2005, the increase to almost 8 US\$ per kg between 2005 and 2008, the fall to below 3 US\$ per kg in 2009 and the rise to almost 9 US\$ per kg in 2011.
- (ii) Some candidates gave detailed suggestions of how changes in supply and demand could lead to the changes in the price of copper. Others answered the question as if it had asked them to explain a rise in prices only.
- (iii) Some candidates suggested reasons that did not use information from the graph.
- (b) (i) There were some detailed answers to this question. Some candidates made clear statements about landscaping, restoration and reclamation.
- (ii) Many candidates made suggestions that needed more detail to gain full credit.

Question 5

- (a) (i) Few candidates gained full credit for this question. Most identified the long period of very slow growth. Relatively few identified the period of steady increase followed by very rapid increase in the last 500 years.
- (ii) Some candidates plotted graphs that did not show the differences in birth rate clearly. There were very few errors in plotting but a number of candidates did not label the axes, particularly the y-axis.
- (iii) Reasons were sometimes confused. The most common reasons suggested to explain why some countries have very high birth rates and others very low birth rates were about the importance of family planning and the education of women.
- (b) Some candidates wrote about pull factors instead of push factors

Question 6

- (a) (i) Most candidates gave the correct answer.
- (ii) Most candidates gained at least some credit by writing about evaporation or condensation.
- (iii) Many candidates wrote about the danger of water-borne diseases such as cholera and typhoid in ponds and lakes. There were vague references to contamination but few convincing explanations of different types of pollution.
- (b) Many candidates were able to write about sunlight penetrating the shallow water of continental shelves encouraging the growth of phytoplankton and zooplankton which provide food for fish.

ENVIRONMENTAL MANAGEMENT

Paper 0680/22

Paper 22

Key Messages

- There were several instances of candidates stating something is affected without saying in what way it was affected. For example, in **1(d)(iv)**, some candidates wrote about acid rain affecting fish or affecting plant growth without saying how. In **2(e)(i)** many stated that the population of plants and animals 'affected the food chain'. They needed to state how it was affected.
- Some candidates need to be accurate in their answers. This was particularly true when using data from graphs, tables or maps, as well as in plotting data on graphs. The standard of graph drawing was generally very good.
- Candidates need to be detailed in their answers. In **2(d)** many simply wrote that most of the forest was destroyed. They needed to look for details as there were three marks available.

General Comments

This report highlights what the better candidates did as an indication of what is needed to secure high marks, as well as indicating common problems of weaker answers.

Candidates tended to score more highly on **Question 1** than on **Question 2**. This was due to the nature of the questions rather than candidates running out of time on **Question 2**. All candidates showed good time management skills as there was little evidence of candidates not completing all the questions.

Comments on Specific Questions

Question 1

- (a) (i) Most candidates were able to identify the magma. Very few could identify the trench and there was much confusion about the mantle and the continental crust.
- (ii) Ideally the arrows should have been placed within the crust or upper mantle.
- (iii) This was known by most. Some thought it was a divergent or constructive plate boundary.
- (iv) Few candidates gave detailed and organised explanations of why volcanic eruptions occur at destructive plate boundaries. They should know about subduction, friction, heating and melting of plate and sediments, and how the pressure that causes an eruption occurs.
- (v) Most candidates were aware of soil fertility. Better answers went on to give other reasons, such as tourism or geothermal energy.
- (b) Parts (i), (ii) and (iii) were answered correctly by nearly all candidates, though some chose the wrong figures for the calculation.
- (iv) Around half the candidates were able to work out that this was a cost-saving process.
- (v) The best candidates gave comprehensive answers concerned with sustainability of resources, reduction in costs and energy use and discussed how it would reduce different types of pollution, from less dumping of waste rock to effects on atmosphere, rivers and groundwater. Weaker candidates often made one or two basic points; they needed to expand 'less pollution' into specific types to earn credit.

