www.dynamicpapers.com

ENVIRONMENTAL MANAGEMENT

Paper 0680/12
Paper 1 Theory

Key messages

- Many candidates showed knowledge of a wide range of topics and were able to use and interpret data confidently.
- Some responses were too general in their approach and not specific enough to gain credit as this level. Candidates should take the opportunity to provide sufficient context to any comments made.
- The 6-mark (level of response) question at the end of the paper showed good planning from many respondents; however, candidates are reminded that they should reach a conclusion within their answer as well as providing supporting examples as evidence.
- There was a general misunderstanding of the action and impact of herbicides; these were often confused with insecticides or fertilisers.

General comments

There was clear evidence of candidates carefully reading the question before commencing to answer; this resulted in many focused responses and few irrelevant answers.

Most candidates handled data correctly and used the information provided within questions to help form their answers. Candidates are expected to provide further detail rather than writing out the text as a direct copy of the source material.

There was evidence of a good range of knowledge across the unit specification. Some aspects caused confusion, notably the impacts of increasing meat consumption, the effect on the total population of a lower birth rate and the causes of earthquakes.

Comments on specific questions

Section A

Question 1

(a)(i) Many candidates successfully named the layer in the Earth's atmosphere which contained the ozone layer. Most incorrect responses named other layers.

(ii) Many candidates correctly identified that levels of ultraviolet light reaching the Earth's surface increased with damage to the ozone layer. Many correctly identified that this could lead to skin cancer and cataracts. Less precise answers such as '*cancer*' and '*can harm humans*' were not given credit. There was some conflation of ozone depletion with global warming.

(b) Whilst many candidates correctly stated that the atmosphere has no international boundaries, fewer developed the idea further.

www.dynamicpapers.com

Question 2

(a) Many candidates knew some details of how typhoid is spread and named poor sanitation or lack of a potable water supply. Fewer candidates specified aspects such as crowded conditions or lack of access to medical services which are also common in informal settlements.

(b) Most responses identified cholera as being a water-borne bacterial disease. The most common incorrect response was malaria.

Question 3

(a)(i) Most candidates correctly sketched the shape of the population graph. The biggest challenge was clear labelling of the sections, and the most common error was to label the lag phase in the region where the population was near to its carrying capacity.

(ii) The most common responses were linked to the availability of resources.

(b) Population pyramids were drawn with varying levels of accuracy. Marks were awarded for the overall shape and for the inclusion of different age categories for male and female.

Question 4

(a) Many candidates successfully interpreted the diagram of the carbon cycle to identify parts A and B correctly. A common mistake in Part C was to refer to the process rather than the agent of the process (decomposers).

(b) Most candidates understood the photosynthesis reaction and correctly named the energy source of the process.

Section B

Question 5

(a) The majority of candidates identified two distinct advantages and one limitation. A few responses lacked precision, e.g. '*cost*' or '*does not cause pollution*' and were considered too generic to be awarded marks.

(b) Most candidates correctly interpreted the graph to describe global energy consumption and often supported this with the correct use of data. Most identified the need to describe the trends rather than detailed information about a specific fuel type.

(c) Most responses identified the link to personal wealth and the opportunity to buy and use machines which use energy. Some responses lacked clarity with too much generalisation being used rather than specific examples being given.

(d) Common themes included turning off devices when not in use or using more energy efficient devices. The use of insulation was also commonly included. Misunderstanding of the question was evident in some responses with the inclusion of the use of other energy sources (such as solar panels) rather than ways to reduce energy consumption.

Question 6

(a)(i) Most candidates plotted the missing bar correctly on the graph. Most also made the bar the same width as the other bars already present.

(ii) Candidates generally recognised that the USA had larger CO_2 emissions than Nepal. Some did not make the link between CO_2 emissions and climate change. There was good use of data to support the answers.

(b) Most candidates successfully interpreted the data to identify the months with the greatest number of landslides.

(c)(i) Most candidates calculated the percentage correctly.

(ii) Many responses included a range of points which were worthy of credit. Common themes included the loss of homes and damage to infrastructure. More detailed answers linked these to the issues of loss of food supplies, jobs and damage to the local economy.

(iii) The majority of candidates suggested two distinct reasons why people continued to live in the area. Family links were commonly mentioned. There were some responses which referred to living near a volcano rather than an area of flooding / landslides.

(d) This question required candidates to review the sufficiency and validity of sampling techniques in order to form a conclusion. Some candidates responded with an answer which just repeated the source material. Others identified the limitation of the statistical analysis and the weaknesses in the sampling methods.

(e)(i) This question required analysis of the information to form a conclusion. Stronger responses identified reasons why the weed spread rapidly. Repeating the text without any development or amplification did not receive credit.

(ii) There were a wide range of potential answers that were given credit, but some responses were too generic to obtain full marks. There was some confusion over the differences between herbicides and insecticides. Similarly some responses confused fertilisers with herbicides and made an inaccurate link to eutrophication.

(f) (i) The majority of candidates correctly described the differences between subsistence and commercial farming. There were some descriptions which tried to link a specific farming method to either organic or intensive production.

