

ENVIRONMENTAL MANAGEMENT

Paper 0680/12

Paper 12

Key messages

It is important that candidates read questions carefully, looking at the command words and then answer accordingly. More than one or two words are needed when the command word is Describe, Explain or Suggest. Some candidates did not include enough detail in their responses.

Candidates should take into account the mark allocations, shown in brackets, as a guide to how many points they need to make in the answer to each question.

General comments

There were a wide range of responses to the paper. There were some very good, well written scripts. Very few candidates left questions unanswered.

The standard of English was generally good.

Comments on specific questions

Question 1

- (a) Most candidates completed the table accurately.
- (b)(i) Many candidates answered in detail. There were good descriptions of the importance of a suitable site to hold the water, such as a valley with steep sides, a regular supply of water in the form of precipitation or rivers and few people living nearby.
 - (ii) There were some detailed explanations for this question. Some candidates considered a number of different ideas and explained their ideas clearly. Others developed fewer ideas in some depth, for instance the idea of the land being taken for the dam being most fertile farmland in the valley, close to the river for irrigation, and people losing not only their homes, but also the villages they lived in and their jobs, and being forced to migrate to a nearby city.

Question 2

Candidates found this question to be the most challenging of the six questions on the paper.

- (a)(i) Most candidates were able to complete the food chain. A small minority started the food chain with the consumer and ended it with the producer.
 - (ii) Most candidates answered this question correctly.
 - (iii) A majority of candidates suggested incorrect answers for the number of feeding (trophic) levels shown in the food web. It is possible that many of these candidates counted the flows of energy instead of the feeding levels.
 - (iv) Most candidates were able to state that the amount of energy passing along the food chain decreased. There were some excellent answers that went into considerable detail about how energy is used in life processes. A number of candidates referred to the 10% rule although some presented a muddled version of what comprised the 10% and 90%.

- (b) This question was answered well by the better performing candidates. Many candidates wrote about the characteristics of vegetation in the taiga instead of the tundra. Some wrote at length about the climate of the tundra, sometimes with references to vegetation which did not answer the question. A small minority of candidates wrote about animal life in the tundra. Better performing candidates gave clear, short descriptions e.g. “the plants grow sideways and close to the ground” and “plant roots are short”, followed by clear explanations e.g. “to protect them from the strong, cold Arctic winds” and “to stay above the permanently frozen sub soil”.
- (c) This question was well answered by most candidates.

Question 3

- (a) (i) The table was completed correctly by most of the candidates. A number of candidates named nuclear power and hydro-electric power as fossil fuels.
- (ii) A considerable number of candidates seemed to overlook the phrase “government strategies” in the stem of the question. These candidates wrote about how individuals could conserve fossil fuel supplies instead of answering the question as set. Better answers included ideas about governments developing alternative energy resources and encouraging the use of public transport.
- (b) Many of the reasons given lacked the required precision. For example, references to “dangerous gases”, “pollution”, “unsafe” and “dangerous” were too vague. Better performing candidates gave detailed suggestions about the cost of commissioning and decommissioning nuclear power stations and the problems associated with nuclear waste.

Question 4

- (a) (i) Most of the candidates plotted the temperature and precipitation data on the graph accurately and joined the temperature lines.
- (ii) A majority of candidates answered this question correctly.
- (b) All candidates attempted this question with a majority correctly identifying at least two of the three instruments.
- (c) This question proved challenging for candidates. The best answers referenced the sustainable use of water, the way water was directed at the roots so that most was absorbed by the plants, and how this reduced the risk of salinisation. The weakest answers were statements about trickle drip irrigation being cheaper and crops growing faster.

Question 5

- (a) (i) A majority of candidates answered this question correctly.
- (ii) Most of the candidates answered very accurately. A minority appeared to measure the distance but did not to convert their measurement into kilometres.
- (iii) Most of the candidates calculated this correctly.
- (b) Most candidates were able to give at least one reason. There were a number of candidates with strong knowledge of the effect of ash on the engines of planes.
- (c) This was generally answered well with a range of acceptable answers.

Question 6

- (a) (i)** Some candidates described the distribution of malaria shown on the map in very general terms. References to “South America”, “Africa” and “Asia” were considered too imprecise. A minority of candidates made use of the 40° N line of latitude.
- (ii)** Candidates found this the most challenging part of the question.
- (iii)** Most candidates answered this question correctly.
- (b)** Most candidates were able to suggest at least one reason in answer to this question. In some cases, the reasons suggested needed to provide more detail or explanation.

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Paper 0680/22

Paper 22

Key Messages

A significant number of candidates ignored the resource when answering questions.

A number of candidates ignored important words in the questions. For example, **Question 2(b)(iii)** was about the growth of cities, yet candidates wrote about factors affecting whole countries. In **Question 2(c)**, many ignored the 'per person' so their answers about growing populations were incorrect.

