Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/11**

Paper 1 **May/June 2018**

MARK SCHEME

Maximum Mark: 60

Published

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 International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

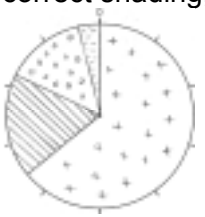
GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)(i)	<table><tr><th>feature</th><th>letter</th></tr><tr><td>convection currents</td><td>D</td></tr><tr><td>crust</td><td>B</td></tr><tr><td>mantle</td><td>C</td></tr><tr><td>ridge</td><td>F</td></tr><tr><td>rising magma</td><td>E</td></tr><tr><td>volcano</td><td>A</td></tr></table> ;;; *5–6 correct [3]* *3–4 correct [2]* *1–2 correct [1]*	**3**
1(a)(ii)	**Z**;	**1**
1(b)	*any three from:* two plates moving apart; driven by convection currents; lava / magma, rises from the mantle to (fill the gap); forms, (submarine) volcanoes / volcanic islands / ridges / rift valleys; lava / magma, (continues) to flow out / sea floor spreads / new land formed; new lava pushes older lava further from the ridge;	**3**
1(c)	*any three from:* fertile soil; tourist attraction / tourism creates jobs; geysers / hot springs / health spas; geothermal power; minerals / mining (sulfur); valuable gemstones (opals); building materials (tuff);	**3**

Question	Answer	Marks
2(a)(i)	oceans;	1
2(a)(ii)	*any two for **one** mark:* ice, shallow groundwater (< 750 metres), lakes;	1
2(a)(iii)	74.94 (%);	1
2(b)	*any three from:* desalination; (method used) e.g. distillation / reverse osmosis; importing / buying / transporting, water (into country); using, canals / pipelines; icebergs; by, moving / towing / harvesting; (obtain water from) underground / aquifers; using, wells / boreholes / pumps; build dams / reservoirs; rainwater / floodwater, harvesting; water conservation / more efficient use; recycling / reuse / reclamation / filtering / purifying; cloud seeding; AVP;	3
2(c)	*any four from:* contains harmful, microbes / pathogens / bacteria; causing water-related / borne, diseases; e.g., cholera / typhoid; pollution caused by, heavy metals; sewage; oil; fertilisers; pesticides; toxic / industrial, chemicals; AVP, e.g. example of heavy metal (lead, mercury, arsenic, cadmium);	4

Question	Answer	Marks
3(a)(i)	(steadily) increases / rises;	1
3(a)(ii)	(316 to 401) 85 (ppm);	1
3(a)(iii)	*any two from:* increased burning of fossil fuels; more, industry; more, vehicles; *reference to*, coal / oil / natural gas; increased deforestation; increased burning of wood;	2
3(a)(iv)	*any two from:* use of, alternative / renewable sources / biomass / hydro-electric / tidal / wave / wind / solar / geothermal; walking / public transport; international / global, agreements / treaties; increased energy efficiency / diesel or hybrid cars / domestic example; laws limiting or controlling factory emissions; use of scrubbers;	2
3(b)(i)	dividing lines at correct values; correct shading; 	2
3(b)(ii)	to a large extent; because carbon dioxide is biggest contributor; *OR* to a small extent; because there are other greenhouse gases / *reference to*, other greenhouse gases / CFCs / methane / nitrogen oxides;	2

Question	Answer	Marks
4(a)(i)	*any two for **one** mark:* animals, people, vegetation;	**1**
4(a)(ii)	*any two for **one** mark:* climate, rock type, soils;	**1**
4(b)(i)	*any two for **one** mark:* (tropical) rainforest; monsoon forest; taiga; savannah / tropical grassland; (hot) desert; tundra; AVP, e.g. temperate grassland;	**1**
4(b)(ii)	*any four from:* agriculture / farming / crops / grazing; timber / furniture / paper / pulp; fuel / wood; mines / minerals / chemicals; gums / resins; settlements / towns / cities / urbanisation; infrastructure / roads / railways / airports; dams (for hydro-electric power);	**4**
4(c)	*any three from:* establishing, a national park / wildlife / forest reserve; establishing, a biosphere reserve; clearly defined boundaries / restricted areas or entry; selective logging / sustainable harvesting of, plant / animal species; agroforestry; community forestry; laws or controls to stop damaging activities; education about the importance of the forest; ecotourism qualified;	**3**

Question	Answer	Marks
5(a)	At the Equator, the Sun's **rays** are perpendicular to the Earth's surface and heat a **smaller** area than at 60° N. At 60° N the Sun's rays are at an angle and have a **larger** surface area to heat. At 60° N, the Sun's rays travel a **greater / longer** distance through the **atmosphere** than those at the Equator. This means more energy is absorbed, scattered and **reflected** so there is less energy to heat the Earth's surface. ;;; *5–6 correct [3]* *3–4 correct [2]* *1–2 correct [1]*	**3**
5(b)(i)	*any three from:* natural resource / renewable / will not run out / sustainable; no air pollution / reduces carbon footprint / does not cause, global warming / acid rain; conserve fossil fuels / fossil fuels are running out; no fuel costs; once installed operating costs are low; system can be expanded; economical / appropriate, where there is plenty of sunshine;	**3**
5(b)(ii)	*any three from:* not reliable / inefficient; energy only produced in daylight hours; (less energy if) clouds / rain; (so) additional source of power may be needed; cost of storing electricity generated by solar power using batteries / pump storage, are high; can take up large areas of land; *reference to*, affecting, agriculture / ecosystems;	**3**
5(c)	*any two for **one** mark:* wind / tidal / wave / hydro-electric / geothermal / biomass / nuclear;	**1**

Question	Answer	Marks
6(a)(i)	***all three*** *required for* ***one*** *mark:* Canada Australia Russia;	**1**
6(a)(ii)	open-pit (mining);	**1**
6(a)(iii)	22 (%);	**1**
6(a)(iv)	*any two from:* little visual pollution; little disturbance to surface environment / no shafts / no pits; lower, capital / operating, costs; smaller workforce; no wasted ore; no waste, heaps / dumps; little, noise pollution / dust; little greenhouse gas impact; safer working conditions / no underground working;	**2**
6(b)	*any two from:* to reduce dependence on, coal / other sources of energy; availability of uranium; to reduce air pollution; does not, release CO_2 into the atmosphere / contribute to global warming; does not, release particulates / smoke particles into the atmosphere; does not cause acid rain; a lot of energy is produced from a small amount of uranium; reliable supply of energy; nuclear power stations do not require large sites; produce a small amount of waste;	**2**

Question	Answer	Marks
6(c)	*any three from:* uranium / fuel / waste, is radioactive; remains radioactive for a long time / uranium has a long half-life; risk of, accidents / radiation leaks (endangering life); *reference to an example*, e.g. Fukushima Japan 2011, Chernobyl Ukraine 1986; exposure to (high) radiation levels can cause, cancers / leukaemia / mutations / radiation sickness or poisoning; risk to future generations; nuclear waste is difficult to dispose of; visual pollution / intrusion / eyesore;	**3**