(ii) This question provided the candidates with a large amount of stimulus material to work with. It is expected in this type of question that the answer should refer back to this information but develop the information further or use it to provide justification for the candidate's opinion. This was done successfully in some of the stronger responses. Weaker responses provided a direct copy of the text without development.

Question 7

(a) The majority of candidates correctly identified the two plate boundaries shown in the diagram. Most candidates used the subject-specific terminology even if they incorrectly identified the boundary type.

(b) Many candidates wrote extensively on the causes of earthquakes, but the quality of the information was variable. Some responses described different types of plate boundary rather than the factors which cause the earthquake to happen, such as the build-up and release of pressure from the friction of plate movement.

(c)(i) This question required the candidates to draw conclusions from a table of information. This was successfully done by most candidates who described the different relationships clearly.

www.dynamicpapers.com

(ii) A wide range of responses and ideas were given credit although it was expected that three distinct points were made to obtain full marks. Some candidates provided numerous examples of one method. Some responses identified the role of monitoring for tsunamis but failed to mention the linked requirement of warning the population.

Question 8

(a)(i) The majority of candidates correctly wrote about the trends in the data (rather than referring to each year) but many incorrectly identified Oceania as having the greatest meat production. Most responses correctly described the overall trend from 1960 to 2017 even if the regional data was misinterpreted.

(ii) Most candidates correctly identified that demand was increasing with an increase in global population. A few responses reflected upon changes in diet and rising incomes, both of which were also given credit.

(b)(i) The climatic benefits of eating a plant-based diet were not widely stated. Some responses correctly identified the link between keeping animals and methane production (a greenhouse gas). Few responses linked the answer to the efficiency of protein production and the land required. Some incorrectly stated that the growing and harvesting of crops would reduce the amount of oxygen production by photosynthesis.

(ii) Some responses linked concepts such as the reduction in demand for resources which would result in reducing the amount of greenhouse gas emissions.

(c) The Level of Response question on this paper allows candidates to write extensively about a particular topic, including the development of specific points with examples as well as a range of alternative viewpoints. It is expected that candidates will develop a conclusion which is supported with valid information.

Many candidates wrote cohesive responses that addressed both support and the alternative views to the statement.

The best responses identified both the impact of education as well as an evaluation of the effectiveness of alternative methods of controlling the population. Many correctly identified traditional and cultural pressures that may impact on the effectiveness of strategies.

www.dynamicpapers.com

ENVIRONMENTAL MANAGEMENT

Paper 0680/22
Paper 2 Management in Context

General comments

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

Key messages

Candidates should:

- Read each question carefully before starting to write a response. Underlining key command words and words which indicate the context of the question is a useful strategy.
- Show working when completing calculations and estimates, especially when more than one mark is available for the answer.
- Understand the meaning of the command words, describe, discuss, explain, state and suggest.
- Plot graphs and charts carefully. If a *y*-axis is truncated (does not start at 0), include the false origin number; alternatively, show there is an axis break with a zig zag.

Comments on specific questions

Question 1

(a) Many candidates correctly calculated the percentage of the total population of Honduras living in Tegucigalpa and Pedro Sula in 2019.

(b) Most candidates suggested at least three causes of landslides. There were many detailed responses describing how earthquakes, heavy rain and deforestation can cause landslides. A minority of candidates wrote about the effects of landslides.

(c) This question required candidates to use the key to the diagram to estimate the predicted area of planned housing in the capital city by 2031. Those who showed their working were sometimes able to gain partial credit when the final answer not accurate.

(d)(i) There were many correct responses suggesting why type **B** houses are mostly found in unplanned (informal) housing areas. Many responses developed ideas about the poverty of the people living in the houses and the quality of the materials used to build them.

(ii) This question asked candidates to suggest reasons why living in type **B** housing is less healthy than living in type **A** housing. Some responses focused on the lack of basic amenities such as hot water. Other responses explained how unsafe water and poor

sanitation could cause diseases such as cholera and dysentery. Many responses concentrated on the poor quality of the building, with descriptions of how it could easily fall on the inhabitants and insects such as mosquitoes could enter and spread disease. Several candidates explained that it was difficult to keep the house dry and clean.

(e)(i) Some candidates answered this question correctly. Many candidates suggested that the three poor housing areas were selected for the project because they had low incomes. Some gave details about the aims of the project.

(ii) Of key significance in this question was the word, 'volunteered'. Most responses incorrectly focused on the importance of being trained. A small number referred to people being willing to be trained or not needing to be paid.

(iii) Some candidates correctly wrote about the benefits to the poor peoples' diets, others about how different plants benefitted the soil. A minority of candidates misread the question and gave the names of five vegetables.

(iv) This question required candidates to suggest the benefits of using old car tyres to grow vegetables. Most candidates gave detailed answers describing how old tyres were easily found and recycling them was good for the environment, and people, as it meant the tyres would not be burnt releasing gases, chemicals, and smoke. They were also either free, or cheap, and their use meant that plant pots did not have to be purchased. Some candidates wrote about how the tyres kept the soil and water in place.

