CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0680 ENVIRONMENTAL MANAGEMENT

0680/22 Paper 2, maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

General notes

Symbols used in Environmental Management mark schemes.

/ separates alternatives for a marking point – other valid idea are also credited

; separates points for the award of a mark

[3] indicates the number of marks available

italic indicates that this is information about the marking points and is not required to gain credit
italic text is also used for comments about alternatives that should be accepted, ignored or rejected

ora or reverse argument – shows that an argument from an alternative viewpoint will be credited

AW alternative wording, sometimes called 'or words to that effect' –
AW is used when there are many different ways of expressing the same idea

( ) the word / phrase in brackets is not required to gain marks but sets the context of the response for credit
e.g. (nuclear) waste – nuclear is not needed but if it was described as a domestic waste then no mark is awarded

<u>volcanic</u> underlined words – the answer must contain exactly this word

ecf error carried forward – if an incorrect answer is given to part of a question, and this answer is subsequently used by a candidate in later parts of the question, this indicates that the candidate's incorrect answer will be used as a starting point for marking the later parts of the question

1 (a) (i) 1 North America 2 Oceania 3 Europe 4 Latin America

(ii) $26,210;

(iii) values plotted on map matching the bands of shading;
key completed which matches the colours / shading used
quality, appearance and value of shading and completed

(iv) 1 *good fit*
between North and Latin America is best because tw
also between Europe and Africa with one shading zone difference (and Africa has the lowest value so big difference in actual numbers); likewise need to separate Oceania from Asia;

2 *less good fit*
Asia is the obvious example because its average value is low, but some parts such as Russia and Japan are in the developed North; line splits the continent in half;

3 *overall fit*
good fit in separating out the developed continents of North America and Europe from the developing continents of Africa and Latin America i.e. in western half of the map. Line less valuable in the east of the map where its course is forced to change from running east-west to north-south to accommodate the high development of Japan and Australia, to some extent making the North-South world label less valid;

1 mark for each of parts 1, 2 and 3

4th mark can be distributed to 1 and 2 as well for a particularly precise answer **[4]**

(b) (i) average income per head; **[1]**

(ii) much more likely to suffer from water-borne diseases such as diarrhoea, typhoid and cholera (*i.e. 1 mark for recognising the importance of water-borne diseases*);
since these spread as a result of drinking contaminated water;
also caught by washing food / pots and pans / hands and face in dirty water;
allow one clear reference to table such as Japan with highest clean water percentage and highest life expectancy;

Up to the full 3 marks

Related points provided that water-borne recognised;
these diseases easily spread to other people in areas with poor sanitation;
young children are most at risk with lower immune systems;
disease reduces work ability of parents / increases poverty with less chance of affording medical attention;

Maximum 1 mark for these if water-borne not established; otherwise 2 marks possible.

References to water-based diseases such as bilharzia can also be made relevant by stressing that it is most likely to be caught by people working in polluted waters.
Others such as Guinea worm are caught by people drinking contaminated water.
Up to the full 3 marks, although the marks are harder to earn because the focus must be kept on access to clean (safe) water.

Water-bred diseases such as malaria are not relevant to

3 × 1 mark for points made, bearing in mind restrictions s

(iii) strongest support from values for China–Japan sep
difference between average income per head (over US$
life expectancy and access to safe water the relative diffe

average income per head (especially) would suggest th
placed north of the line / that it no longer belongs in the S

Russia's position in the North can be questioned – life expectancy is well below that of all the others, even China, despite the very favourable people per doctor ratio;

How well?
Individual candidates can hold different overall views, which are capable of being justified by the data.
The best view is that the line has its uses for splitting the world up into a simple two-fold division, but that at the country level there are always likely to be exceptions;

Quality of explanation based on study of measures in table = 1, 2 or 3 marks
Attempt with support to answer 'How well do the differences ....?' = 1 or 2 marks **[4]**

