



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT

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Paper 1

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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.

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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)	<p>Cyclones form over <u>oceans / water</u> between the Tropic of <u>Cancer</u> to the north of the Equator and the Tropic of <u>Capricorn</u> to the south of the Equator.</p> <p>The tracks of cyclones generally move in a clockwise direction <u>north</u> of the Equator and an anticlockwise direction south of the <u>Equator</u>.</p> <p>The cyclones forming in the Atlantic Ocean affect narrow areas of land on the eastern side of <u>North / Central America</u>. ;;;</p> <p><i>5–6 correct [3] 3–4 correct [2] 1–2 correct [1]</i></p>	3
1(b)	<p><i>any four from:</i></p> <p>loss of life / injury; very strong / above 200 km / hr, winds; heavy / torrential, rainfall / thunderstorms; floods / flooding; landslides / mudflows; strong / high, winds produce huge / storm, waves; winds, drive sea water inland / cause, sea surges / rise in sea level; damage to, possessions / buildings / houses; damage to infrastructure / damage with example, e.g. water / electricity / power / transport; trees uprooted / flying debris; damage to, crops / livestock / famine; salt contamination; disruption of, drinking water supplies; sewage treatment / waste disposal; spread of, disease / cholera / typhoid;</p>	4

Question	Answer	Marks
1(c)	<p><i>any three from:</i> forecasting / monitoring / prediction; use of, satellites / radar / animal behaviour; hazard preparedness / disaster preparation / warning systems; emergency, drills / procedures; supplies, food / drinking water; legislation / planning regulations; appropriate buildings (e.g. water / wind resistant / raised above ground / on stilts); sea walls / mangroves / levees; underground power lines; evacuation; to (cyclone) shelters / inland; mobilisation of, emergency services / rescue services / police / fire / ambulance; disaster relief / international aid;</p>	3

Question	Answer	Marks
2(a)	<p><i>any three from:</i> no nuclear power production 2014 / nuclear 26% of production in 2010 to 0% in 2014; gas increased, by 13% / from 27% in 2010 to 40% in 2014; coal increased, by 6% / from 27% in 2010 to 33% in 2014; oil increased, by 3% / from 8% in 2010 to 11% in 2014; hydro-electric increased, by 1% / from 8% in 2010 to 9% in 2014; biomass and waste increased, by 1% / from 3% in 2010 to 4% in 2014; other renewables increased, by 2% / from 1% in 2010 to 3% in 2014; (total) renewables increased, by 4% / from 12% to 16%;;</p>	3

Question	Answer	Marks
2(b)	<i>any two from:</i> only a small amount of uranium ores / raw material needed; does not produce, carbon dioxide emissions / greenhouse gases / does not contribute to, global warming / greenhouse effect; no emissions of sulfur dioxide / acid rain;	2
2(c)	<i>any three from:</i> uranium / fuel / waste, is radioactive; remains radioactive for a long time / uranium has a long half-life; risk of, accidents / radiation leaks (endangering life); <i>reference to an example</i> , 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
2(d)	<i>any two from:</i> increased efficiency in the, mining / production of uranium; developing alternatives to uranium (e.g. plutonium); more efficient nuclear reactors / use of fast-breeder nuclear reactor; more efficient use of electricity / less electricity generation required; increased use of renewable sources of energy;	2

Question	Answer	Marks
3(a)	growing crops / rearing animals, for sale / profit;	1
3(b)	0.005 / 5×10^{-3} (USD);	1

Question	Answer	Marks
3(c)	<p><i>any two from:</i> around the Equator / between the tropics; northern part of South America; central America; islands, between North and South America / in the Caribbean; eastern side of South America / (large area) south of the Equator; close to the coast; small area to the south of the Tropic of Capricorn;</p>	2
3(d)	<p><i>any three from:</i> bananas grow in, hot climates / tropical regions; bananas cannot be grown in North America and Europe; (high) demand in developed countries; developed countries can afford to import bananas; production costs are low in developing countries; provides income / foreign exchange, for developing countries;</p>	3
3(e)	<p><i>any three from:</i> decreases biodiversity / disrupts food webs / affects ecosystem; harmless / beneficial, organisms, poisoned / killed; other animals eat poisoned insects and die; run-off into, rivers / lakes, leading to water contamination; drifting / spraying, pesticides, causing air pollution; may disrupt, wildlife / insect behaviour; can remain in the environment for generations; pesticide resistance may develop, increasing numbers of pests; DDT named as dangerous pesticide;</p>	3