There were several instances of candidates stating something is affected without saying in what way it was affected. This was particularly an issue in relation to **Question 1(d)(v)**.

General Comments

All candidates appeared to have sufficient time to complete the examination and there were very few occasions where no attempt was made to answer a question. Numerical and graphical questions were well answered by most candidates, as were the questions relating to pollution and health in cities. Candidates therefore did better on **Question 2** than on **Question 1**.

Candidates found the last part of each question challenging. Both questions asked, 'How far do you agree with this statement?' Many candidates stated complete agreement or disagreement, rather than attempting to look at reasons in support and against. Therefore, answers were often unbalanced and ignored major problems with either full agreement or disagreement. For example, on **Question 2(d)** most candidates ignored the fact that many countries or many parts of countries were nowhere near the sea and that the water would have to be pumped uphill from the coast, but stated that desalination was the only answer to problems of water storage. Candidates need to develop ideas for and against if possible and then decide on their level of agreement.

Comments on Specific Questions

Question 1

- (a) Good answers noted the proximity to the Arctic Circle and that the zone was in the north of the continents of North America, Europe and Asia. A few correctly noted that the zone only occurred in the Northern Hemisphere; stating it was 'above' or north of the Tropic of Cancer was not specific enough.
- (b)(i) Most candidates correctly stated 34 °C. A number of candidates calculated the average temperature rather than the range.
- (ii) The best answers gave descriptions that created an image of the climate in the mind of the reader, commenting on the number of months below freezing, the short, warm summer and the distribution of precipitation. Some candidates gave general descriptions without using the data or gave month by month accounts which did not describe the climate as shown.
- (iii) Most candidates correctly gave 5 months.
- (iv) Candidates found this question to be challenging. Better performing candidates realised that growing crops and/or fodder would be difficult and have low productivity.

- (c) (i) The best answers described what the photograph showed in terms of cone shaped trees, and the plants in the foreground. It was not possible to see needle-like leaves or moss and lichen in the photograph provided. Some candidates explained adaptations which the question did not ask for.
- (ii) There were many good answers; few candidates managed to explain five adaptations.
- (d) (i) Many candidates knew that an ecosystem involved both biotic and abiotic components and some went on to state their interdependence.
- (ii) This was one of the best answered questions on the paper. Candidates who performed less did not use examples from the diagram, as the question required.
- (iii) The best answers covered decomposition, recycling of nutrients, fixing of nitrogen and the aeration by earthworms. Some candidates limited their explanation to simply mentioning the role of bacteria and fungi in decomposition.
- (iv) This was answered well by candidates.
- (v) Better performing candidates took a logical approach to answering this question and followed through the impact of reduced food for primary consumers. The best answers noted that the logging of the trees would allow more grasses and shrubs to grow, which would provide more food for many herbivores. Candidates who performed less well stated that herbivores such as elk would be affected but did not go on to state how they were affected.
- (e) The best answers showed awareness of means of conservation of forest, such as selective logging and replanting. The very best identified how even these approaches would cause some harm to the ecosystem, for example if one species of tree is logged, those insects and animals that depend on that particular species of tree would still suffer. A number of candidates mentioned the problem of ensuring logging is selective. Candidates often just repeated answers to the previous question without directing them at the requirements of this question or just made a few brief statements that either totally agreed or disagreed with the quote in the question.

Question 2

- (a) (i) and (ii) Both questions were usually answered correctly; a few responses located the x for Lesotho at 38% rather than 28%.
- (iii) Many responses noted the negative correlation, which was described in many different ways.
- (iv) Comparatively few candidates realised that as an ever increasing percentage of the population live in urban areas, there are fewer people left to migrate to the cities.
- (b) (i) Most candidates answered this part correctly. Some needed to read the question carefully as they gave figures for Kolkata rather than for Dhaka.
- (ii) The question required a comparison. The better performing candidates did this; noting how the population of Dhaka grew slowly up to 1960 or 1970 and then at an increasing rate, compared to the steady rate of increase of Kolkata. Candidates who performed less well did not make a comparison and wrote individual unconnected statements. These candidates did not note the changes in growth rate of Dhaka or quote relevant comparative statistics from the graph.
- (iii) The better performing candidates realised that the growth was due to rural to urban migration and then gave reasons for this migration, such as higher incomes in the cities. Some excellent answers discussed the rapid fall in death rates compared to a slower decrease in birth rates in the cities. Quite a few candidates did not read the question carefully and simply wrote about population growth of developing countries.
- (iv) Some excellent answers were seen, identifying sources such as more vehicles, industry and power stations and then going on to give details of the pollutants, such as sulfur and nitrogen oxides, particulate and lead for air pollution and sewage and heavy metals for water pollution. Candidates who performed less well identified basic sources without extending to details of the pollutants.

