Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/42**

Paper 4 Alternative to Coursework **March 2017**

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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the March 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

Question	Answer	Marks
1(a)	46 / 46.0 / 46.02 / 46.023 / 46.0228 / 46.0229;; (*if answer incorrect, allow one mark for correct method, e.g. 6 million ÷ 130 370 [1]*)	**2**
1(b)(i)	*any two of:* mostly rely on subsistence farming; only, part time / seasonal work in tourism; no industrial jobs; no highly paid jobs; high unemployment / eq; lack of health care / presence for serious disease; lack of land to grow food; AVP, e.g. rely only on tourism and farming;	**2**
1(b)(ii)	*any two of:* to earn money from canal charges; to attract investment; create jobs in, construction / canal management; improve the economy (of the country) / more, imports / exports / trade; AVP;	**2**
1(c)(i)	**A** 274; **C** 274; (*allow answer within the range of 260–290 for each measurement*)	**2**
1(c)(ii)	(*route*) **A** and (*reasons*) destruction of wetlands; *or* (*route*) **C** and (*reasons*) destruction of biosphere resource;	**1**
1(d)(i)	*any two of:* (more) sediment reduces photosynthesis; kills, plants / producers; reduced biodiversity / so some species, reduced / die out; food chains altered / described;	**2**

Question	Answer	Marks
1(d)(ii)	*any two of:* a named pollutant e.g. oil / fuel oil; more waves (damaging shoreline); reduced water quality, e.g. more turbid / described;	**2**
1(e)(i)	table drawn; headings with units (metres / m and tonnes / t); data correctly entered;	**3**
1(e)(ii)	*any two of:* need to find the investment money / some investment from overseas; training workers / getting skills; finding labour force; planning permission / land purchase; relocating local people; getting, materials / equipment; AVP, e.g. size of project;	**2**

Question	Answer	Marks
2(a)	*any three of:* ocean temperature (at surface of pacific) warmer than average / eq; ocean currents change (direction); changes in rainfall patterns; weaker winds over the equator / wind direction reversed; AVP;	**3**
2(b)(i)	78.4 / 78.40 / 78.41;; (*if answer incorrect, allow one mark for correct method, e.g. 1074 – 602 = 472 [1] or 472 ÷ 602 · 100 [1]*)	**2**
2(b)(ii)	reduced supply of beans; same / increased demand (so prices rise);	**2**
2(b)(iii)	source of, protein / carbohydrate / vitamins / minerals / fats;	**1**
2(c)(i)	*any two of:* tests three different volumes of water; volume, stated in method two / not stated in method one; so method one could not be repeated / eq;	**2**
2(c)(ii)	*any two of:* temperature; pH of water; light; size of dishes;	**2**
2(c)(iii)	*any one of:* number of leaves produced; mass of seedlings; length of, root / shoot / whole seedling;	**1**
2(d)(i)	orientation; all plots correct; axes fully labelled with units (cm^3 and days);;	**4**
2(d)(ii)	as volume increases survival time increases **and** levels off / eq;	**1**

Question	Answer	Marks
2(d)(iii)	(*month*) September; (*reason*) rainfall too high for survival of seeds; *or* (*month*) February; (*reason*) rainfall too low for germination; *or* AVP, e.g. December or May with valid reasons;;	**2**
2(d)(iv)	*any two of:* bean plants fix nitrogen; so plant can make protein; reference to root nodules / bacteria in roots; remains of, first crop / roots release, ammonia / nitrites / nitrates into the soil;	**2**
2(e)(i)	*any three of:* heavy rainfall not intercepted / lack of vegetation / eq; surface run-off on slopes; top soil / soil / surface, washed away; rill formation / rill formation described; enlarges to gully;	**3**
2(e)(ii)	*any four of:* place two poles a, measured / stated distance apart; place float in channel (upstream); start stopwatch as float passes; stop stopwatch at second pole; record time; repeat; find average; rate = distance ÷ time;	**4**

Question	Answer	Marks
2(e)(iii)	*any one of:* have you made more profit?; do you think the extra work was worth it?; can you maintain the check dam?; do you use less fertiliser?; can you grow other crops?; AVP;	**1**
2(e)(iv)	check dams, slow down / stop, the flow of water; so more time for infiltration / eq;	**2**

Question	Answer	Marks
3(a)(i)	anemometer;	**1**
3(a)(ii)	(*highest*) 17 **and** (*lowest*) 11; (*range*) 6 *or* 11–17;	**2**
3(a)(iii)	*any two of:* winds mostly blow in the same direction; more efficient generation / eq; so turbines do not need to keep turning into the wind / eq; turbines might last longer;	**2**
3(b)(i)	*any two of:* no carbon dioxide released; no other named pollutant released; does not contribute to global warming; sustainable, as a renewable / not finite resource; turbines cheap to run / low maintenance cost / eq;	**2**
3(b)(ii)	*any three of:* keep industry making, money / products; keep tourism making money; keep hospitals running; keep computer systems running; power cuts increase crime / eq; to maintain lifestyle / to encourage economic activity; AVP, e.g. refrigeration / air conditioning not reliable;	**3**