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ENVIRONMENTAL MANAGEMENT

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MARK SCHEME

Maximum Mark: 60

Published

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This document consists of **9** printed pages.

Question	Answer	Marks
1(a)	<p>5 correct [3] 3 to 4 correct [2] 1 to 2 correct [1]</p> <p>Most active volcanoes are near plate boundaries. Over half of the active volcanoes are located around the Pacific Ocean. There are volcanoes near the plate boundaries in the middle of the Atlantic Ocean. Some volcanoes on this map are far away from plate boundaries, for example the volcanoes on the eastern side of Africa, and also volcanoes caused by hotspots in the middle of the Pacific Ocean.;;;</p>	3
1(b)	<p>any four of: two plates move towards each other or converge; oceanic or heavier plate, sinks below, continental or lighter plate; into the subduction zone; oceanic plate is destroyed or melts or forms magma (in the subduction zone); magma forced upwards through rocks or crack or vent; pressure is released; magma or lava erupts onto the Earth's surface OWTTE; (over time) lava cools to form a volcano OWTTE;</p>	4
1(c)	<p>any three of: monitoring; prediction / forecasting; education / drills / training / sirens; evacuation (plans) or centres or routes or logistics; warnings or communications, by TV or radio or personal contact; co-ordinate or mobilise, emergency services or medical teams; establish, safe or dangerous or exclusion zones during the eruption; stock piles of food or water; prepare hazard maps or risk maps; divert lava using earth barriers or explosives or H₂O bombs;</p>	3

Question	Answer	Marks
2(a)(i)	<p>5 correct [3] 3 to 4 correct [2] 1 to 2 correct [1]</p> <p>cloud seeding E dam A rainwater harvesting C stand pipe B well D;;;</p>	3
2(a)(ii)	<p>any two of: need to have a coastline / good access to oceans or seas; process is very expensive / cannot afford desalination; process needs a lot of energy; requires high levels of technology; water poor ORA;</p>	2
2(b)(i)	<p>any three of: people are poorer than <u>urban</u> areas; government or people cannot pay for infrastructure needed; (large distances) difficult or expensive to provide pipes or sewers; people dispersed or in villages or live on farms or nomadic; lack of development that would stimulate provision; remote from government or decision makers in cities; people cannot exert political pressure; government does not prioritise development of rural areas;</p>	3
2(b)(ii)	<p>any two of: water is a basic human need; to prevent illness or death ORA; caused by <u>water-related</u> disease(s); AVP, e.g. bilharzia / cholera / malaria / typhoid / diarrhoea; caused by polluted water; breaks poverty cycle or improve peoples' productivity ORA; irrigation water, improves farming / increases crop yields; encourages (industrial, tourist) development;</p>	2

Question	Answer	Marks															
3(a)(i)	1.2;	1															
3(a)(ii)	<p>3 to 4 correct [2] 1 to 2 correct [1]</p> <table border="1" data-bbox="701 384 1529 703"> <thead> <tr> <th data-bbox="701 384 853 499">year</th> <th data-bbox="853 384 1196 499">total world population / billions</th> <th data-bbox="1196 384 1529 499">time taken for population to double / years</th> </tr> </thead> <tbody> <tr> <td data-bbox="701 499 853 552">1800</td> <td data-bbox="853 499 1196 552">1</td> <td data-bbox="1196 499 1529 552"></td> </tr> <tr> <td data-bbox="701 552 853 604">1930</td> <td data-bbox="853 552 1196 604">2</td> <td data-bbox="1196 552 1529 604">130</td> </tr> <tr> <td data-bbox="701 604 853 657">1974</td> <td data-bbox="853 604 1196 657">4</td> <td data-bbox="1196 604 1529 657">44</td> </tr> <tr> <td data-bbox="701 657 853 703">2024</td> <td data-bbox="853 657 1196 703">8 (estimate)</td> <td data-bbox="1196 657 1529 703">50</td> </tr> </tbody> </table>	year	total world population / billions	time taken for population to double / years	1800	1		1930	2	130	1974	4	44	2024	8 (estimate)	50	2
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1800	1																
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1974	4	44															
2024	8 (estimate)	50															
3(a)(iii)	<p>any four of: death rate(s) declined or increased life expectancy; infant mortality decreased; birth rate higher than the death rate; advances in healthcare; e.g. AVP such as penicillin or vaccination or hospitals; cleaner or safer drinking water supply; improvements in sanitation OWTTE; improved standard of living including example, such as increased affluence; awareness of healthy living including example; mechanisation of farming / better food production or supply;</p>	4															

Question	Answer	Marks
3(b)	<p><i>any three of:</i> enables women to control fertility / family planning; AVP, e.g. use of contraception; lengthens time spent in, school or education; raises the age of marriage; delays child bearing years; improves survival of children; better care of own health; better care of families' health; increases economic independence; focus on careers; changes attitudes;</p>	3

