Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/12**

Paper 1 Theory **October/November 2019**

MARK SCHEME

Maximum Mark: 80

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 2019 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.

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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.

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Question	Answer	Marks
1(a)	*any two from:* land cut into, flat surfaces / steps / reduces slope / gradient; speed of (surface) run-off is reduced; soil held back (by terraces); water held by bunds;	**2**
1(b)	*any two from:* contour ploughing; windbreaks; maintain vegetation cover; afforestation / mixed cropping / intercropping / crop rotation; increasing drainage; adding organic matter; bunds;	**2**

Question	Answer	Marks
2(a)	<table><tr><th>part</th><th>name of part</th></tr><tr><td>**A**</td><td>lag phase</td></tr><tr><td>**B**</td><td>exponential / log, phase</td></tr><tr><td>**C**</td><td>stationary phase / stable phase</td></tr><tr><td>**D**</td><td>carrying capacity</td></tr></table> ;;; *all 4 correct [3]* *2–3 correct [2]* *1 correct [1]*	**3**

Question	Answer	Marks
2(b)	*any two from:* (freely available) contraception / birth control programmes; improvements to women's education (so women have, careers / children later); awareness programmes / family planning; tax incentives / legislation / national policies / example of a named policy in a specific country; raising the age for marriage; improved healthcare;	**2**
3(a)(i)	*any two from:* rubbish / domestic waste; (untreated) sewage; the child is standing in the water; (toxic) chemicals (from, industry / agriculture); water-related diseases / bacteria / named example;	**2**
3(a)(ii)	*any two from:* improvement to sanitation to separate from water source; piped water; digging wells / storage reservoirs; bottled water / water tankers; sewage treatment system; chlorination / boiling / water filter; water treatment plant;	**2**
3(b)	13(.3) ;; (*if answer incorrect allow one mark for,* 82.6–72.9 or 9.7 [1]);	**2**

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Question	Answer	Marks
3(c)	*any two from:* lack of money / lack of infrastructure / lack of technology or skills; water is geographically inaccessible / water is ice / country is land-locked; lack of rain; lack of fresh water sources; climate change / drought; water stores have been contaminated; natural disaster; conflict; (too) large population;	**2**

Question	Answer	Marks
4	*any two from:* buildings destroyed; flooding; cars off the road / cars damaged / cars overturned; lots of, debris / timber / rubbish; infrastructure damage;	**3**

Question	Answer	Marks
5(a)(i)	130;	**1**
5(a)(ii)	0.48 / 0.5;	**1**
5(a)(iii)	the diameter of the trunk is still increasing at 150 years;	**1**
5(a)(iv)	84.8 / 85;	**1**
5(a)(v)	1600;	**1**
5(b)	*any three from:* teak trees are a monoculture / reduced to one species; habitat removed / period of no forest cover; reduction in biodiversity; genetic depletion; different species move into area as more suited to teak tree habitat; effect on, food chain / food web;	**3**

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Question	Answer	Marks
5(c)	*any three from:* *selective logging:* less damage to native forest (than excessive logging); less loss of biodiversity (than excessive logging); extraction is potentially sustainable; teak trees can be replanted / allows young trees to grow; provides, jobs / employment; provides government with income; *complete ban:* difficult to enforce; encourages illegal logging;	**3**

Question	Answer	Marks
6(a)(i)	12.5;	**1**
6(a)(ii)	*any three from:* less legislation / fewer controls on air pollution; use of more polluting technologies; types of, industry / work done / more factories; use of open fires for cooking indoors; greater population density; poor housing / lack of ventilation; older / poorly maintained, vehicles; cannot afford less polluting technologies; abundance of fossil fuels;	**3**
6(a)(iii)	5.9 : 7 **or** 1 : 1.186 **or** 1 : 1.2;	**1**

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Question	Answer	Marks
6(b)	*any two from:* asthma / bronchitis / breathing problems / breathing difficulties / COPD; lung cancer; eye irritation; cardiac problems;	**2**
6(c)	*any four from:* difficult to pass / enforce, legislation; may impact on the economy; not popular with the public; difficult to restrict individual / company, activity; pollution produced by neighbouring countries / air pollution exceeds international boundaries; needs international agreement; people cannot afford technologies to reduce air pollution;	**4**

