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**ENVIRONMENTAL MANAGEMENT**

**0680/12**

Paper 1

**May/June 2017**

MARK SCHEME

Maximum Mark: 60

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**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 <b>plate boundaries</b>. Over half of the active volcanoes are located around the <b>Pacific</b> Ocean. There are volcanoes near the plate boundaries in the middle of the <b>Atlantic</b> Ocean. Some volcanoes on this map are far away from plate boundaries, for example the volcanoes on the eastern side of <b>Africa</b>, and also volcanoes caused by hotspots in the middle of the <b>Pacific</b> 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) <b>lava cools</b> 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 H<sub>2</sub>O 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        <b>E</b> dam                        <b>A</b> rainwater harvesting <b>C</b> stand pipe              <b>B</b> well                        <b>D</b>;;;</p>	<b>3</b>
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>	<b>2</b>
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>	<b>3</b>
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>	<b>2</b>

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="701 384 851 499">year</th> <th data-bbox="851 384 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="701 499 851 552">1800</td> <td data-bbox="851 499 1196 552">1</td> <td data-bbox="1196 499 1529 552"></td> </tr> <tr> <td data-bbox="701 552 851 604">1930</td> <td data-bbox="851 552 1196 604">2</td> <td data-bbox="1196 552 1529 604">130</td> </tr> <tr> <td data-bbox="701 604 851 657"><b>1974</b></td> <td data-bbox="851 604 1196 657">4</td> <td data-bbox="1196 604 1529 657"><b>44</b></td> </tr> <tr> <td data-bbox="701 657 851 703"><b>2024</b></td> <td data-bbox="851 657 1196 703">8 (estimate)</td> <td data-bbox="1196 657 1529 703"><b>50</b></td> </tr> </tbody> </table>	year	total world population / billions	time taken for population to double / years	1800	1		1930	2	130	<b>1974</b>	4	<b>44</b>	<b>2024</b>	8 (estimate)	<b>50</b>	2
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<b>2024</b>	8 (estimate)	<b>50</b>															
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>combustion                    T  decomposition                Q  fossilisation                   R  mining and pumping        S  photosynthesis                U  plant and animal respiration 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>	<b>2</b>