Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/22**

Paper 2 Management in Context **March 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.

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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)(i)	(12.5 million / 16.7 million × 100 =) 74.85 / 74.9 / 75;	**1**
1(a)(ii)	(× 100 000 =) 668 000 / 0.668 million ;; *(if answer incorrect, allow one mark for 16.7 million × 0.04 or 0.668 [1])*;	**2**
1(b)(i)	orientation and sensible linear scale; y axis fully labelled with unit; x axis fully labelled; all bars correctly plotted;	**4**
1(b)(ii)	*between* 2013 *and* 2014;	**1**
1(b)(iii)	(50.68 + 362 =) 412.68 / 412.7 / 413 ;; *(if answer incorrect, allow one mark for 0.14 × 362 or 50.68 [1])*;	**2**
1(c)(i)	*any two from:* trees can grow again / have time to, grow / recover; villagers will not take wood faster than it grows; so supply can be maintained (for future generations); using charcoal reduces carbon footprint; fossil fuels, are not used / conserved for other uses;	**2**
1(c)(ii)	*any three from:* food not eaten by shrimps; (excretory) waste from shrimps; bacteria can feed on (excretory) waste and / or left over food; (shrimps) stir up sediment; farming uses water to clean equipment; bacteria make the water, cloudy / smell;	**3**
1(d)(i)	(small) invertebrates;	**1**
1(d)(ii)	a group of individuals of the same species; living in the same area;	**2**

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Question	Answer	Marks
1(d)(iii)	*any two from:* temperature; water; oxygen; salinity; pH; light;	**2**
1(d)(iv)	*any two from:* increases their food supply; grow quickly / reach maturity faster; more energy intake (per day); to make (more) flesh / shell (at a faster rate); more protein intake; more fat intake / more fish oils; AVP, e.g. shrimp will not have to find food so less energy used in movement;	**2**
1(e)(i)	6.4;	**1**
1(e)(ii)	(6.6 / 21.3 x 100 =) 31;	**1**
1(e)(iii)	*any one from:* use as a fertiliser; use as a food (for shrimps / animals / humans); make into fishmeal; use as bait for fishing;	**1**
1(f)(i)	measured length / 8.4–8.7 (cm); correct use of formula / 84–87 (cm);	**2**
1(f)(ii)	yes **AND** as it is longer than 80 cm;	**1**
1(f)(iii)	young fish can, grow / reach maturity; so population can be maintained / more fish produced;	**2**

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Question	Answer	Marks
1(f)(iv)	*any four from:* easy to catch too many fish / overfishing; young fish get caught; so the fish population goes down; other people may take fish; so needs constant supervision / law enforcement; using nets catches other species / bycatch, as well; so damage to food chain; nets catch other animals such as turtles and dolphins, which drown; AVP, e.g. cost of law enforcement;	**4**
1(f)(v)	*any three from:* set quotas; (set up) no fishing areas / no take zones / breeding grounds conserved; limit number of days at sea; limit size of net; control, size / shape of mesh in net; limit, number / size of boats; fishing patrols to check on fishermen;	**3**
1(g)	*any three from:* change of (trade) winds; change the direction of currents; surface water moves towards Ecuador; surface water is warm; so cold upwelling stops; increased rainfall along coast; *reference to* changes in weather in other parts of the world; low air pressure in eastern Pacific;	**3**

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Question	Answer	Marks
2(a)	*allow answer within range* 280–375 (km);	**1**
2(b)(i)	*any four from:* trees cut down / deforestation; so habitat lost; for, birds / insects / other animal; more / less, plant species on the ground; as more light reaches the ground; difficult for small animals to cross the pipeline; so habitat cut into small sections; populations isolated; AVP, e.g. noise of construction scares animals away;	**4**
2(b)(ii)	*any two from:* need to check pipeline for, maintenance / repairs; could be surveyed from the air; stops, trees / vegetation / animals damaging pipeline; stops, theft / damage / sabotage of oil by people (hiding in vegetation);	**2**
2(b)(iii)	*any six from:* use transect lines / some samples near pipeline, some in the rainforest; at 90 degrees to pipe / N and S; use of quadrat; quadrat of defined size; count number of species; count number of each species / percentage cover / other named measurement; stated number of, samples / transects; repeats in following years; use a book to identify plants;	**6**
2(c)(i)	*any one from:* each tree provides many niches; insects are very small; insects are protected from predators;	**1**

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Question	Answer	Marks
2(c)(ii)	*any one from:* many species still not, known to science / identified; difficult to take a representative sample / sampling does not capture all species;	**1**
2(d)(i)	*both benefits to Ecuador and benefits to other countries must be covered for maximum credit:* *max three from, benefits to Ecuador:* gain some revenue without having to invest in oil extraction; so can still fund other government project; maintains park for other use, e.g. tourism / medicinal plants; *max three from, benefits to other countries:* helps them offset their carbon emissions / complies with international agreements; encourages research into alternative fuels; call sell own reserves; keeps the price of oil high; conserves fossil fuel reserves; *idea of* increased trade opportunities; AVP, e.g. high oil price helps countries earn more money;	**4**
2(d)(ii)	*any four from:* oil is a main export / main source of income; to maintain demand or increase demand; creates employment; increases, tax revenue / national wealth / GDP; prevents the need for imports;	**4**

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Question	Answer	Marks
2(e)(i)	*any four from:* more people think it should go ahead; so more money to spend on them; some people may think the government will get money but they will not see any benefits; many people not to clear about biodiversity; as results (of biodiversity question) evenly split / high number of do not knows; on the other hand not much support for withdrawing national park status as, this gives a good impression / may have value in the future; AVP, e.g. as only people living in the capital city were asked maybe different opinions would be gathered from people living nearer to Yasuni National Park;	**4**
2(e)(ii)	*question related to the oil extraction written in a similar style, e.g.* Do you think there will be much pollution? / Do you think some species will become extinct? / Do you think oil extraction will extend into the Yasuni National Park? ;	**1**
2(e)(iii)	a sensible random or systematic method; further detail, e.g. how people are selected;	**2**
2(f)(i)	*any two from:* oil leaks occur (offshore); oil floats; ocean current moves towards Ecuador; oil can be moved by, wind / waves;	**2**
2(f)(ii)	*any four from:* toxic effect of oil; kills seabirds; and other animals, e.g. marine mammals or fish; negative effect on, food chain / food web; stops / reduces, photosynthesis; reduces / kills, algae / seaweeds / primary producers; beaches unsightly (for tourists); *reference to* tourism / tourists stay away / local businesses affected; *reference to* mangroves and shrimp in context of source information;	**4**

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Question	Answer	Marks
2(g)	*any four from:* *wind:* wind, does not blow all the time / needs to be fast enough; wind can be too powerful; wind direction changes; *solar:* solar does not work at night; solar batteries expensive; *either wind or solar:* not enough sites / not enough space; inability to cope with spikes in demand; Ecuador may not be rich enough to invest in these resources / *reference to* cost of installation;	**4**