Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/11**

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.

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)	*any two from:* maps a large area; will show, topography / relief; geological characteristics / colour of, rocks / soils; reaches inaccessible areas; shows types of vegetation;	**2**
1(b)	*any one from:* geological / local surveys; taking soil or rock samples / drilling test boreholes / prospecting / re-working old deposits; geophysics / seismic waves / satellites / named sensors, e.g. gravity sensors, magnatronic sensors;	**1**
1(c)(i)	antimony;	**1**
1(c)(ii)	gold **AND** copper;	**1**

Question	Answer	Marks
2(a)	**ecosystem** **abiotic components** / **biotic components** light / bacteria oxygen / fungi soil pH / insects temperature / plants ;;; *all 8 correct [3]* *5–7 correct [2]* *1–4 correct [1]*	**3**

Question	Answer	Marks
2(b)	*any three from:* death (of plants); salinisation; inhibits germination; (*insufficient water may cause*) dehydration / wilting; reduce plant growth; prevent or stimulate development of, flowers / seed / fruit; reduce uptake of nutrients; reduces photosynthesis; (*too much water / flooding may*) reduce amount of oxygen available to roots / waterlogging; wash plants away;	**3**

Question	Answer	Marks
3(a)(i)	aquifer / ground water;	**1**
3(a)(ii)	infiltration;	**1**
3(b)	*any two from:* rain / drizzle; snow / sleet; mist / fog; dew; hail;	**2**

Question	Answer	Marks
4(a)	(*the source*) burning fossil fuels / industry / factories / vehicles; (*the reaction*) soot / particulates and water vapour / reaction with sunlight / UV light; (*other conditions*) urban areas / high pressure / calm conditions / lack of airflow due to hills or mountains or temperature inversion;	**3**
4(b)	*any two from:* breathing problems / asthma / bronchitis / COPD / respiratory disease / respiratory problems; eye irritation / named example; lung cancer;	**2**

Question	Answer	Marks
5(a)	*any four from:* uranium (fuel); (uranium) decays / chain reaction / (nuclear) fission; water pumped into reactor; reactor heats water / conversion to thermal energy; turns it to, steam / vapour; (steam) turns a turbine; (turbine) turns the generator (generating electricity);	**4**
5(b)	*any three from:* no CO_2 emissions; (so) reduced impact on, enhanced greenhouse effect / global warming / climate change; no sulfur / SO_2 emissions; (so) no acid rain production; environmental impact of acid rain explained; lower volume of waste materials;	**3**

Question	Answer	Marks
5(c)	*any three from:* education (on energy consumption); increase efficiency of existing energy sources; reduce energy consumption (of buildings) with, better building insulation / having more windows to improve, light / ventilation; use more energy efficient machines; examples of action, e.g. turn thermostat down / shower for less time; transport policy / named example of transport policy;	**3**
5(d)(i)	27;	**1**
5(d)(ii)	6.7(2) billion ;; (*if answer incorrect allow one mark for,* (12 + 12 + 16 + 8 =) 48% or 0.48 [1]);	**2**
5(d)(iii)	1 116 000;	**1**

Question	Answer	Marks
6(a)(i)	157.0;	**1**
6(a)(ii)	*any three from:* wild fish catch greater than farmed fish catch; total fish catch has increased each year / valid data on total fish catch, e.g. overall increase of 29 million tonnes / from 137.3 to 166.3 million tonnes; amount of wild fish catch, has fluctuated / is fairly constant / increased slightly / valid data on wild fish catch, e.g. range of 1.8 million tonnes / 88.6 to 90.4 million tonnes; amount of farmed fish has increased (each year) / valid data on farmed fish catch, e.g. increased from 47.3 to 75.9 million tonnes / increased by 28.6 million tonnes;	**3**
6(a)(iii)	*any two from:* decreasing wild fish stocks / overfishing; increase in demand (for fish) / increase in world (human) population; prices make farmed fish more economical; improved fish farming techniques; more fish farms;	**2**

Question	Answer	Marks
6(b)	*any three from:* restriction on, numbers caught / size caught / quotas / laws / licensing / boat numbers; limits to fishing areas / marine reserves / restricted areas; seasons for fishing (to avoid, spawning / breeding season); smaller nets / types of nets / fishing type; larger mesh size / shape of mesh;	**3**
6(c)	*any three from:* data is based on samples; not all fishermen declare catch / illegal fishing; governments or countries may under-report catch / no enforcement of quotas; data might not include bycatch; some species not included in the recording;	**3**

