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CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0680 ENVIRONMENTAL MANAGEMENT

0680/11 Paper 1, maximum raw mark 60

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.

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Mark schemes will use these abbreviations:

- ; separates marking points
- / alternatives
- ® reject
- A accept (for answers correctly cued by the question)
- (I) ignore
- AW alternative wording (where responses vary more than usual)
- AVP additional valid point (where there are a variety of possible additional valid answers)
- underline actual word given must be used by candidate (grammatical variants excepted)
- D, L, T, Q quality of drawing / labelling / table / writing as indicated by mark scheme
- max indicates the maximum number of marks that can be given
- eq equivalent
- ORA or reverse argument
- IDEA OF where candidates are expected to make an argument which expresses a particular idea, but the ways in which they will do this will be many and varied

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1 (a) (i) 100 000 000 000 / 100 000 000 = 1000;
1 mark for correct working if answer incorrect
® extra units (e.g. million) [2]

(ii) the fishing can go on for year after year without diminishing / going down;
the gold / copper will run out;
the gold will make much more money in the short term / fishing takes much longer but will make as much in long term;
and eventually exceed gold / copper profits;
credit comparison of environmental damage caused; [3]

(b) (i) entry of acid rain / eq; [1]

(ii) pH falls;
aluminium added;
fish / animals / creatures killed / toxic to fish / animals / creatures; (but not if due to lack of oxygen or similar)
fish / animals / creatures stressed;
fish / animals / creatures eggs do not hatch;
specific effect on fish (e.g. gills);
reasonably explained food chain effect; (but not if due to death of plants / producers)
® eutrophication arguments [3]

(iii) because these gases get blown from one country to another / because rivers flow through many countries; [1]

[Total: 10]

2 (a) (i) emissions high in North, low in South;
carbon dioxide emissions come from fossil fuels;
these are burnt to generate electricity / run cars / trains / eq;
more electricity generated in North than South leads to more CO_2;

(ii) some countries in South with North type consumption levels, or reverse argument;

***(a)(i)** and **(ii)**, any correct points in correct part to max 3* [3]

(iii) income / rich / poor / equivalent;
housing inadequacy / homelessness;
disease levels / water supply / health;
quality of nutrition;
infant mortality;
education quality;
sanitation;
family size;
life expectancy / mortality rate;

all 4 = 2 marks; 2–3 = 1 mark; 0–1 = no mark [2]

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(b) (i) it is the increase in temperature of the Earth's (surface / atmosphere) ;
since the mid-1900s;
(**I**) reference to ozone layer [2]

(ii) the trend is an increase in use of ethanol / or described;
which can be used to fuel vehicles;
cutting down on use of fossil fuels / named / alternative to fossil fuels / named;
reducing greenhouse gas emissions (because);
ethanol is carbon neutral (A does not emit greenhouse gases but NOT just carbon dioxide without this qualification) [3]

[Total: 10]

3 (a) (i) crop farming / **B**
pastoralism / **A**; [1]

(ii)

extensive:	*intensive:*
few workers;	many workers (4 in sketch);
large land area;	small land area;
low input or describe such as fertilizer etc. (NOT machinery);	high input or described;
low output / shifting cultivation;	high output;
land not modified much;	land modification;

must be written in a comparative way for more than 2 marks [4]

(b) (i) *Causes:*
fuelwood clearance;
settled farming of any type;
for settlements / housing / roads / eq;
timber extraction / logging / paper;
grazing;
industry sites / mining; [3]

(ii) soil erosion or described;
desertification;
climate change / global warming;
loss of biodiversity;
habitat destruction;
reduced carbon dioxide uptake / eq; [2]

[Total: 10]

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4 (a) (i) mountain / hill;
formed by lava / ash;
an opening / rupture, in the Earth's surface / crust;
created by tectonic activity / near plate boundary or described;
which allows hot magma / volcanic ash / gases to escape (from below the surface); [2]

(ii) 40 km ± 2; [1]

(iii) 13; [1]

(iv) fertile soils;
well drained soils;
ancestors lived there / family ties / affordability argument;
beautiful scenery / tourism;
abundant gems / minerals (qualified so clear not plant nutrients) etc.;
geothermal energy; [3]

(b) location **X** / Popocatapetl is on a plate boundary / fault / destructive boundary / plate margin (NOT just margin);
plates moving toward each other / convergent;
melts rocks / subduction zone or described;
producing magma / lava which forms the volcano; [3]

[Total: 10]

5 (a) (i) bar chart;
axes appropriate and labelled
(country name on *x* and quantity & units on *y*);
plot correct; [3]

(ii) good access to seawater / long coastline;
very rich / lots of oil for energy; [2]

(iii) aquifers / ref underground water or implied;
collect rainwater from buildings;
AVP; (e.g. buy in water) [2]

(b) more wealth / wealthy people so;
water treatment exists;
sewage disposal exists;
water tends not to accumulate;
high density in urban makes it more worthwhile / necessary;
idea of piped water in urban; [3]

[Total: 10]

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6 (a) (i) *mark independently*
ozone, layer at top of stratosphere / above 20 000 m; (I) any of the others that are wrong
carbon dioxide and oxygen and water vapour in troposphere /
all below dotted line; (I) ozone incorrect for this mark [2]

(ii) carbon dioxide;
oxygen;
oxygen;
carbon dioxide / ozone / water vapour;
carbon dioxide / ozone / water vapour; (but different one from previous gap)
ozone;

5–6 = 3 marks; 3–4 = 2 marks; 1–2 = 1 mark; 0 = no mark [3]

(b) (i) IDEA OF
carbon dioxide has gone up;
carbon dioxide is greenhouse gas;
transparent to light but opaque to heat / traps energy;
increases in carbon dioxide increase temperature / ORA;

(ii) IDEA OF
hole in ozone layer / ozone gone down;
allows more ultra-violet light to penetrate / ozone usually blocks ultra-violet which increases incidence of skin cancer / sunburn / mutation;

(b)(i) *and* ***(ii)****, any correct points in correct part to max 3* [3]

(iii) *personally*
cut down use of fridge;
cut down use of air conditioner;
reduce use of aerosols;
increase use of suntan cream;
OR
generally
alternatives to CFCs (or described);
in fridge / air conditioner / aerosol propellants / foaming agents;
encourage use of suntan cream;
Montreal protocol in sensible context; [2]

[Total: 10]

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