- (c) Many candidates gained credit for knowing that the sulfur dioxide reacted with water to create weak acids. Few went much further than this. The best answers mentioned that sulfur dioxide was a gas, named specific acids and even how these fell to as rain.
- (d) (i) Many candidates were able to gain the majority of credit here. Some descriptions were vague or inaccurate.
- (ii) Many candidates worked out that there must be concentrations of industry, thermal power stations and/or vehicles in such areas, though they frequently only gave one cause. A few commented on winds bringing in pollution from the west.
- (iii) Some candidates lost marks through errors in line drawing, but could still gain credit for accurate scales and labelling of the axes.
- (iv) There were few good, detailed descriptions of the effects of acid rain, but candidates had better knowledge of the methods of reduction, such as catalytic converters and desulfurisation. Some were aware of the use of lime to spread on land or spray into lakes to neutralise the acid. The best answers gave some detail of the effects beyond just 'kills plants and fish'. They covered leaching of minerals from the soil, the impact on reproduction in fish, etc. A large number of weaker candidates concentrated on damage to buildings (some mentioning limestone or marble). Some seemed to think that acid rain was so bad that it burned skin and endangered human life.

Question 2

- (a) (i) This proved difficult for a number of candidates, with many confusing the canopy and emergent layers.
- (ii) Many candidates knew about competition for light, but few referred to the year-round hot, wet climate promoting growth.
- (b) This was done well by nearly all candidates, though some needed to be more accurate, and a few seemed to have no concept of a pie graph.
- (c) (i) Almost all candidates gained full credit on this question.
- (ii) A few candidates did not read the question and described the trends from 1998. Many candidates gave good answers, noting the overall downward trend, the variations from 2002 to 2004, the rise in 2008, and quoted relevant figures.
- (iii) Candidates frequently gave a correct answer. Some needed to be more careful in reading the scale as they gave answers such as 5005 or 5000.
- (iv) This was a challenging question for weaker candidates. There were some rather vague answers referring to the loss of biodiversity and climate change. There was little reference to pressure from external organisations. Only a few candidates explained what 'targets' could achieve.
- (v) Good candidates made some reference to the difficulties of enforcing laws, especially in such a large area under the control of several countries. A few mentioned corruption or weak government. Where population pressure was referred to, the effects of this, such as the need of land for urbanisation, infrastructure, farming, etc. were sometimes not explained.
- (d) Many candidates simply stated that most of the area had been deforested by 2006. This indicates the need for candidates to be more accurate in their statements. Some noted that there was more deforestation south of the river than in the north, but such detail was rare. Changes to the river and the fact that the river banks had retained forest cover were also noted by some candidates.
- (e) (i) Good candidates used the information in the diagram to work out what was needed in each box. Weak candidates tended to gain credit for the final box by stating something about loss of biodiversity or similar, but could not deduce that less interception would lead to more water reaching the ground surface, or that fewer nutrients made the soil less fertile or decreased the growth of vegetation.

- (ii) The best answers dealt with a range of factors, usually starting by explaining how the loss of trees led to more rain reaching the ground and less take-up of water by plants. They then went on to describe how this led to soil saturation and rapid surface run-off. A few mentioned how soil erosion could lead to reduced capacity of rivers to hold water. Weaker candidates tended just to provide very basic details related to lack of interception or take-up by tree roots.
- (f) (i) A majority of candidates did not know this syllabus term.
- (ii) Most candidates understood that the soil would lose its fertility in three or four years. Only the best candidates explained that ash provided some initial fertility and that the soils had few nutrients at the start of cultivation.
- (g) The question included the phrase 'people in many parts of the world', but a significant number of candidates ignored this and only wrote on local issues. This limited their ability to score well. The impact of loss of biodiversity and its implications locally and globally, along with possible climate change through the release of carbon dioxide and subsequent temperature rise, melting of ice caps and sea level rise was required. Some candidates used information from previous parts of **Question 2** and wrote about flooding, impact on tribes, etc. This was fine as long as the answers went on to global concerns.

ENVIRONMENTAL MANAGEMENT

Paper 0680/03
Coursework

Key Messages

- Some interesting environmental topics were investigated, showing the value to students of the opportunity to see issues in their local areas. However, the issue needs to consider a sustainable development aspect and this caused a problem for some investigations this year.
- With no sustainable resource involved Domain C is likely to be weak. The advice is to think about this aspect at the start and then tailor the research approach to achieve a plan for the future.

Comments on Assessment Criteria

Domain A

There was good evidence that students are applying their knowledge from the course to their research and this sets them up admirably for the theory examinations. However, care must be taken to make the theory relevant to the topic chosen for investigation. More selectivity was often needed.

