Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 **May/June 2018**

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 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.

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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)	The wettest month is **Dec / December**, which has a mean monthly rainfall of **306** mm. Temperatures are highest in **October** and the annual range of temperature is **7.2** °C. Ndola has a savanna climate and is located in the **southern** hemisphere. ;;;;;	**5**
1(b)(i)	*any two from:* there are trees in the tree savanna, not in the shrub savanna / greater variety of species in the tree savanna; vegetation is, higher / taller in the tree savanna than in the shrub savanna; trees different height / shapes, whereas shrubs same height / shape; lower density of trees in tree savanna / higher density of shrubs in shrub savanna;	**2**
1(b)(ii)	grass;	**1**
1(b)(iii)	*any four from:* low / decrease in, rainfall / ground dries out; increased grazing / overgrazing; so vegetation dies; trees removed / fires destroy trees; no roots to bind soil; less transpiration so rainfall reduced still more; soil open to erosion / winds carry soil away / soil bare; encroachment of dunes from desert;	**4**
1(c)	dispersal **D** competition **E** food web **A** habitat **B** photosynthesis **C** ;;;; *4–5 correct [4]* *3 correct [3]* *2 correct [2]* *1 correct [1]*	**4**

Question	Answer	Marks
1(d)(i)	*any three from:* sand / beach / sunbathing; sea / ocean / coast / swimming / watersports; clear (blue) skies / no or little cloud / dry / no rain / hot / warm; attractive scenery / mountains / exploring / walking; flat land; bay;	**3**
1(d)(ii)	*any four from:* quarrying for, stone / resources to build; clearance of vegetation; loss of habitats; loss of, flora / fauna / biodiversity / animals move away; noise pollution during construction; waste from digging foundations; air pollution from machinery / dust; increase in sediment washed into the sea / soil erosion; effects of increased sediment; sand stripped from, beach / seabed for building; soil compaction; soil pollution; visual pollution / spoils view;	**4**

Question	Answer	Marks
1(d)(iii)	*both shortage of water and waste and sewage to process must be covered for maximum credit:* encouraging tourists to, save water / use water carefully / restrict use / reduce waste; *shortage of water:* recycling of water; tax / raise price of, water; require swimming pools to use sea water / legislation on building or reducing pools; desalination of seawater / storage / aquifers / importing water; *waste and sewage to process:* idea of improvement of sewage treatment works; recycling of, grey water from sewage / wastes (e.g. plastic, cardboard); waste for bioenergy; sewage for manure / waste for compost;	**3**
1(d)(iv)	*any four from:* (large numbers of) planes / ships / ferries; (large numbers of) vehicles, e.g. coaches / taxis / buses; traffic congestion; large amounts of electricity needed; for, air conditioning / other uses; barbecues / other recreational activities, e.g. fireworks; result in, sulfur / nitrogen / carbon, oxides / greenhouse gases, being released; result in particulates being released;	**4**
1(e)	scale of x axis and orientation; scale of y axis; x and y axes correctly labelled; 4 / 5 points plotted correctly;	**4**

Question	Answer	Marks
1(f)	*Level of response marked question:* Level 3 [5–6 marks] Balanced coverage of both environment and economy and reaches a conclusion based on the detailed explanation. Level 2 [3–4 marks] Covers environment far more than economy or vice versa. Reaches a conclusion, but explanation is limited. Level 1 [1–2 marks] Basic descriptive points with little or no reasoning. May only cover one side of the environment / economy debate. No response or no creditable response [0]. *Level of response marking indicative content:* The best answers will look at both parts of the statement, i.e. why tourism is good for a country's economy, but harmful to the planet. Candidates can use ideas from previous part-questions on environmental damage and also include examples, such as building of airports. Answers should also include how tourism benefits the economy through for example, jobs, investment, foreign exchange and tax revenue. Expect most candidates to agree with the statement, though some may argue that sustainable / eco-tourism is good and that money from tourism can pay for protection, as happens in Kenya for example.	**6**