(c) (i) accurate plot of pie graph;
key completed for shading / colours used in pie graph; **[2]**

(ii) developing countries are only receiving 10% of final price / small amount of the total
– what the coffee farmer in the tropics receives is the only source of income for the developing country;
Or
90% of the final price goes to companies in developed countries – for transport, manufacture and retail; **[1]**

(iii) guaranteed price to the farmers for their crops, even when world market price falls – farmers know the minimum price they are going to get for their crops, which allows to survive when world market price falls. No longer at the mercy of world market prices over which the farmers have no control, and which change wildly;

helping them to find a market for their produce by putting them in touch with overseas importing companies from small producers – opening up a market for their produce, again safeguarding their income;
Or
1 mark for describing the way (from the source);
2nd mark for explaining the advantage of Fair Trade; [2]

(iv) *Ways referred to include*
community projects, outside toilets leading to improv canteens.
Explanation depends on choice.
e.g. improved sanitation reduces risk of diseases spr reducing their work productivity;
community canteens and a proper meal improves rural to devote more time to productive activities; children mor the attendant social and economic benefits;

1 mark for naming supported by only outline explanation
2 marks for fuller explanation related to the named way. **[2]**

(v) *big companies not interested in taking bananas from a producer with only two hectares of land – suggestions include:*
would need to deal with too many different producers to obtain big amounts needed (compared with dealing with one large plantation owner);
small producers less able to guarantee reliable quality and consistent quantity;
more interested in profits than in helping local communities and paying farmers more;

Realises what the question is asking and/or identifies the most relevant comment = 1 mark
Understands the question well and make one or more valid suggestions = 2 marks **[2]**

(d) (i) A – F (food aid)
B – N (non-governmental aid)
C – G governmental (bilateral) aid
1 mark

(ii) A – short-term
B – long-term
C – long-term
1 mark

(iii) A – unsustainable
B – sustainable
C – *allow either answer; instead mark this answer in part* **(iv)**
1 mark **[3]**

(iv) *If unsustainable*
environmental and ecosystem damage for their creatio
well looked for housing and good farmland, are of some r
sediments build up in lake behind dam, its effectivene
below dam deprived of water and silt with further
downstream, water often used many kilometres away i
leading to soil salinisation.

If sustainable
large dam will provide large water / energy supplies for
water supplies in areas with dry or unreliable climates,
allowing reclamation of desert land for food cultivation, assuring food and clean water supplies, encouraging economic development benefiting future generations.

Valid explanation for viewpoint chosen – 1 or 2 marks according to number of points made, or for one point well elaborated. **[2]**

(v) *Advantages*
alleviates immediate suffering after a natural disaster;
can be a life saver for poor people badly affected;
well targeted development aid allows improvements that poor villages people could otherwise not afford;
examples of these such as deep wells, small dams, clinics, schools;
improve infrastructure for longer term economic development;

Points made such as these; 2 × 1 mark each

Disadvantages
fosters dependence on outside help which cannot last for ever,
big money can be spent on large projects which benefit only a few people,
some 'tied aid' does not target the real needs of people or countries,
aid does not always reach remote rural communities where it is most needed.

Points made such as these; 2 × 1 mark

Allow 3:1 or 1:3 ratios provided that either answer includes reference to a specific example of a project, or named countries and relevant aid. **[4]**

(e) (i) Award 1 mark if the name of a country, or area or resort in a developing country is sufficiently precise. Country names such as India or Brazil would not be enough, but holiday islands such as the Maldives, Mauritius and Barbados would be acceptable. Otherwise hold back the mark at this point; take the name into account when marking the second part.

(ii) tourist attractions, either natural or human, and related to
up to 2 further marks with 1 mark already awarded in **(i)**
up to 3 marks if definitely related to the area name insufficiently precise for the mark in **(i)**

How managed for a sustainable future?
Controls on destruction of the natural environment, suc
Biosphere reserves; management and maintenance;
training guides; building eco-lodges; ecotourism initiative
up to 3 marks if definitely related to the area named in **(i)**.

