Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/12**

Paper 1 **October/November 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 October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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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)	*any two from:* two parts, inner and outer; outer is liquid, inner is solid; outer core is thicker (2200 km) than inner core (1250 km); radius of core is 3450 km / diameter of core is 6900 km;	**2**
1(a)(ii)	(6400 – (1250 + 2200 + 2900) =) 50 (km);	**1**
1(b)	igneous **AND** sedimentary **AND** metamorphic;	**1**
1(c)	*any three from:* cold water is pumped underground; contact with hot rocks heats the water; water is changed to steam; steam is piped to, (geothermal) power station / turbine; steam, turns / drives, turbines / electricity generators;	**3**
1(d)	*any three from:* lava / ash (weather to produce) fertile soils for farming; tourism (scenery is tourist attraction); e.g. health spas / volcanic scenery / hot springs / geysers / boiling mud pools; minerals can be mined; e.g. sulfur, copper, gold, silver, lead, zinc; (valuable) precious / semi-precious, stones; e.g. opals, obsidian, agate, onyx; (can provide) building materials; e.g. basalt / tuff / hardened volcanic ash; (can provide) jobs plus example, e.g. in mining / in tourism / on farms;	**3**

Question	Answer	Marks
2(a)(i)	In a normal year cold **water** upwells off the coast of **Peru** in South America. This water is rich in nutrients, carbon dioxide and **oxygen**. In an El Niño year the flow of water reverses and a **warm** current replaces the **cold** current. ;;; *5 correct [3]* *3–4 correct [2]* *1–2 correct [1]*	**3**
2(a)(ii)	wind moves (surface) water away from the coast, cold water from deeper in the ocean rises up (and takes its place);	**1**
2(a)(iii)	*any two from:* (ocean) water is warm so low in, oxygen / nutrients; less food / plankton, for fish; fish, migrate / die / do not grow; fishing boats have to go further offshore; weather changes (from dry to wet) making fishing more difficult;	**2**
2(b)	*any two advantages:* (factory) ships, process / freeze fish at sea; modern ships at sea, longer / for months at a time / travel further; modern ships are mechanised, crews, safer / drier; global positioning gives location of ship; sonar / echo sounders, locate fish / warn of underwater dangers; satellites used for navigation; radar can help prevent collisions at sea; computers provide, more accurate / longer term, weather information; huge nets catch large quantities of fish; *any two disadvantages:* overfishing / worldwide decline in fish numbers; effect on marine, food webs / biodiversity; huge nets catch whole shoals so, unwanted fish / bycatch, thrown away; small mesh means young fish caught so don't breed; causes unemployment;	**4**

Question	Answer	Marks
3(a)(i)	China;	**1**
3(a)(ii)	USA;	**1**
3(a)(iii)	(24.0 + 6.0 + 6.0 + 1.5 + 1.5 =) 39(%);	**1**
3(b)	*any three from:* demand / needs of, an increasing population / urbanisation; burning, fossil fuels / coal / oil / natural gas; to, produce electricity / heat buildings / use in industrial processes / make cement; to use in, transport / vehicles / aircraft / ships; deforestation / cutting down or burning trees;	**3**
3(c)	*any four from:* walk / cycle / use public transport / train, instead of a car; more efficient use of the car, e.g. car sharing; buy, a more energy efficient car / hybrid car; insulate house / turn down, heating / air conditioning; reduce the use of appliances / turn off appliances when not in use; energy saving or efficient appliances / low energy light bulbs; use / install, solar panels / solar water heating / small scale wind turbine; choose a renewable energy supplier; recycle; buy brands with low carbon footprint; work from home;	**4**

Question	Answer	Marks
4(a)(i)	*any two for <u>one</u> mark:* Atacama, Namib, Kalahari, Great Australian;	**1**
4(a)(ii)	<u>Africa;</u> **AND** *any one from:* across the north; extends north and south of the Tropic of Cancer; in the northern hemisphere / north of the Equator;	**2**
4(a)(iii)	*any two from:* desert, so large areas of land available / not in use (for farming); high levels of incoming radiation from the sun / long hours of sunshine; little cloud cover; few people live there;	**2**
4(b)(i)	*any two for <u>one</u> mark:* biomass, geothermal, hydro-electric, wave, wind, tidal;	**1**
4(b)(ii)	nuclear;	**1**
4(c)	*any three from:* not reliable / inefficient; energy only produced in daylight hours / no power generated at night; power may not be generated when, the sky is cloudy / there is rain; (so) additional source of power may be needed; cost of solar cells can be high; possible lack of, expertise / skilled workers / technology; installation / connection to grid, is expensive; cost of storing electricity generated by solar power, using batteries / pump storage, are high; can take up large areas of land which affects, agriculture / ecosystems; <u>visual</u> pollution / intrusion / eyesore;	**3**

Question	Answer	Marks
5(a)(i)	North America **AND** Oceania;	**1**
5(a)(ii)	(10 / 11 x 100 =) 90.9 / 91;; *(if answer incorrect, allow one mark for 21 – 11 = 10 [1]);*	**2**
5(b)(i)	*push factor:* negative factors / reasons, that make people want / force them to leave, an area; *pull factor:* positive factors / reasons, that attract people to an area;	**2**
5(b)(ii)	*any three from:* *pull factor:* jobs / employment **AND** *explanation:* (work available) in shops / offices / factories / higher wages / casual or 'informal' jobs / money for higher standard of living; *pull factor:* living conditions **AND** *explanation:* housing / piped-water / sanitation / electricity; *pull factor:* services **AND** *explanation:* doctors / hospitals / shopping malls / AVP; *pull factor:* educational opportunities **AND** *explanation:* (more) schools / further education / university; *pull factor:* transport / infrastructure **AND** *explanation:* many / more, (paved) roads / public transport; *pull factor:* (reliable) food supplies **AND** *explanation:* (many) food shops / markets; *pull factor:* urban lifestyle **AND** *explanation:* recreational resources / entertainment / cultural facilities; AVP;	**3**

Question	Answer	Marks
5(c)	*any two from:* pressure on land causes, deforestation / loss of habitats; loss of, agricultural land / green spaces / green belts; air pollution / smog, from traffic / industry; water pollution caused by, poor sanitation / industrial waste / open drains; noise pollution from, factories / traffic; land pollution from, waste / litter / rubbish tips; pressure on water supplies / overdrawn aquifers / reduced water levels in, reservoirs / rivers; AVP;	**2**

Question	Answer	Marks
6(a)(i)	*natural store:* atmosphere / river / sea **AND** *artificial store:* reservoir;	**1**
6(a)(ii)	treats water from the, river / reservoir, to provides clean (drinking) water (to homes / industry); takes away dirty water and treats it before discharging into river or sea;	**2**
6(b)(i)	*any three from:* could contain harmful, microbes / pathogens / bacteria; causing water-related / water-borne, diseases; example of, e.g. cholera / typhoid / AVP; (could be) polluted with, industrial waste / oil / heavy metals / toxic chemicals; (could be) polluted with, agricultural waste / sediment / fertilisers / pesticides; AVP, e.g. sewage;	**3**
6(b)(ii)	malaria / AVP;	**1**

Question	Answer	Marks
6(c)	*any three from:* need to have a coast / access to, oceans / seas; process is very expensive / cannot afford desalination; process needs a lot of energy; requires, high levels of technology / skilled workers; water rich / other fresh water sources available, so not needed ORA;	**3**