Question	Answer	Marks
4(a)	<p><i>Birth and death rates are both high in stage <u>1</u>.</i> <i>Birth and death rates are both below 15 per thousand per year in stage <u>4</u>.</i> <i>The birth rate starts to decrease in stage <u>3</u>.</i> <i>The death rate starts to decrease in stage <u>2</u>.</i> <i>The population increases most rapidly at the end of stage <u>2</u>.</i> <i>The death rate is higher than the birth rate at the end of stage <u>5</u>. ;;;</i></p> <p><i>5–6 correct [3]</i> <i>3–4 correct [2]</i> <i>1–2 correct [1]</i></p>	3
4(b)	<p><i>any four from:</i></p> <p><i>environmental problem: deforestation / loss of, natural vegetation / habitats / biodiversity;</i> <i>explanation: land for, houses / settlement / agriculture / extracting or developing resources with example (e.g. minerals, dams for water / HEP);</i></p> <p><i>environmental problem: pressure on (fresh) water, sources / supply;</i> <i>explanation: reduced water in, rivers, wells / aquifers;</i></p> <p><i>environmental problem: damage to soils, erosion / salinisation / desertification / loss of, nutrients / fertility;</i> <i>explanation: overcultivation / overgrazing / over irrigation;</i></p> <p><i>environmental problem: damage to, oceans / marine ecosystems;</i> <i>explanation: shipping / oil / overfishing;</i></p> <p><i>environmental problem: <u>air</u> pollution / global warming / climate change / acid rain / ocean acidification;</i> <i>explanation: fossil fuel burning / vehicles / industry;</i></p> <p><i>environmental problem: <u>land</u> / <u>water</u>, pollution;</i> <i>explanation: from, litter / rubbish tips / land fill / waste / sewage / plastics / AVP;</i></p>	4

Question	Answer	Marks
4(c)	<p><i>any three from:</i> provision of, family planning services / contraception / birth control / sterilisation; improved, health services / childcare; education (including on family planning) / literacy; national policies / laws (antinatalist) to reduce, birth / fertility rate; national policies / laws (pronatalist) to increase, birth / fertility rate; rewards / tax incentives, for small families; later marriages / preventing early marriages; control, borders / migration;</p>	3

Question	Answer	Marks
5(a)(i)	correct plots at 14 million tonnes on the line AND 2.6 million tonnes between the lines;	1
5(a)(ii)	59.72 / 59.7 (%);	1
5(a)(iii)	<p><i>any one from:</i> population growth / demand / exports / foreign exchange (earnings); food, shortages / high prices; investment in, boats / equipment / modern technology; more efficient methods of fishing / sonar / freezer trawlers / AVP;</p>	1
5(b)(i)	<p><i>any four from:</i> net, size / type limitations; mesh, size / shape limitations; pole and line fishing (instead of using a net, not where otherwise banned); ban on use of, chemicals / explosives / dredging (destructive methods); quotas; licences; international agreements / conservation laws; patrol boats / enforcement officers; (economic) exclusion zones; closed seasons / <i>idea of</i> banning fishing during reproductive seasons; restricted areas / protected areas / reserves; moratorium / ban (on named species e.g. cod, sea bass);</p>	4

Question	Answer	Marks
5(b)(ii)	<i>any three from:</i> quotas / restrictions, ignored; little / no, monitoring / enforcement / weak deterrents; use of, illegal / large nets; use of nets with, illegal / small mesh; fishing in restricted areas / trespassing; fishing in breeding season; destroying / death of, small fish caught illegally / bycatch; problems getting international agreements / corruption;	3

Question	Answer	Marks
6(a)(i)	<p><i>any two from:</i> small rocks have weathered into soil allowing plant roots to develop; (heat provides) optimal temperature (for growth); (soil / rocks provide drainage) preventing water logging; fruit ripens (on south facing slopes); goats produce manure / waste, that improves the soil;</p>	2
6(a)(ii)	<p><i>any four from:</i> pioneer community, consists of lichens that grow on the rock waste; <i>reference to</i> humus / decomposition / decay; <i>reference to</i> soil; <i>reference to</i> seeds; <i>reference to</i> succession / number of species increase / height of species increases; climax vegetation, consists of large trees;</p>	4
6(a)(iii)	<p>goats eat the shrubs and bushes which stops, trees growing / climax vegetation developing;</p>	1
6(b)	<p><i>any three from:</i> waste disposal / garbage / landfill; lake; fill for, farming; fill for, forestry / parks; (leisure) sports stadiums / golf courses; solar power farms; eco-friendly (flora) projects / restoring habitats; living accommodation; storage in underground mines; low grade thermal energy from flooded deep mine workings; tourist attraction;</p>	3