Question	Answer	Marks
4(a)	<p>5 to 6 correct [3] 3 to 4 correct [2] 1 to 2 correct [1]</p> <p> <i>combustion</i> T <i>decomposition</i> Q <i>fossilisation</i> R <i>mining and pumping</i> S <i>photosynthesis</i> U <i>plant and animal respiration</i> P;;; </p>	3
4(b)	<p><i>any three of:</i> formed over <u>millions</u> of years or in the carboniferous (era); from dead organisms or trees or plants; <i>reference to</i> lack of oxygen or anaerobic; on sea beds / in swamps; formed a thick layer of peat; covered with, sediment or mud or sand; pressure turns vegetation or peat, to coal OWTTE;</p>	3

Question	Answer	Marks
4(c)	<p><i>any four of:</i> increased efficiency in use / decreased use / recycling; insulation (home / buildings); turn off lights / use energy saving light bulbs / turn off appliances when not in use; using renewable or alternative or sustainable, sources of power; such as, wind or tidal or wave or solar or nuclear or biomass; (reduce use for transport) walk or cycle; car pool or use public transport or bus or train; hybrid cars;</p>	4

Question	Answer	Marks
5(a)(i)	<p><i>any three of:</i> <u>Equator or 0°</u>, (tropical) rainforest or tall trees or large amount; (0° to 10°N,) trees or woodland; (10°N,) baobab or acacia or wider or shorter trees (savanna) or decreases; (10°N to 20°N), bushes; <u>20°N</u>, clumps of grass or scattered bushes (in desert) or little vegetation; density decreases; size decreases; biodiversity decreases;</p>	3

Question	Answer	Marks
5(a)(ii)	<p><i>any three of:</i></p> <p>trees have long or deep (tap) roots to reach underground water;</p> <p>bushes or trees <u>store</u> water (in large trunk / bulbs / corms);</p> <p>deciduous or no leaves or only produce leaves during the wet season to reduce water loss in dry season OWTTE;</p> <p>small or thorny leaves or waxy cuticle to reduce transpiration;</p> <p>(acacia) 'umbrella' shape trees reduce (ground) evaporation;</p> <p>(acacia) 'umbrella' shape trees to capture sunlight;</p> <p>(acacia) shape or branches direct water towards the ground;</p> <p>green stems to photosynthesise;</p> <p>grasses grow in wet season or short growing season to set seed;</p> <p>grasses turn brown to limit water loss;</p> <p>grasses <u>store</u> moisture and nutrients in roots for use in dry season;</p> <p>thick bark protects from fire;</p> <p>stomata close to reduce water loss (by transpiration);</p>	3
5(b)	<p><i>any four of:</i></p> <p>natural fires;</p> <p>fires started by people;</p> <p>removal of vegetation or trees;</p> <p><i>reference to</i> fuel or firewood;</p> <p>expansion of agriculture or overcultivation or monoculture;</p> <p>soil degradation or loss of nutrients or loss of soil fertility;</p> <p>increased population pressure;</p> <p>overgrazing;</p> <p><i>reference to</i> animals of nomadic herders;</p> <p>climate change or global warming or decrease in rainfall or no rain;</p> <p>drought;</p> <p>soil erosion;</p> <p>poor irrigation or salinisation;</p>	4

Question	Answer	Marks
6(a)(i)	cattle farming;	1
6(a)(ii)	95%;; <i>(if answer incorrect, allow one mark for correct method, e.g. cattle 67% + subsistence 21% + commercial 7% [1])</i>	2
6(a)(iii)	<i>subsistence farming</i> produce is for the use of the farmer and family (allow village) OWTTE; <i>commercial farming</i> produce is grown for sale OWTTE;	2
6(a)(iv)	<i>any three of:</i> mining; e.g. copper / gold / iron ore (Carajas project); population growth / settlement / urbanisation / tourism OWTTE; e.g. AVP, settlements such as, Manaus / Parauapebas / Sinop; road building; e.g. Trans-Amazonian Highway / Inter-Oceanic Highway; dam / reservoir / HEP production; e.g. Itaipu / Jirau / Santo Antônio / Belo Monte; (wild)fires; e.g. AVP, in Oct. 2015 burnt for 2 months spread across 100 km;	3

Question	Answer	Marks
6(b)	<p><i>one mark for strategy, second mark for related description:</i></p> <p>reforestation; replanting areas of forest or restores ecosystem or maintains precipitation;</p> <p>community forestry; the community makes decisions to conserve forest OWTTE;</p> <p>harvesting forest products; e.g. rubber tapping or fruits or nuts;</p> <p>logging quotas / selective logging; cutting down some trees while leaving the rest;</p> <p>agro-forestry; growing trees (fruit / nut) and crops;</p> <p>education; about consequences of deforestation;</p> <p>forest reserves / National Parks; area protected OWTTE;</p> <p>ecotourism; tourism does not exploit the natural environment or local communities or revenue supports conservation;</p> <p>monitoring; using satellite technology or remote sensing;</p>	2