Domain B

A wide range of techniques were used by some students. However, this was not the case for all and so some investigations did not score well in this domain or in **Domain C**.

Domain C

As usual, this was the weakest domain, mostly due to the lack of forward planning and often because of a lack of a limited resource being involved in the first place. It would help students to read the descriptors for this domain and ask themselves if they have fully considered the ultimate reason for their research, i.e. to produce a sustainable development plan.

ENVIRONMENTAL MANAGEMENT

Paper 0680/42
Alternative to Coursework

Key Messages

Candidates should:

- read the source material and the question carefully
- use data from either graphs or tables to help describe trends or patterns
- be specific in answers and avoid vague phrases
- label both axes of a graph with units

General Comments

This paper invited candidates to consider environmental issues and methods of gathering and interpreting data in the context of one country, Bangladesh. 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 described a very wide range of effects of cyclones on people. Most candidates were able to score full credit.
- (b) (i) Only a few candidates suggested that a full census would only be carried out every few years. Points about migration of people and changes in birth rate were the most commonly made suggestions.
- (ii) Nearly all candidates completed the calculation correctly.
- (iii) Most candidates correctly selected the months and then gave supporting reasons for their choice. A small number of candidates did not seem to appreciate that air drying was an important part of the process.
- (iv) Most candidates carried out the calculation correctly.
- (v) Most candidates gave at least one good reason to explain why the brickmakers had to work for seven days a week.
- (c) (i) Candidates nearly always completed the table correctly.
- (ii) Nearly all candidates correctly identified the factories that matched the given statements.
- (iii) The heading on the last column stated the number of whole bricks per tonne of coal. A small number of candidates rounded their calculated value up to the next whole number, which was not the correct approach on this occasion.

- (iv) Most candidates were successful in answering this question. Mistakes in the table were allowed for as an error carried forward. Only a minority of candidates used limited information from other columns to suggest answers that were not correct.
- (d) (i) This question asked candidates to describe the possible environmental problems caused by burning coal. Whilst many candidates identified carbon dioxide or sulfur dioxide and described problems specifically associated with these gases, others mentioned toxic gases vaguely and could not be given credit.
 - (ii) Many candidates did not seem to appreciate the importance of the word 'sustainable' in this question. Some candidates suggested that mud came from the sea.
- (e) (i) Most candidates correctly calculated the number of bricks needed to complete one section of the building.
 - (ii) Many candidates correctly multiplied their answer to part (i) by four.
 - (iii) Nearly all students suggested that more bricks needed to be ordered to allow for breakages.
- (f) Many candidates suggested that imported bricks would be more expensive than locally made bricks. Many other points worthy of credit were seen regularly.

Question 2

- (a) (i) Most candidates identified that July had the highest rainfall. However, answers often contained errors such as suggesting July had 16 wet days rather than 12. Only a few candidates made further comments worthy of full credit.
 - (ii) The tables presented nearly always had headings with units. However, many candidates did not rearrange the data in the correct time sequence.
 - (iii) Many candidates suggested that house one suffered from poor draining but only a small number of candidates suggested a possible reason for the slow drainage of water.
 - (iv) Nearly all the candidates plotted a bar graph. However some candidates lost marks by not clearly labelling both axes.
 - (v) The graph did not show any clear pattern. Some candidates just described the increase and decrease in flooding without any further comment.
- (b) (i) Candidates were asked to suggest a district nearest the khal. Most suggested either P or R. No justification was needed on this occasion.
 - (ii) Most candidates that appreciated that oxygen was being supplied. They often managed to describe the possible consequences to the food web and the damage that would otherwise be done. Some candidates felt that adding carbon dioxide was important and just described its use in photosynthesis.
- (c) (i) Candidates found this question demanding as they found it difficult to suggest groups of people that would be linked to some of the information in the table. For example, there were only a few suggestions about asking water engineers or people living by khals.
 - (ii) Too many answers just suggested equal numbers of each group would make results 'reliable'. Better comments included that it reduces bias or allows valid comparisons to be made.
- (d) This question allowed candidates to show their knowledge and appreciation of how to overcome or limit the problems caused by flooding. A range of responses were seen, with all the points on the mark scheme regularly seen in candidate's answers.