Question	Answer	Marks
2(a)(i)	*any two from:* trawl dragged along sea-floor; chain / frame, holds trawl open / allows it to sink; fish, enter net / are trapped (at narrow end); fish loaded onto trawler;	**2**
2(a)(ii)	*any two from:* heavy chains dig into the sea-floor / skids cut grooves in the sea-floor / sediment disturbed; (both) destroy, sea-floor habitats / food sources / plants / animals / e.g. corals; parts of the trawl left on sea-floor causing, damage / pollution; lack of time for sea-floor to recover;	**2**
2(a)(iii)	when more fish are caught than can be replaced (by breeding) / fishing that is not sustainable;	**1**
2(a)(iv)	*any three from:* large / increasing, human population; large / increasing, demand / need for fish; better, technology / fish detection; example of improved technology, e.g. sonar, freezer trawler; big nets / large number of fishing boats / bigger boats; small mesh size; lack of, regulation / policing;	**3**
2(a)(v)	*any three from:* fish population decreases; loss of food for, predators / consumers / species higher up the food chain; so their numbers decrease / death of predators; predators will feed on other prey species / other prey species decrease; increase in, species lower down the food chain / plankton;	**3**
2(b)(i)	20;	**1**

Question	Answer	Marks
2(b)(ii)	*any three from:* overall increase / increases from 2005 or 2007 to 2014; no increase 2005–2007; small increase 2007–2009; large increase since 2009; greatest yearly increase between 2011 and 2012; data to illustrate change, including at least two figures or calculation of change;	**3**
2(c)(i)	152;	**1**
2(c)(ii)	56;; *(if answer incorrect, allow one mark for 152–96 [1]);*	**2**
2(c)(iii)	fish stocks are, increasing / improving / recovering;	**1**
2(c)(iv)	*any three from:* increase mesh size; ban fishing in certain areas; ban fishing for particular species; allow fishing for only part of the year / avoid fishing in breeding seasons; licences or permits or sensible legislation; authorities should eliminate hidden subsidies, e.g. subsidising the cost of fuel for travelling to fishing grounds;	**3**
2(d)(i)	2006;	**1**
2(d)(ii)	2003–2005;	**1**
2(d)(iii)	7.4;	**1**
2(d)(iv)	*any three from:* some cyclones more powerful; those that reach land cause more damage; some hit, populated areas / high density of buildings; some hit low-lying areas; damage more costly to repair in developed nations; areas less prepared / areas without defences suffer more damage / houses not as strong;	**3**
2(d)(v)	correctly marked at 8,42;	**1**

Question	Answer	Marks
2(d)(vi)	*any two from:* no relationship; no best fit line / damage does not increase with frequency; data to justify answer;	**2**
2(d)(vii)	*any three from:* warm water / ocean temp 27 °C or greater; energy from evaporation; warm air rises (quickly); causing low pressure; draws in more air at ocean surface; the air spins due to the, Coriolis effect / Earth's rotation; cold air sinks in centre; increase in atmospheric energy due to global warming;	**3**
2(e)	*Level of response marked question:* Level 3 [5–6 marks] Detailed explanations of pollutants, reduction and challenges. Needs to reach a conclusion based on the evidence presented. Level 2 [3–4 marks] Some explanation of a source of pollution, how it can be reduced and an idea about the challenges faced. Level 1 [1–2 marks] Limited reference to pollution sources and their reduction. Little or no explanation. No response or no creditable response [0]. *Level of response marking indicative content:* Expect candidates to deal with major pollution sources in oceans, such as oil spills, sewage, plastics and possibly fertilisers / heavy metals. It is not necessary to cover all of these. The main focus should be on whether the sea pollutants can be reduced. Very difficult to remove, though oil spills are 'scooped up' to some degree. So expect details on making oil tankers safer, government initiatives to reduce waste being dumped into the oceans and the role of environmental groups in terms of education and action. Answers may also include difficulties, as international cooperation is needed and currents spread pollution from source areas.	**6**