Question	Answer	Marks
7(a)(i)	bar plotted at 18 first (large oil spills); bar plotted at 28 second **and** correctly shaded (small oil spills);	**2**
7(a)(ii)	1979;	**1**
7(a)(iii)	11;	**1**
7(a)(iv)	*any three from:* overall reduction in number of small oil spills / use of relevant data for small oil spills, e.g. 67 in 1976 decreased to 4 in 2016; overall reduction in number of large oil spills / use of relevant data for large oil spills, e.g. 26 in 1976 decreased to 1 in 2016; overall reduction in the total number of oil spills / use of relevant data for total oil spills, e.g. 93 in 1976 decreased to 5 in 2016; number of small oil spills (almost) always greater than large oil spills; fluctuations / use of relevant data to show fluctuations;	**3**

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Question	Answer	Marks
7(a)(v)	*any two from:* increased use of, navigational technology / GPS; use of double-hulled ships; MARPOL / legislation; development of more clearly defined shipping routes; better training of oil tanker crews;	**2**
7(b)	*any three from:* (oil) toxic (causing death); damage to feeding areas; reduces gas exchange between sea and air so less oxygen in water; oil on marine organisms, covers bird's feathers, affects flight / blocks gills of fish / other named example; cuts out light for, marine plants / photosynthesis; impact on (marine) food webs; damage to, habitats / coral reefs / mangroves;	**3**
7(c)	*any one from:* run-off from, land / industry; transferring oil between transport methods; leaks from, oil wells / oil rigs / pipelines;	**1**

Question	Answer	Marks
8(a)	*any three from:* at, edges of seas / coastlines; mainly between the tropics; in the Indian Ocean; in the Pacific Ocean; (high concentration) in Oceania; east coast of Africa; Caribbean / central America / south of North America;	**3**

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Question	Answer	Marks
8(b)(i)	*any two from:* climate change / increasing sea temperatures; chemical / oil, pollution; acidification of the sea; disease; human damage by, collecting / boats / fishing / tourism;	**2**
8(b)(ii)	150 000;	**1**
8(c)	*any three from:* difficult to accurately outline the area or restrict access; coral reef may be in the territory of more than one country and all countries need to agree; difficult to patrol; reduces income of local people who use the coral reef; coral reefs bring in money from tourists; (oil) pollution in ocean currents cannot be prevented from entering marine ecological reserves;	**3**

Question	Answer	Marks
9(a)	*any two advantages of surface mining:* easier to access; cheaper to extract; less risk of injury; quicker; *any two disadvantages of surface mining:* visual pollution; uses a lot of (farming) land / destroys habitats / reduces biodiversity; noisy; dusty; cost of remedial work after completion; larger waste heaps;	**4**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>9(b)</td><td>
<table>
<tr><th colspan="3">type of rock</th></tr>
<tr><th>igneous</th><th>metamorphic</th><th>sedimentary</th></tr>
<tr><td>basalt
granite</td><td>slate</td><td>limestone
sandstone
shale</td></tr>
</table>
;;;

all 6 correct [3]
3-5 correct [2]
1–2 correct [1]
</td><td>3</td></tr>
<tr><td>9(c)</td><td>any three from:
created from existing rocks;
heat;
pressure;
rock changes structure;</td><td>3</td></tr>
</table>

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Question	Answer	Marks
9(d)	*Level of response marked question:* Level 3 [5–6 marks] A descriptive response, well argued, covering and linking both viewpoints of the debate. Response must provide a conclusion. Response will include specific examples or development to support the statements made. Factually accurate and well laid out. Level 2 [3–4 marks] A well-argued response but containing broad descriptions and lacking the support of relevant examples or development. The links between the environmental and the economic impact of mining may not be clear within the response. Or A one-sided response covered in depth and supported by relevant examples or development of the statements made. Typically factually correct but may contain some errors or vague detail. Level 1 [1–2 marks] The response may be lacking in depth, or may be in the form of a list. Some information may be inaccurate. The response may describe generalisations and lack technical language. No response or no creditable response [0]. *Level of response indicative content:* Candidates may agree that the extraction of minerals is necessary for the economy of the country, covering the need for income to feed / clothe the population and the need for minerals. Minerals are needed for many purposes and candidates may identify that minerals are important for foreign exchange and imports / exports. Some candidates will consider that mining may have more relative importance to the economy of a LEDC. Candidates may suggest there are plenty of other countryside areas that are not being mined and that minerals may be in short supply. They might also discuss restoring an area after mineral extraction, more efficient use of minerals and recycling. Candidates may agree that preservation is important but state that we need minerals too. Environmental factors might include deforestation, rare habitats, risk of extinction, disruption of food webs and that the effect of mining on these environmental factors is difficult to measure. Candidates may also cite the impact of noise, air or water pollution with their sources and / or impact. Candidates may also cover the time it takes to restore an area and consider only allowing mining in certain areas. Responses may also identify the impact of mining developments on tourism.	**6**

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