- (v) There seemed to be a common misconception that water polluted by sewage would lead to malaria and bilharzia. Good answers correctly linked untreated sewage to cholera, for example, through drinking contaminated water or eating contaminated fish. The impact of air pollution on breathing difficulties such as asthma and the impact of lead from vehicle exhausts on brain development were well known.
- (c) (i) Nearly all the candidates were able to calculate the average daily water consumption per person.
- (ii) A considerable number of candidates ignored the 'per person' in the question and therefore provided incorrect answers based on growth of population. The best answers understood that Bangladesh was less wealthy and so lacked the appliances, such as washing machines, that use a lot of water, and had poorer access and availability of water than USA. Other good answers focused on USA being more industrialised and more wasteful.
- (iii) The 'per person' aspect was ignored by many candidates. This led to incorrect answers concerning the growth of population. The best answers recognised that consumption was likely to increase mainly in countries as they developed and became more industrial and wealthy and gave relevant examples.
- (d) Some candidates did not appreciate sea water is not readily available in many parts of the world and will also require energy to pump the water uphill for it to be of use. Candidates who performed less well usually agreed with the statement without reservation. Some candidates commented that renewable energy use would overcome the issue of greenhouse gases resulting from high energy requirements. Better candidates noted that oil rich countries such as Saudi Arabia could afford this, but that many developing countries could not. The best answers looked at alternatives methods of providing and/or conserving water, as well as the advantages and disadvantages of desalination.

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Paper 0680/42
Alternative to Coursework

Key messages

- Candidates should be reminded to read the source material and the question carefully in order to answer the question set precisely.
- Where data is given in the form of graphs or tables, candidates should make use of this to help describe trends or patterns

General comments

Generally most candidates understood and made good use of the source material and their written responses were clearly expressed. The mathematical and graphical questions posed some challenges for a minority of candidates.

Candidates appeared to have no problems completing the paper in the time available with most candidates answering all questions.

Comments on specific questions

Question 1

- (a) (i) Candidates answered this well.
- (ii) Candidates described a wide range of possible reasons with many candidates recognising that the oil resource was going to run out at some point in the future.
- (b) (i) Most candidates completed a suitable calculation.
- (ii) Most candidates gave good answers to this question.
- (c) (i) Nearly all the candidates completed the graph correctly. A small number did not provide an answer to this question.
- (ii) Most candidates gave a good description of the trend shown by the graph. Only a small number of candidates identified that the electricity consumption increased after the rise in temperature. Only the best answers used data from the graph to illustrate this.
- (iii) Many candidates referred to the changes of temperature during the year and went on to link this to changes in use of air conditioning and refrigeration.
- (d) (i) Nearly all candidates found this a demanding question but there were strong answers from the better performing candidates.
- (ii) Most candidates gave at least one further advantage of dams.
- (iii) This question proved challenging for a number of candidates. Some of these candidates incorrectly shaded the whole area below the land surface.

- (e) (i) Most candidates gave at least one acceptable answer to this question.
- (ii) Most candidates gave at least two good answers to show why improved farming would be of benefit to the government.
- (iii) Many candidates identified the possibility of soil erosion or eutrophication due to over use of fertilizers. Only a small number of candidates went on to give further details to either of the problems.

Question 2

- (a) (i) Most candidates completed the table correctly.
- (ii) Most candidates identified the period of April to September correctly.
- (iii) Most candidates correctly identified August and then gave a suitable reason for their choice.
- (iv) Many candidates correctly suggested that the IUCN will help to raise awareness of the problem. A number of candidates wrote that the IUCN is responsible for passing laws to help conservation, whereas this can only be done by the government of a country.
- (b) (i) Most candidates completed the table correctly.
- (ii) Only a small number of candidates identified that the other factors were very consistent and only salinity changed significantly between pools.
- (c) (i) Most candidates correctly identified two advantages of trap C.
- (ii) Candidates often described a suitable method of measuring fish length. The unit (mm) was often omitted from their answer.
- (d) (i) Most graphs were completed correctly. Candidates who performed less well showed some plotting errors and incomplete axis labels.
- (ii) Most candidates identified the length of fish at the required salinity. There were only a few examples of misreading the scales.
- (iii) The anomalous point was often clearly indicated and nearly all candidates attempted this question. Some circles incorrectly enclosed more than one point.
- (iv) Some candidates were able to describe the pattern shown by the graph.
- (v) Good responses included a detailed explanation for their opinion.
- (iv) Most answers suggested repeating the experiment.
- (e) Nearly all the candidates gave answers suggesting helping protect wildlife and encouraging tourism.