Without a valid location named in **(i)***, the maximum mark for an answer of a general nature is 2 marks, either 1 + 1 mark for attractions and management,*
or more likely up to 2 marks for management methods used in tourism. **[5]**

[Total: 40]

2 (a) (i) c*limatic* – cyclone, drought and flood
tectonic – earthquake and volcano; **[1]**

(ii) *cyclone*
tropical storm, with very low pressure, associated with high winds and heavy rainfall;

earthquake
shaking of the ground surface; Richter scale measures the strength of the shaking;

flood
large amount of surface water covering areas which are usually dry; areas under water after heavy rains;

volcano
cone shaped mountain built up by eruptions of magma from the interior of the Earth;

4 definitions × 1 mark
5th mark for high levels of precision, or for the inclusion one or two particularly strong definitions. **[5]**

(iii) *Possible choices are all of them, except earthquakes.*

examples:
cyclone – done by improved weather forecasting; use of weather satellites to view cloud patterns and track the course of the storm; possible to give advance notice and estimate chance of land area being hit; there is time for people to be evacuated to shelters or to move inland; areas likely to be affected by cyclones are well known;

volcano – set up instruments to measure and monitor temperatures in and around the crater; use seismographs to register earthquake shocks prior to an eruption; look for visible signs of impending activity such as increased amounts of steam and gases coming from the crater;

No mark for the choice; all three marks describing how prediction can be done.
3 points along the lines of those suggested above; 3 × 1 mark **[3]**

(iv) earthquake – while zones at high risk of earthquakes are with plate boundaries, no one has been able to predict will occur, the big shock is often the first; the after-sho main earthquake, so there are usually no small warning impossible to know when tension has built up sufficient to

1 mark for choice of earthquake
2nd mark for explanation

For the others, no mark for choice; 2 marks can be awar
any of the others. The choice will control the likelihood of enough explanation for both marks.
volcanoes – past performance in eruptions may be no guide to the future; some do just erupt without notice and much history of doing so.
cyclones – can change course at the last minute, or strengthen suddenly threatening areas that thought they were safe.
drought – is perhaps the best choice, since it needs a longer time frame in which to occur. The annual rains might be late in arriving, but meteorologists cannot predict whether it will rain weeks or months ahead, later in the wet season.

Up to 2 marks for quality of the explanation. **[2]**

(b) (i) correct plots of 90% and 98% on the bar graphs;
key completed for developed and developing countries which matches what is shown in the graphs; **[2]**

(ii) *build shelters* – cyclone / also allow tsunami
train emergency rescue teams – earthquake
store of staple foodstuffs – drought
3 × 1 mark **[3]**

(iii) poverty – lack of money so that governments are unable to afford to undertake the advance precautions, nor do they have the resources to deal with the immediate aftermath during which lives could be saved. Only the rich can afford to do things for themselves such as stronger houses.

poverty cycle – people have been unable to recover from previous natural disasters, most noticeable in droughts; rainfall may have been below average for several years not giving a chance for food stocks to be built up.

government attitude – many other problems to deal with in developing countries;
hazard protection is a lower priority than in developed countries where the social role of governments is greater.
Some governments too corrupt to help people.

infrastructure and organisation – places affected are often more difficult to reach in developing countries making emergency aid arrival slower.

geographical location – some of the natural hazards, noticeably tropical cyclones, affect latitudes where developing countries are more numerous than developed countries; droughts are made worse in the tropics by high rates of evaporation

high rates of population increase – pressure on the lan even without natural hazards. Over-use of farm land, slopes, make the effects of some natural hazards worse.

cumulative effects of repeated / different natural hazards

poverty – maximum of 3 marks, unless two very se included as suggested above.

