

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0680 ENVIRONMENTAL MANAGEMENT

0680/13

Paper 1, maximum raw mark 60

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1 (a) 6 (six)

December/January

January/December

July

26.5–27 °C

June

Six correct for three marks. Four or five correct two marks. Two or three correct one mark. [3]

(b) are evergreen/trees have leaves all year;
do not lose nutrients in lost leaves;

are able to photosynthesise at low temperatures/(trees grow in) short growing season;
so can continue to grow even though growing season would be short if they could not;

(waxy) needle-shaped leaves; reduce water loss by transpiration; in freezing winter
temperatures; when there is little rain in summer;

pyramid/conical shape; gives trees stability/trees bend in the wind;

downward sloping/flexible branches; to stop snow from collecting/snow slides off easily;

straight/upright trunk/growth; to receive maximum sunlight;

thick bark; insulates/protects tree in cold winters; fires in summer;

[4]

(c) *Credit two strategies with one developed correctly.*

sustainable harvesting of wild plant and animal species;
so as not render them extinct;

wildlife/nature reserves;
protected by law;
example, e.g. panda in China/tiger in India;

world biosphere reserves where plants and animals can be protected in their natural
environment;

internationally recognised by UNESCO;

to use sustainably;

support with research;

monitoring;

education;

international network for information exchange;

gene banks to preserve plants and animals in danger of extinction;

plant genes as seeds/whole plants/pollen/cell cultures;

animal genes by freezing sperm and eggs;

[3]

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- 2 (a) (i) most/five are north of the Equator/in northern hemisphere/Tropic of Cancer/one is south of the Equator/in southern hemisphere/found on east and west coastline of North America/found west coastline of Europe/North Africa/South America/found east coastline of Asia;
generally near coasts;
on all continents except Oceania;

Credit two accurate descriptive points.

[2]

- (ii) some years the cold current reverses;
event is called 'El Niño';
surface water becomes warm;
the warm current is low in oxygen/minerals/nitrates/nutrients;
plankton and fish die/move away/migrate to colder waters;

Peruvian current is off the coast of area X;
this current brings cold water from the Antarctic;
upwelling of cold water to the ocean surface makes the surface water cold;
the cold current is rich in minerals/nitrates/nutrients;
which support (phyto)plankton;
which (zooplankton)/fish feed on;

Credit the below ideas in context.

temperature changes;
nutrient level changes;
oxygen level changes;
plankton/fish food changes;

[4]

- (b) *Credit two causes with two marks for development/explanation.*

new technology / satellites / radar / sonar equipment;
locate shoals of fish quickly and accurately;

very large nets;
trap larger shoals of fish;
mature and immature fish / bycatch / discards;

mesh sizes used have decreased;
smaller and smaller fish caught;

large ships;
travel further from land / to more difficult locations;
catch more fish;

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factory ships;
process/freeze fish/fish products while at sea;
allow fishing all year round;
catch juvenile fish;

increasing demand for food by growing world population;

few international fishing regulations, e.g. quotas;
those that exist are not always implemented/enforced;

pirate fishing;
illegal/unregulated/unreported;

[4]

3 (a) (i) over a million;

[1]

(ii) lava/ash produces fertile soils for farming;
family/friends live there/have always lived there (in Sicily)/part of (Sicilian) community;
jobs/investments are there/cannot afford to move;
many/over a million people live there so risk not great enough to move;
good forecasting/protection schemes;
(volcanic) tourism/scenery;
minerals; e.g. copper/gold/silver/lead/zinc;
valuable gems; e.g. diamonds/opals;
(volcanoes provide) building materials;
geothermal energy can be generated (in volcanic areas);

Allow development marks.

[3]

(b) monitoring/warning/predicting the eruption;
instruments/satellites measure changes in temperatures/heat in the crater/observations of emissions of gases/steam/seismographs record small earthquake shocks caused by moving magma/tilt meters/global positioning satellites/surveying instruments/satellite radar maps to record changes in ground shape/deformation;
evacuation/re-location;
redirecting lava flow;
by digging diversion canals/halting advance of lava by dropping concrete slabs/making a wall of concrete blocks/spraying water;
avoids damage to buildings/deaths/injury;
education/training/emergency action plans/drills;
reinforcing buildings, e.g. sloping roofs;
reduces damage to buildings/protects people in buildings;
zoning;

Allow development marks.

