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Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/22**

Paper 2 **May/June 2016**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)(i)	660–680; 2011;	**2**
1(a)(ii)	1983;	**1**
1(a)(iii)	18 years;	**1**
1(a)(iv)	flooding;	**1**
1(b)(i)	(fruit / veg need a lot of water) so close to the river for irrigation / fertile soil close to river; extensive cattle farming has less need of water / less need of fertile soil;	**2**
1(b)(ii)	*any 2 of:* (many years of) low rainfall / below average rainfall; so grass / fodder doesn't grow much / dies back; reduced food for cattle / cattle may die; lack of water for cattle to drink; farmers lose money / go bankrupt / forced to sell cattle;	**2**
1(b)(iii)	*any 4 of:* heavy rain; so ground becomes saturated; leading to surface runoff; following (long) dry period; so would be limited vegetation; to hold soil together; when rain falls it washes soil away;	**4**
1(b)(iv)	*any 4 of:* nitrates and / or phosphates; washed into water sources; nitrates in drinking water harm human health; in rivers / lakes cause algae to increase rapidly; bacterial decomposition of algae when they die; (leading to) oxygen deficiency; and so eutrophication; leading to death of fish / invertebrates;	**4**

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Question	Answer	Marks
1(b)(v)	*any 3 of:* educating farmers; reducing fertiliser / pesticide use; using natural / organic fertilisers / such as manure / compost; using natural bio-controls for pests; less intensive fruit growing; reduce stocking levels on cattle farms; mixed cropping; crop rotation; store water for irrigation trickle drip irrigation; etc.;	**3**
1(c)(i)	period of abnormally low rainfall;	**1**
1(c)(ii)	Europe;	**1**
1(c)(iii)	mainly in the tropics; except for China / India; east side of continents; in a band through north Africa; Oceania; South / south east Asia; eastern South America; max 2 on named locations	**3**
1(c)(iv)	removal of vegetation / desertification; climate change / global warming;	**2**
1(d)	*any 3 of:* drought means vegetation dries out; accidental burning by farmers; climate change causing loss of habitats / lack of water; expanding human activities / deforestation; pollution of environments;	**3**

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Question	Answer	Marks
1(e)	*any 4 of:* weakening of trade winds; reversal of warm / equatorial current; to flow eastwards; increase in rainfall; so no upwelling of cold water; so lack of nutrients at surface; causing decline in numbers of marine creatures;	**4**

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Question	Answer	Marks
1(f)	*Indicative content* droughts tend to last longer and affect larger areas than floods or cyclones; floods and cyclones cause more damage to property than droughts; all can lead to soil erosion and loss of crops / animals; cyclones and floods are short-term and may require emergency rescue, shelter, food, etc.; effects of drought, being longer term, can be planned for, but can cause far more deaths than the others if no food aid, etc.; most environments recover from such disasters; it will depend on the severity of each disaster as to environmental effects, though flooding and cyclones more likely to result in pollutants being washed into water courses or the sea; droughts less environmentally damaging; Level 3 5–6 marks must communicate the features of the climatic hazards. Answers the question with detailed consideration of climatic hazards. Must look at both sides of the argument, so must be some discussion of floods and/or droughts and their relative impacts. Level 2 3–4 marks considers both sides (i.e. other climatic hazards besides cyclones) with brief details OR detailed consideration of one climatic hazard (probably cyclones) Level 1 1–2 marks basic descriptive points with little or no reasoning. May just be a list of impacts of cyclones and an agreement without mention of other climatic hazards. no response or no creditable response, 0.	**6**

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Question	Answer	Marks
2(a)(i)	crust; mantle; core; all 3 correct = [2], 1 or 2 correct = [1]	**2**
2(a)(ii)	*any 3 of:* two plates moving towards each other; both are continental plates; collision cause plates to buckle; creating folds and mountains / fold mountains;	**3**
2(a)(iii)	*any 2 of:* no oceanic plate; so no subduction; so no melting of plate for magma;	**2**
2(b)(i)	constructive (divergent);	**1**
2(b)(ii)	two arrows pointing away from central rift; fault labelled at central rift;	**2**
2(c)(i)	south / southwest of Iceland / on the Atlantic mid-oceanic ridge;	**1**
2(c)(ii)	igneous;	**1**
2(d)(i)	21 / 22;	**1**
2(d)(ii)	*any 4 of:* no plants in 1965; increased up to 1975–8; then remained constant until 1985; constant again 1987 to 1989; then a rapid increase; up to 55 / 56 plant species in 2000; accept other valid descriptions;	**4**

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Question	Answer	Marks
2(d)(iii)	*any 3 of:* sudden increase; transported seeds to Surtsey; in droppings / feathers; droppings provide nutrients for plant growth;	**3**
2(d)(iv)	*any 2 of:* change in the types of plant species (that occupy a given area through time); from bare ground to climax vegetation; can use descriptive example such as bare ground e.g. moss/lichen/trees /forest;;	**2**
2(e)(i)	*any 4 of:* cold water pumped down well; passes through cracks / joints / fissures in the rock; which heats it; hot water rises (under pressure); at surface (drop in pressure) turns water to steam; turns turbines / generator;	**4**
2(e)(ii)	has hot rocks close to the surface (or similar) / volcanic;	**1**
2(e)(iii)	yes or clearly implied; available to future generations /lasts forever; Earth's heat / water not used-up or can be reused; OR max 2 if 'no' given as answer AND reasons as 50 year max life for power plant at that location; if no control of cold water pumping;	**3**

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Question	Answer	Marks
2(e)(iv)	*any 4 of:* burning fossil fuels produces carbon dioxide / carbon monoxide; carbon dioxide is a greenhouse gas; responsible for enhanced global warming; max 1 on consequences of global warming; burning produces nitrogen / sulfur oxides; which cause acid rain; burning produces soot / particulates; which cause smog / toxic gases / health problems; max 1 for impacts of extraction if well explained;	**4**
2(f)	*Indicative content* advantages such as geothermal, fertile soils, minerals, tourist destination and therefore source of income; disadvantages such as risks from lava, lahars, ash clouds, pyroclastics, etc.; may also discuss little choice as nowhere to move to, tradition, etc., but these can only be peripheral to the argument; Level 3 5–6 marks must communicate the hazardous / beneficial features of volcanic eruptions / regions; must reach a conclusion having covered both advantages and disadvantages with developed arguments / explanations; may be more detailed on one side than the other; Level 2 3–4 marks must communicate the hazardous and/or beneficial features of volcanic eruptions / regions. covers both advantages and disadvantages with brief arguments / explanations. OR one sided looking at either advantages or disadvantages with developed arguments / explanations. Level 1 1–2 marks basic descriptive points with little or no reasoning. May just be a list of for or against. no response or no creditable response, 0.	**6**

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