UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

0680 ENVIRONMENTAL MANAGEMENT

0680/22 Paper 22, 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 must be read in conjunction with the question papers and the report on the examination.

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1 (a) A – almost three quarters ocean (plot = 71%), or vice versa, or similar
B – fresh water makes up a tiny percentage of water on Earth (plot = 3%), or similar [2]

(b) (i) Reasonably accurate plot of ice and snow 75%, groundwater 25%, with thinnest of sectors less than 1% for lakes and rivers = 2 marks
Part accuracy = 1 mark
Labels or key for sectors = 1 mark [3]

(ii) [No further credit for tiny percentage of fresh water]
75% of fresh water locked up in ice and snow only available when these melt,
most located in cold places where few people live anyway,
easy to reach surface sources like rivers and lakes make up only 0.4 %,
more groundwater available but more difficult/costly to obtain than surface stores,
much of the groundwater is deep and out of the reach of humans,
comment about the value of rivers as water supply for people, yet they are only 0.1%,
high costs of desalination.

Three explanatory points like these. [3]

(iii) May be all human power, animal power such as sakeer/Persian wheel, mechanical such as tube wells; can be traditional or modern.
In some places it is just a matter of collecting water from springs or other natural surface outpourings.

Name with basic description = 1 mark
Further descriptive detail = 2nd mark [2]

(iv) Possible advantages of groundwater stores include reliability of supply, all-year/ all-season availability, not subject to short term weather variations, free from evaporation, clean/not polluted.

Two advantages given, 1 mark for each. [2]

(c) (i) Name of large dam or clear location (more than just a river name). [1]

(ii) References to advantages such as its many uses (electricity, irrigation water, water supply for people and industry), flood control, navigation, tourism.
Further detail such as increase in crop areas and yields, reclamation of desert land for crops, etc.
The 'explain why it was built' part of the question allows reference to broader economic factors, plus physical factors.

General advantages of large dams/nothing specific to named example, or no named example in part **(i)** – maximum of 2 marks.
General advantages of large dams that could apply to the named example, but lacks specificity – maximum of 3 marks.
Valid example in part **(i)** and includes specific information related to it – up to four marks. [4]

(iii) Examples of objections that might be used:
Economic – high costs, places the country in debt/need to borrow from rich countries, diverts spending away from other areas/projects.
Social – people often displaced from best land on valley floors, family disruption/loss of communities and traditions, not always as well compensated as promised, moved on to inferior land.
Environmental – clearances of forests/vegetation, loss of habitats, disruption of river flow and ecosystems below the dam.

Narrow answers with one type of factor only referred to, or broader answers but lacking in supporting detail – worth 1 or 2 marks.
Broader answers with at least two factors covered and some substance to the comments – worth 3 or 4 marks.
All three factors covered with support; particularly if comment is included about their controversial nature – worth 5 marks. [5]

(d) (i) Two uses most likely to lead to water pollution are waste disposal and ships and navigation = 1 mark for these choices.

Explanation such as untreated waste, litter and toxic materials disposed of, oil/diesel from ships' engines or cleaning out of tanks, or disposal of waste over the sides.
Other uses can be credited for explanation provided that candidates show how they lead to water pollution e.g. washing out nitrates/pesticides related to irrigation water for crops, and untreated sewage for domestic uses.

Either 1 mark for choice + 3 marks for explanation (1 + 3).
Or no marks for choice and 4 marks for explanation (0 + 4). [4]

(ii) Possible conflicts that candidates might refer to:
– waste disposal upstream then use of water for drinking/recreation downstream
– shipping is often densest in most populated river sections
– irrigation water is taken out of the river so that not enough is left downstream for all the other users
– mention of other conflicts such as fishermen and river life destroyed by pollution.

Mention of at least two examples, and explanation for at least one for all three marks. [3]

(e) (i) Access to sanitation is lower than for water supply for all three (world, urban, rural), differences are about 24% world, 15% urban and 34% rural.

Strong general statement = 1 mark.
Use of values 1 or 2 marks. [2]

(ii) Access to sanitation in rural areas is the lowest of all six values, under half the access of urban areas/41% difference between them.

Strong general statement = 1 mark.
Use of values 1 or 2 marks. [2]

(iii) Possible reasons:
poverty – lack of money for providing the necessary infrastructure
low level of development – lack of industries/businesses to stimulate improvement
traditional farming societies, in some places nomadic
population more spread out making it more expensive/difficult to provide services, remote from political decision making in the city.

Credit clear statement of reasons such as the above, and any elaboration.
Three reasons for 3 marks or two reasons and an elaboration (2 + 1 marks). [3]

(f) (i) Less time to build up immunity,
many infants are under-nourished so that their resistance is low,
reference to diarrhoea or another water related disease in question context,
children more likely to play in water/less likely to know the risks.

(ii) Long journey to collect water consumes time that could be used for productive work, in many African countries women are both water carriers and the main crop growers,
other ways to make money such as by craft occupations/helping husbands, frees up time to help with/engage in community projects.