[4]

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- (c) small in magnitude/strength/low on Richter scale;
distance of area/population away from epicentres/fault lines;
depth of earthquakes from surface/focus;
time of day/time of year in context;
earthquake-resistant buildings/quality of building construction/design;
population density/urban or rural;
existence of warning systems/speed of relief/aftercare;
damage to infrastructure/water/gas;
rescue response times;

Allow other valid suggestions. [2]

4 (a) (i) migration

Accept emigration/immigration. [1]

- (ii) push factors: pull factors:
C A
D B
E G
F I
H J

Award one mark for any three push factors and one mark for any three pull factors. [2]

(b) (i) Credit one or two ideas developed.

more people using energy/more power stations;
more factories;
more vehicles;

developed with reference:
emission of carbon dioxide from industry/vehicles;
increase greenhouse gases;
unburnt smoke particles;
lead emissions from vehicles;
sulfur dioxide/nitrogen oxides;
smog etc.;

[3]

(ii) Credit two strategies with two marks available for development/explanation.

demolition by city authorities;
residents homeless;
move somewhere else;
authorities plan new use for land;
e.g. fewer high cost houses for wealthy people;

relocation of people to other parts of the city/areas of new housing;
in some cities too expensive for city authorities;
unrealistic as so many people;
in other cities too expensive for people;
people cannot afford houses;

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community participation / self-help schemes;
 making settlements legal;
 authorities provide (cheap) loans / building materials;
 advice / technical assistance;

environment improvement with essential services;
 electricity / roads / piped water / sewers;

planning a city's physical expansion;
 zoning of land for new housing;

[4]

5 (a) (i) 21

5

6

All three correct for one mark.

[1]

(ii) 44;

[1]

(b) distance from the Equator / latitude;
 distance from ocean / sea / large lake;
 amount of snow / albedo;
 altitude;
 cloud cover;
 warm / cold ocean currents;
 warm / cold winds;
 smog / temperature inversion;

[2]

(c) (i) ice caps melt;
 sea levels rise;
 coastal flooding;
 cost of sea defences;
 cities / holiday resorts / islands covered;

the habitats of plants and animals will change;
 loss of biodiversity; some animals may migrate, other animals / plants lose their
 habitats / become extinct;

changes ocean currents / e.g. Gulf Stream / North Atlantic Drift cools;
 climate of N Europe colder in winter, etc.;

more flash floods;
 more water evaporated into the atmosphere;

more extreme weather events;
 stronger tropical storms;
 heatwaves;
 forest fires;

melting permafrost;
 releases large amounts of methane in the atmosphere;
 increases greenhouse effect;

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more fresh water in oceans;
affects ocean currents;

droughts;
desertification;
crop failure;
famines;

[4]

(ii) *Credit one advantage with explanation.*

lower deaths / injuries; named cold climates warm up;
more crops grown; world famine reduced;
water held in ice caps and glaciers melt giving water supplies;
more accessible resources in Arctic / Antarctica, e.g. oil / gas / etc.;
Arctic ice melts improving trade between Scandinavia, Russia, Canada and USA, etc;
less energy required to heat homes;
reduced demand for gas and electricity;
reducing amount of greenhouse gases being released;

[2]

6 (a) (i) Middle East;

[1]

(ii) (10.4 / 10.3) – 3.0);

7.3–7.4 thousand million barrels per year;

[1]

(iii) in the Asia Pacific region consumption is (much) higher than production;
by about 8 million barrels;

Asia Pacific region has the low(est) oil reserves / less than 100 thousand million barrels;

[3]

(b) (i) pipeline / oil tanker / train;

[1]

(ii) *Credit two problems about transport of oil with two marks available for development / explanation.*

pipelines can break;
oil seeps into ground; polluting the land;
destroying crops / pasture land;
contaminating the soil;
polluting water supplies;

oil tankers run aground or sink, oil leaks into sea;
kills animals / plants / fish / birds;
destroys habitats;
damages (tourist) beaches / bays / lagoons;
oil spills can disrupt power stations / desalination plants that require a continuous supply of clean seawater;
interfere with the safe operation of coastal / industries ports;
clean-up operations can lead to further problems;

[4]

[Total: 60]