(v) There were varied responses to this question which required candidates to use the results of the questionnaire in the table to discuss whether the urban agriculture project was successful. The strongest responses connected the percentages given in the questionnaire to the initial stated aims of the project. Weaker responses restated the percentages in the questionnaire without considering the results or wrote in vague terms about the project.

(vi) Most candidates suggested that growing vegetables benefitted the families because eating them meant they were healthier. Others wrote that the families income improved because they did not have to buy vegetables and might even be able to sell some.

Question 2

(a)(i) The responses to this question requiring a description of the life cycle of the malaria parasite were variable. The stronger responses showed a sound understanding of the life cycle. Some of the weaker responses muddled the life cycle of the malaria parasite with that of the Anopheles Mosquito. Some responses confused malaria with other water-related diseases.

(ii) Candidates with strong responses to **2(a)(i)** often correctly stated four strategies to control malaria. The candidates with unclear answers about the life cycle of the malaria parasite often listed inappropriate strategies such as those used to control cholera.

(b)(i) Most candidates plotted the data correctly as a bar chart and fully labelled both axes. Some candidates did not include the unit 'millions' on the *y*-axis. Others used less than half the space provided or plotted an incorrectly truncated graph (where the *y*-axis scale did not have the false origin labelled or did not have a zig zag to indicate an axis break). Some graphs had bars of different widths and some candidates did not use a ruler.

(ii) Many candidates correctly stated that the money spent on control of malaria over the nine-year period fluctuated.

www.dynamicpapers.com

(iii) Many candidates correctly calculated the amount of money the government of Honduras provided for control of malaria in year 6. Some gave the answer as 0.84 without 'million'.

(iv) Some candidates thought it was possible to eradicate malaria from Honduras by 2030, others thought it was not. A number of candidates put both points of view. There were some thoughtful responses displaying clarity and relevant supporting points. Several candidates incorrectly interpreted the graph as being about the money spent on the eradication of malaria each year.

(c) Stronger responses to this question stated that the capital city had a lower rainfall and was an urban area so there were fewer sources of stagnant water for the mosquitoes to breed in. The temperature was also lower making it too cold for mosquitoes to survive. The weaker responses stated that the climate was not suitable without giving any supporting information from the table.

Question 3

(a)(i) The majority of candidates used the information in the table to complete the sentences correctly. The most common errors were thinking **D** was the dam with the greatest volume used for water supply and miscalculating the total maximum volume of water in the five dams.

(ii) Most candidates suggested at least two benefits of farming near dams. The most common benefits suggested were flood control, water for irrigation and hydroelectric power.

(iii) Many candidates correctly described the economic benefits of a multipurpose dam compared with a single-purpose dam. The strongest responses described how in addition to storing and supplying water multi-purpose dams could be used for hydroelectric power generation and tourism, thereby also providing employment. Weaker responses described how the dam had different purposes without giving examples.

(iv) Most candidates described how hydroelectric power is used to generate electricity. A minority of candidates confused the hydroelectric system with other systems, such as geothermal and tidal.

(b)(i) This question required candidates to describe the environmental impacts of building a dam. Most candidates described several impacts such as deforestation, loss of habitat, loss of biodiversity and the effect a dam could have on food chains.

(ii) Few candidates correctly suggested the economic impacts of borrowing money from other countries. The most common correct responses referred to repaying the loan, paying interest and being in debt.

(c)(i) This question gave candidates information about plans to build new wind turbines in Honduras and the minimum wind speed required. Many candidates gained full credit by suggesting that the location on the map had high wind speeds throughout the year. Weaker responses stated that the location was 'suitable' without providing reasons or supporting evidence.

(ii) Some candidates suggested one problem with using the location on the map for the site of the wind turbines. The most common answer referred to problems associated with the long distances to Tegucigalpa and San Pedro Sula.

(iii) Nearly all candidates correctly stated two renewable energy sources, other than hydroelectric and wind power. A small minority named the excluded wind power, and some gave nuclear energy as a renewable energy resource.

www.dynamicpapers.com

Question 4

(a) Most candidates gave at least two reasons why some known deposits of minerals are not extracted. The most common reasons were the cost of extraction, geology, accessibility, and the sustainable development of mineral resources. Some responses mentioned the need for an environmental impact assessment to be carried out, or a failed EIA.

(b) The majority of candidates correctly suggested one risk to the health of humans from antimonite dust particles.

(c)(i) Most candidates explained that sample **P** was a control for the investigation or gave details of how it was needed for comparison to prove that the antimonite dust affected the wheat seedlings.

(ii) Most candidates correctly described the trend shown by the results.

(iii) Most responses suggested at least two factors that the scientist should control in the investigation. A minority of responses included details about the drying process in the oven.

(iv) Many candidates correctly suggested two other ways of measuring the growth of the wheat seedling samples. The height of the seedlings, the length of the roots and the number of leaves were frequently suggested.

(v) Only the strongest responses candidates suggested two limitations of the scientist's investigation. Some responses suggested only one.

(d) This question asking candidates to describe how toxic substances, such as antimony, can pass along a food chain was generally well answered. Stronger responses described the process of bioaccumulation with reference to a producer, primary and secondary consumers (or herbivores and carnivores) and a top predator.