Minimum 1 mark, maximum 3 marks for each part. [4]

2 (a) (i) Germany (– 2.0), China (+ 7.4), India (+ 15.5), 1 mark each.
Maximum of 2 marks without + signs. [3]

(ii) Natural decrease instead of natural increase, however expressed. [1]

(b) (i) Africa [1]

(ii) Europe [1]

(iii) Every country in Africa above 25 (many in Africa not enough),
attempt to describe distribution of groups of very high countries in East/West Africa,
block of high birth rates from the Middle East into Pakistan,
examples of three or more countries in this block,
elsewhere in Asia only one other (Mongolia)/North Korea,
only one in all of South America (Bolivia),
a few in Central America and the Caribbean (Mexico, etc.)

Three descriptive statements such as the above. [3]

(iv) Have readily available family planning for all,
often more economically developed countries that can afford this,
also attitudes of people are different with women more career orientated,
education available to all both male and female to high levels,
socially acceptable/normal to have small families,
government pensions and social services to look after elderly,
costs money to bring up children/children no longer seen as work assets.

Four points made along these lines. [4]

(c) (i) Ethiopia 0–4 shaded in; UK 35–39 shaded in. [1]

(ii) 46 (allow 45–47) [1]

(iii) 16 circled (or otherwise clearly indicated as the answer) [1]

(iv) Ethiopia more triangular/pyramidal; UK is more upright/straight up and down,
Ethiopia widest at the base; UK narrows towards the base,
UK is taller.

Any two differences like these related to shape, 1 mark for each. [2]

(v) Ageing populations have an increasingly high proportion of elderly people, for the UK this is shown by age groups above 65 being well represented (16%), bulge in middle aged groups to swell soon the elderly age groups.

Evidence stated and understood = 2 marks.
Some understanding but answer incomplete = 1 mark. [2]

(vi) With young populations:
high costs for education (also for certain health services, agriculture for food),
unemployment is often a major issue with problems for finding work for all,
population likely to continue growing for many years as they reach marrying age,
continued pressure on resources.

With ageing populations:
high and increasing costs for care and pensions,
at time when working population paying taxes is decreasing,
funding gap which is going to increase with time,
solutions such as immigration for more workers are unpopular with the public.

Separate answers/answer for young or ageing much stronger = 1 or 2 marks.
Differences established and explained = 3 or 4 marks. [4]

(d) (i) 1 North America 2 Oceania 3 Europe – all Developed.
4 Latin America 5 Asia 6 Africa – all Developing.
All correct = 2 marks.
No more than one or two mistakes = 1 mark. [2]

(ii) The direct evidence is the high average income in Oceania (Australia and New Zealand); as the continent with the second highest average it cannot be left in the same group as Africa and South America.

From knowledge candidates may also be able to explain in relation to Japan, one of the world's most developed industrial countries; the line takes a sharp turn to keep Japan in the north (= less likely answer).

Understanding shown = 1 mark. [1]

(iii) Examples of where the line indicates a big divide are between North America and Latin America (along the Mexico-USA border), and between Europe and Africa (through the Mediterranean Sea) = good fits. Also between Oceania and Asia.

Lack of evidence for route across Asia; reason for position of line cannot be worked from an average value for Asia only, but the average is a lot below those for Europe and North America.

Comment favourable to the divide as a good indicator is easier to justify by reference to the size of the differences in average income between Northern and Southern continents, especially the US$ 23,800 difference between North and Latin America. One warning is that average income in individual countries can vary greatly from the continental averages.

Enough to show good understanding = 3 marks.
Some valid points supporting the assessment of fit = 2 marks.
One or two valid points without an assessment, or unsupported assessment = 1 mark.
[3]

(iv) All low birth rate values below 15 are on the 'North' side of the line,
all high values above 25 are on 'South' side of line,
conclusion that the divide is well supported
This is one example of a 2 mark answer.

Could focus more on less evidence in Asia, or use areas of moderate birth rates, but this seems more likely to lead to 1 mark rather than 2 mark answers. [2]

(e) (i) Fair trade considers the producers/suppliers rather than trading using world market prices which is what happens in normal trade. It often includes some guarantees for the producer such as keeping prices above production levels even when world prices tumble. Often help with community projects is built in (or similar).

Differences understood and clearly stated = 2 marks.
Some attempt to state difference, or understanding but weakly expressed = 1 mark. [2]

(ii) Advantages of aid – emergency relief aid can help desperate people in desperate situations after human or natural disasters. Development aid can support projects with longer lasting benefits to local communities such as clean water supplies, wells, rain water storage and small dams to increase farm output in dry times, clinics etc.

Disadvantages of aid – can be given for the wrong things big prestigious/political projects which give poor value for money spent. In some African countries like Ethiopia there are fears that many years of aid is leading to a culture of dependency.

Some balance between advantages and disadvantages, and especially if comment towards reducing the wealth gap is incorporated = 3 or 4 marks.

Stronger on either advantages or disadvantages, or shallow on both = 1 or 2 marks. [4]

(iii) No mark for choice – all marks for justification.
Many of the positives and negatives can be applied to both; everything depends on candidate use.

Possible lines of explanation – positives such as these:
Fair Trade income/aid both transfer wealth from rich to poor countries.
Both can have knock-on benefits for communities in general as well as people specifically targeted.
Both can establish long lasting arrangements with give poor people some security for the future.

Negatives such as these:
Both come with strings attached to them; people/companies/organisations and governments in rich countries can walk away from them.
Long term tie-ups lead to dependence/over-reliance upon one source with no back-up.
Remote communities can be at mercy of economic downturns affecting developed world.

Choice well explained = 2 marks.
Some support for choice = 1 mark. [2]

[Total: 40]