Question	Answer	Marks
7(a)	number of people killed: 4 ; number of households affected: 5520 ; area of crops damaged: 1075 **AND** hectares ;	**3**
7(b)	*any three from:* lack of clean water; lack of sanitation; lack of shelter / homeless; reduced access to, medical care / emergency supplies; loss of crops / starvation / malnutrition; stagnant water; spread of disease; named water-related disease; some injured may die; some people still missing;	**3**

Question	Answer	Marks
7(c)	*any three from:* use of, accurate weather forecasting / hydrographs / early warning systems; investment in, dams / walls to rivers / dredge rivers / widen rivers / straighten rivers; provision of emergency shelters; practice emergency procedures; availability of, medical support / rescue teams / equipment; restrict building in flood-prone areas; afforestation; building modifications;	**3**

Question	Answer	Marks
8(a)	pie chart completed (five segments plotted correctly in correct order) ;;; key shaded and labelled;	**4**
8(b)	*any two from:* increase in world (human) population; (so) increase in demand for food; change in diet towards more grain; increase in consumption of meat (which needs grain for livestock); agriculture more intensive / due to over cultivation;	**2**
8(c)(i)	26.1;	**1**
8(c)(ii)	*any one from:* conversion ratio lower (for chicken) / 7:1 for beef compared to 2:1 for chicken; more food needed for a cow (to produce 1 kg of beef) / chickens require less food or less water (to produce 1 kg);	**1**
8(c)(iii)	5 780 625 / 5.8 million / 5.78 million;	**1**

Question	Answer	Marks
8(c)(iv)	*any two from:* unsuitable land (for crops); unsuitable climate (for crops); profitability; lack of demand for crops / (more) demand for meat; lack of knowledge (about, growing crops / arable farming); lack of money to change farming type; animals also provide other products; tradition;	**2**

Question	Answer	Marks
9(a)(i)	*any three from:* increase in population of 1.5% or more in north (east); population growth to the east of the country; population decline in most areas of the country; Tasmania / island to south, has small increase or increase <0.5%; most of population increase is around the coast; central region (of Australia) is area of population decrease;	**3**
9(a)(ii)	*any two from:* increased urbanisation; migration / immigration; many areas do not have employment opportunities; better climate at the coast; older population (means fewer births) in many areas / ageing population; drought / crop failure / wild fires / desertification;	**2**

Question	Answer	Marks
9(b)	*any three from:* migration / immigration, controls; public education / family planning; educating women (so women have, careers / children later); birth control programmes / availability of contraceptives; pronatalist or antinatalist policy / encouraging or penalising certain family sizes; example of a named policy in a specific country; raising the age for marriage; improved healthcare;	**3**
9(c)	*Level of response marked question:* Level 3 [5–6 marks] A descriptive response, well-argued, covering and linking both sides 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 economy and the environment may not be clear within the response. Or A one-sided response covered in depth and supported with relevant examples to support 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 or disagree that a growing population is good for the environment and also agree or disagree that it is good for the economy of a country.	**6**

Question	Answer	Marks
9(c)	*economic content:* Candidates may cover the strain on the economy caused by an increase in birth rate and how this is a drain on resources due to less women at work, and the increased requirement for medical care and the need for schools and other resources. Candidates may also cover the decrease in death rate / people living longer and what this means for the economy in terms of an increased need for medical care, the need for pensions and (proportionally) less people in work. However, more young people will eventually enter the workplace to increase the working population and increase the economic potential for the country. Also, some candidates will cover immigration and migration of the working population. *environmental content:* Candidates may cover the need for space for a growing population, for residential or industrial buildings, and discuss deforestation, habitat destruction and the effects on food chains, food webs and biodiversity. Candidates may also cover the increased need for food, and the idea of more land for agriculture and monoculture as well as land for livestock. Candidates may consider the increased need for transport, infrastructure, electricity and amenities and talk about increased waste, sewage, atmospheric pollution and other issues. Some candidates may consider the things that can be done to counteract the negative effects of a growing population, for example more efficient use of resources, recycling, and alternative energy resources.	