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ENVIRONMENTAL MANAGEMENT

0680/12

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MARK SCHEME

Maximum Mark: 60

Published

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Question	Answer	Marks
1(a)(i)	ammonia B nitrate A nitrification C ;; <i>3 correct [2 marks]</i> <i>1 or 2 correct [1 mark]</i>	2
1(a)(ii)	it is used to make, amino acids / proteins / chlorophyll / chloroplast / DNA; for, growth / repair / photosynthesis / cell division;	2
1(a)(iii)	<i>any four from:</i> nitrate / phosphate; wash off into rivers; cause algae to, grow / reproduce; algae die; block sunlight; (bacteria) decompose / respire algae; (bacteria) use up oxygen; lack of oxygen kills fish; <i>ref to eutrophication;</i>	4

Question	Answer	Marks
1(a)(iv)	<i>ref to</i> GM crops; e.g. fix nitrogen / pest resistant; plant breeding; e.g. for pest resistance / to grow with less nitrogen; mixed cropping / crop rotation; to reduce soil exhaustion / use of a legume; (improved) irrigation / method described; to allow more growth / photosynthesis; legumes; to fix nitrogen; organic fertilisers; provide nutrients / improve water retention; use of a pesticide / herbicide / fungicide; stop crop being eaten / remove competition;	2

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Question	Answer	Marks
2(a)(i)	$(7 - 2.4 =) 4.6$ (billion);	1
2(a)(ii)	$(0.343 \cdot 100\% =) 34.3 / 34$;; (if answer incorrect, allow one mark for correct method, e.g. $2.4 / 7$ [1]);	2
2(a)(iii)	any three from: urban: more people (making it worthwhile to) install, pipework / sewage treatment ; greater density of population (making it worthwhile to) install pipework / sewage treatment ; people have, more power / influence, so it is easier to pressure the government; the government have more interest in providing water to the people; tourists are more likely to visit if clean water is available; more money / rich people, to pay for their water; leading to improved pipework / sewage treatment; rural: ref to a rural problem, e.g. terrain / making it difficult to install water system; no machinery making it difficult to install water system; AVP;	3
2(b)(i)	bilharzia OR malaria;	1
2(b)(ii)	any three from: correctly named vector; drain water to remove breeding site; use of insecticide / chemical, to kill vector; wear clothes / use of nets, to prevent vector feeding / biting; sterilise males, to reduce breeding / reproduction; pour oil on water, to stop breeding; use of fish, to eat larvae;	3

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Question	Answer	Marks
3(a)(i)	<i>any two for one mark:</i> wind / wave / tide / HEP / geothermal / nuclear / solar / biomass / biofuel;	1
3(a)(ii)	USA and Russia;	1
3(a)(iii)	720 (million tonnes) ;; (if answer incorrect, allow one mark for correct method, e.g. $0.09 \cdot 8000$ [1]);	2
3(b)(i)	<i>any three from:</i> electric cars produce no (local) air pollution / emission of gases; as do not burn, a fuel / named fuel; less health issues / named health issue in cities; but if the power comes from, fossil fuelled power station / hybrid car engine; then using them does produce air pollution indirectly; inefficient to transfer the energy from power station to car; production of car still produces air pollution;	3
3(b)(ii)	<i>any three from:</i> reduce the use of appliances; turning off appliances when not in use; energy saving appliances / low energy light bulbs; insulation; solar panels; small scale wind turbine; choose a green energy supplier / use biofuel; reduce use of car by, walking / public transport / bicycling; more efficient use of the car, e.g. car sharing / catalytic converter / better fuel consumption; <i>ref to low / no, CFC appliances;</i>	3

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Question	Answer	Marks
4(a)(i)	C as seen (cold current going in direction of pole to equator);	1
4(a)(ii)	W as seen (warm current going in direction of equator to pole);	1
4(a)(iii)	<i>any four from:</i> cold current / cold and warm current meeting / upwelling; bring / contain, nutrients (from sea bed); these encourage growth of phytoplankton; which are fed on by zooplankton; which are fed on by fish, leading to more fish; (cold currents) are rich in oxygen; for respiration;	4
4(b)(i)	(decreases water quality by) carries diseases / may lower oxygen availability / may add, toxic chemical / heavy metals to the ocean; AVP;	1
4(b)(ii)	<i>any three from:</i> treated / passed through a sewage plant before disposal; dispose of in small quantities; filtered / remove solid material; acted on by microbes / digested to remove nutrients; <i>ref to</i> government control / legislation on the quality of sewage;	3

Question	Answer	Marks
5(a)(i)	<i>any four from:</i> trees removed / no trees; no low-lying shrubs / grasses etc.; no vegetation / bare soil; desert; land cleared for, arable farming / animals grazing ; overgrazing / trampling; overcultivation; soil erosion / exhaustion / dry;	4
5(b)(i)	indication in drawing of horizontal “ledges” / step / wall / etc.; reasonable label e.g. flat land / step / plants on flat land / step / wall;	2
5(b)(ii)	stops rapid flow of water / run-off / more infiltration / carrying soil away; due to no slope / flat surfaces for growing / wall blocking water flow / hold soil back;	2
5(b)(iii)	<i>any two from:</i> increases area for farming; allows high parts to get adequate water, as it does not run away / fertilisers do not run away ; easier to work the land when flat; can use machinery when field is flat;	2

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Question	Answer	Marks
6(a)(i)	<i>any two similarities with one difference OR any two differences with one similarity:</i> <i>similarities:</i> <i>both in:</i> in western / coast of N. America; in western / coast of S. America; far east / between Asia and Oceania / south Asia / southeast Asia / east Asia; east Africa; in ocean west of Africa / between Africa and S America / south Atlantic; in ocean west of S America / south Pacific; Pacific ring of fire / around the edge of the Pacific; southern Europe; North Atlantic / Iceland; on plate boundaries; none in Oceania / Australia; <i>differences:</i> <i>volcanoes only in:</i> mid Pacific / middle of ocean west of Americas; NW Africa / middle of Africa; south pole / Antarctica; south east Africa / between Madagascar / Indian ocean; <i>ref to hotspot;</i> AVP; <i>earthquakes only in:</i> S / central / inland, Asia / Himalayas; Mid-Atlantic Ridge MAR / line between east of Americas and west of Africa;	3
6(a)(ii)	<i>any three from:</i> can avoid living in those places / recognise danger zones; can monitor for signs of occurrence; in order to predict; prepared to evacuate when signs are seen; communication of signs ready when seen;	3
6(b)(i)	coal / oil / gas / fossil fuel;	1

Question	Answer	Marks
6(b)(ii)	<i>any three from:</i> <i>ref to disposal of radioactive waste;</i> waste has a long (half) life; cost of building / maintaining plants is high; danger to workers from radiation; danger from accident; AVP;	3