

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0680 ENVIRONMENTAL MANAGEMENT

0680/23

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.

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- 1 (a) (i) sedimentary
metamorphic
igneous
- All three correct for two marks. One or two correct for one mark.* [2]
- (ii) correct scale on y-axis;
axes labelled correctly (including names for bars);
- All three bars plotted correctly for two marks.
One or two bars plotted correctly for one mark.* [4]
- (iii) clearance of natural vegetation;
removal of overburden;
rock is blasted using controlled explosions;
blasted rock is transported by truck or conveyor belt;
rock is crushed;
rock is sorted into different grades;
rock is washed and cleaned;
- Max. two marks for issues relating to extraction.* [3]
- (b) (i) town C (receives the most limestone); [1]
- (ii) 0.5 million tonnes (of limestone); [1]
- (iii) 0.5 million tonnes; *Allow ECF.* [1]
- (iv) quarry creates jobs;
people have more money to spend in local community;
other industries might supply the quarry;
jobs created in linked industries also;
lorry drivers might provide custom for local shops;
supply of aggregate for local industries;
when restored, the quarry might provide a local amenity/tourist attraction;
quarry company pays money in local taxes; [4]

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- (v) loss of land for recreation / leisure;
 loss of farmland and revenue;
 eyesore / spoils the view;
 traffic on local roads;
 dust from blasting affects health;
 noise pollution from blasting / trucks (disturbs local residents);
 loss of natural habitats;
 vibrations from blasting;
 water pollution from sediment;
 light pollution; [4]
- (c) recreation / leisure / relaxation;
 fishing;
 walking;
 bird watching;
 boating / water sports / swimming;
 picnic sites;
 business opportunities / tourism / jobs; [4]
- (d) (i) habitat for many species / biodiversity;
 birds use wetland as winter feeding ground;
 reduce flood risk;
 jobs in fish farming / nature reserves; [2]
- (ii) oil from pleasure boats;
 banks erode by wash from boats;
 noise scares animals;
 trampling of vegetation;
 increased traffic causes noise / air pollution;
 pollution of water from other sources, e.g. litter;
 hunting of animals / reduction in number / threat to species;
 development of facilities to support tourism; [2]
- (iii) adding nutrients / nitrates / phosphates to the water;
 this encourages the growth of algae;
 algae die;
 bacteria use up oxygen in the water;
 fish die due to lack of oxygen;
 algae blocks out sunlight;
 eutrophication; [3]

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(e) (i) bar graph completed and correctly shaded according to the key; [1]

- (ii) farm run-off
air pollution
industry
oil

Three or four correctly placed in rank order for two marks.

One or two correctly placed in rank order for one mark.

[2]

(iii) *Content guide:*

preventing oil spills
dealing with oil spills
international co-operation and agreements / legislation
managing raw sewage
controls on industry / mining
education
controls on dumping waste at sea
management of waste plastics

Do not expect every answer to be covered, even for answers in the top level.

Level 3 5–6 marks

Comprehensive understanding of the issue shown. Detailed explanation of three or more strategies.

Level 2 3–4 marks

Some understanding of the issue shown. Some explanation of at least two strategies.

Level 1 1–2 marks

Basic understanding of the issue shown. Basic descriptive points made. Little or no explanation.

No response or no creditable response scores zero marks.

[6]

Page 5	Mark Scheme	Syllabus	Paper
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- 2 (a) (i) evaporation;
transpiration;
soil erosion;
loss of nutrients through soil moisture;
- Accept nutrients taken up by the roots.* [2]
- (ii) parent rock; broken down by weathering to release nutrients;
organic matter from leaf fall / animals; vegetation / animal waste broken down by microorganisms to release nutrients;
- Award one mark for each source and one mark for each explanation.* [4]
- (iii) *soil type A*
reasons such as sandy soil will be:
more freely drained (as larger particles);
better aerated (as larger particles);
easier to work / lighter to plough;
warmer;
- soil type B*
holds nutrients / more fertile;
greater water holding capacity;
retains heat longer than sandy soil;
- Marks are for the reasons only.* [2]
- (iv) first line correctly placed;
second line correctly placed;
appropriately shaded; [3]
- (b) (i) subsistence agriculture is producing food to feed the farmer and his / her family with little or no surplus for sale and commercial agriculture is producing food for sale OWTTE; [1]
- (ii) the irrigated land is in a long narrow strip;
along the River Nile / close to River Nile / River Nile flood-plain;
also in and around Nile delta;
stretches from Aswan to Alexandria / Mediterranean sea; [2]
- (iii) irrigation can cause salinisation of the soil;
water lying on surface contains minerals;
water evaporates;
salt crystals are left behind;
water moves up from water table to replace evaporated water;
this water also contains salts;
soil erosion from excess water;
loss of soil structure (due to application of irrigation in large droplet size);
leaching of nutrients from excess water; [3]

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- (iv) trickle drip irrigation;
water provided slowly to specific area of plant from pipes;
reduces amount of water used and surface water;
- clay pot; buried in ground, water percolates/seeps out; etc. [2]

- (c) (i) slow rate of increase until 1700;
more rapid increase from 1700 to 1800;
increase from 1800 to 1940 more rapid/population doubled;
rapid increase since 1940; (dates cited are approximate, allow a range)
one pair of statistics with years to illustrate any of the above points;

Max. two marks without the use of population data. [3]

- (ii) dry soil;
land baked hard;
sparse vegetation/no leaves/dry leaves;
few tall trees;
dead vegetation (in foreground);
no evidence of farming or grazing;
people fetching water; [2]

- (iii) increased demand for food;
over-cultivation of land;
soil does not get chance to rest/lie fallow;
overgrazing of land;
trees cut down for fuelwood;
animal manure dried and used as fuel;
no roots to bind the soil;
less interception of rain;
no vegetation to act as a windbreak;
no supply of organic matter;
nutrients are depleted;
soil more vulnerable to erosion;
increased demand for water;
lowering of the water table; [4]

Allow development marks.

(d) (i) $\frac{990\,000 - 789\,000}{990\,000} \times 100;$

$= 20.3\%$ (*Allow 20%.*) [2]

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- (ii) can lead to deaths;
 people are sick so need medical care/ medicines;
 cannot afford cost;
 people are sick so unable to work/farm the land;
 therefore loss of food supply/income;
 child labour needed to support family;
 high infant mortality rate;
 high cost of prevention, e.g. malaria nets; [4]

(iii) *Content guide:*

drugs (preventative or curative)
 vector control
 improvements to sanitation
 ensuring a clean water supply
 chlorination
 education
 named example of disease, e.g. malaria, typhoid, cholera, bilharzia

Do not expect every aspect to be covered, even for answers in the top level.

Level 3 5–6 marks

Comprehensive understanding of the issue shown. Detailed explanation of three or more strategies with named examples.

Level 2 3–4 marks

Some understanding of the issue shown. Some explanation of at least two strategies and named example.

Level 1 1–2 marks

Basic understanding of the issue shown. Little or no explanation. Basic descriptive points.

No response or no creditable response scores zero marks. [6]

[Total: 80]