Otherwise – for each reason;
reason identified with outline explanation =1 mark
more detailed explanation (could be helped by reference to an example) = 2 marks
Any combination of 1 and 2 mark answers up to the maximum of four marks. **[4]**

(iv) some hazards give economic benefits such as volcanoes for fertile soils, minerals, tourism, and are naturally attractive places to live;
people own land and property in the high risk areas; they cannot give up what may be their only assets; massive investments in big urban areas, too big to abandon;
attached to the area; have learnt to live with the risk; some can afford precautions;
belief that it won't happen to them; hazard only happens from time to time, and may be not at all where they live;

Reasons / explanation – credit elaboration and use of examples.
Answer could refer to just one natural hazard with full elaboration, as long as it covers different reasons .
3 valid points made: 3 × *1 mark* **[3]**

(c) (i) big size of flood – nothing like it since the 1920s, almost 100 years ago. **[1]**

(ii) north-south flood zone around the River Indus;
extending the full length of the country from the northern boundary to the sea;
strip of flooded land is 200 km or more wide;
only a few areas west and east of the Indus in the north and centre not affected;
largest unaffected area in the south west / to the north and west of Karachi;
estimate of area of country affected such as about one quarter;

Points such as these taken from study of the map. 3 ×1 *mark* **[3]**

(iii) Rains in the mountains of the north were so great that the River Indus was still in flood 1000 km further south i.e. related to the size of the monsoon rains in 2010. **[1]**

(iv) People in the centre and south had plenty of time to mo areas on the sides of the rivers – it took time for the floo the River Indus. Only people in the mountain valleys of th had little warning.

Floods were on such a scale that nobody elsewhere in them, no matter how poor communications might be in ru

River valleys of large rivers such as that of the Indus are settlement – that is why so many people were affect countries like Pakistan are farmers.

Two different reasons such as these or one reason well elaborated.
2 × 1 mark **[2]**

(d) (i) *Short-term effect on cropland*
loss of crops; farmland covered by mud / stones / tree trunks; nothing to sell

Long-term effect on cropland
layers of fertile silt deposited, underground water stores filled up with waters making it more abundant for future crop use;

1 + 1 mark **[2]**

(ii) Key part of the report refers to the rural poverty trap; 'poor people with little before the flood were left with nothing after it' . Also 'Pakistani poor were the worst hit'. These, along with all the further information about losses to crops, animals, belongings and infrastructure, suggest little chance of getting out of the poverty cycle. This is reinforced by references in the report to lack of government help and aid from outside.

Great challenges in clearing the farmland of mud, stones, tree trunks and other debris for poor people without anything.

Only glimmers of hope in the report are the renewal of soil fertility from the silt deposits, plus more plentiful ground water supplies for irrigation in future years.

Choice and use of content from the report related to the question's poverty cycle theme, but with limited added explanatory comment – 1 or 2 marks

Good choice of content from the report, with the candidate's view about the chances of getting out of the poverty cycle supported and enhanced by comment – 3 or 4 marks **[4]**

(e) earthquakes – little danger from shaking of the ground in o rural areas, but in short supply in cities. Falling debris and c the damage and kill and injure people in earthquakes.

droughts – most significant for people who rely most upon rivers; they are mainly farmers needing water for crops and areas, domestic water use is much lower and water is often drought is less likely) or from man-made stores such as reser

Possible for candidates to use examples of other natural haz
floods – the previous example of floods in Pakistan showed the serious effects for farmers and rural communities
volcanoes – effects often worse in rural areas, closer to the the volcano, and farmland can be covered by lava and ash; eventually fertile, but it takes time to break down into soils that can be used.
cyclones – hazard for which effects on urban and rural areas may be equally severe;
coastal areas that take the direct hit can be devastated whether urban or rural.

Answer may be more about the different effects of natural hazards, only weakly related to the theme of differences between urban and rural areas. Or it may be all about just one natural hazard such as earthquakes – 1 or 2 marks

Answer better focused on the theme of variations between rural and urban areas, supported by references to at least two natural hazards and their differing effect 3 or 4 marks **[4]**

[Total: 40]