



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**ENVIRONMENTAL MANAGEMENT**

**0680/23**

Paper 2

**May/June 2016**

MARK SCHEME

Maximum Mark: 80

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**Published**

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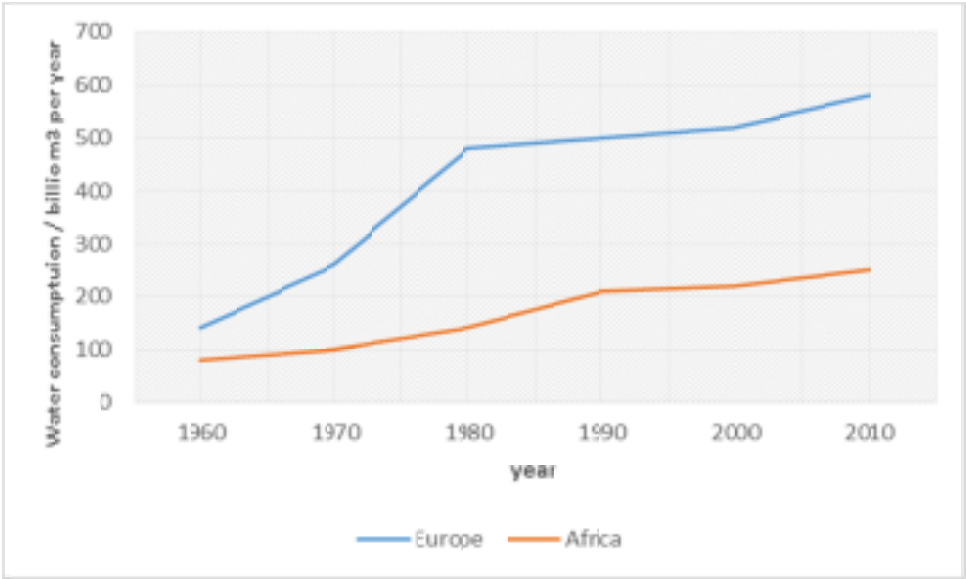
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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                                                       | <b>Marks</b> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1(a)            | Europe;<br>5;<br>26;<br>6;                                                                                                                                                                                                                                                          | <b>4</b>     |
| 1(b)(i)         | <i>any 4 of:</i><br>less than 400 mm at X;<br>increases to 400–1000 ;<br>increases to over 1000 in central Africa / around Equator;<br>decreases to 400–1000;<br>decreases to under 400 mm at Y;<br><br>accept other descriptions using locations<br><br>goes up then down = 1 mark | <b>4</b>     |
| 1(b)(ii)        | the north / around Tropic of Cancer;<br>the south west;                                                                                                                                                                                                                             | <b>2</b>     |

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| Question  | Answer                                                                                                                                                                                                                                                                                                                                   | Marks |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1(c)(i)   |  <p>5 or 6 plotted correctly = 2 marks<br/>3 or 4 plotted correctly = 1 mark</p>                                                                                                                                                                       | 2     |
| 1(c)(ii)  | rapid then slow growth / slower after 1980 / quicker before 1980;                                                                                                                                                                                                                                                                        | 1     |
| 1(c)(iii) | <p><i>any 3 of:</i></p> <ul style="list-style-type: none"> <li>greater domestic use;</li> <li>max 1 for examples(s);</li> <li>more industry;</li> <li>max 1 for examples(s);</li> <li>greater use in agriculture;</li> <li>max 1 for examples(s);</li> <li>water piped to homes in Europe / more readily available in Europe;</li> </ul> | 3     |

|               |                                        |                 |              |
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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                                                                                                                                                                        | <b>Marks</b> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1(d)(i)         | <i>any 3 of:</i><br>river for water;<br>steep sided valley for dam construction;<br>wide / flat valley would provide for large reservoir;<br>low population;<br>mountainous so high rainfall;                                                                                                                                                                                                        | <b>3</b>     |
| 1(d)(ii)        | <i>any 4 of:</i><br>loss of vegetation on valley floor / sides;<br>animals / birds lose habitat;<br>food chain / web disrupted<br>dam stops up / down stream migration of fish;<br>which may stop spawning;<br>however creates new aquatic habitat / wetlands;<br>AVP;                                                                                                                               | <b>4</b>     |
| 1(e)(i)         | <i>any 3 of:</i><br>sluice opened;<br>water flows through penstock pipe;<br>turns turbine;<br>which turns generator;                                                                                                                                                                                                                                                                                 | <b>3</b>     |
| 1(e)(ii)        | <i>if 'yes'</i><br>water can be reused / renewable;<br>rainfall continually resupplies water;<br>produces electricity without using up water;<br>AVP;<br><br><i>if 'no'</i><br>but reservoirs silt up (over time);<br>so electricity production decreases;<br>until becomes completely silted up and unable to produce electricity;<br>AVP;<br>1 mark per point, but allow development for 2nd mark. | <b>3</b>     |

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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Marks</b> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1(f)            | <p><i>life cycle</i></p> <p>larvae hatch in water;<br/> larvae enter snails;<br/> produce cercariae larvae;<br/> these larvae released into the water;<br/> larvae enter humans through skin;<br/> mature into worms;<br/> which lay thousands of eggs;<br/> eggs released into water through urine;<br/> become larvae in the water;</p> <p><i>effects on humans</i></p> <p>high temperature (fever) above 38 °C;<br/> headache ;<br/> joint and muscle pain;<br/> cough ;<br/> bloody diarrhoea / urine;<br/> dehydration;<br/> dark red blotchy raised skin rash;<br/> chest pain;</p> <p>max. 4 on either part</p> | <b>5</b>     |

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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Marks</b> |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1(g)            | <p><i>Indicative content</i><br/> can use any examples from syllabus (bilharzia; typhoid or cholera).<br/> malaria transmission NOT related to sanitation;<br/> so sanitation improvements will not affect malaria;<br/> expect some detail on transmission through urine/faeces in the best answers;<br/> should also look at other ways – education, drugs, protection;<br/> AVP e.g. treating water before drinking (cholera; typhoid), covering feet/legs if working in water (bilharzia);<br/> prevention better than cure with drugs which may be expensive/unavailable;</p> <p>Level 3            5–6 marks<br/> answers the question and provides details of at least two ways that sanitation can reduce/control water- related diseases. For max. marks needs to mention examples of diseases and recognise lack of impact of improved sanitation on malaria, for example.<br/> requires balance and covers other strategies for reducing water-related diseases.</p> <p>Level 2            3–4 marks<br/> some detail of at least two ways that sanitation can help reduce water-related diseases; but with minimal detail on other ways.<br/> good explanation of sanitation with no look at other strategies max. 3.<br/> expect diseases to be named.</p> <p>Level 1            1–2 marks<br/> basic descriptive points with little or no explanation. May just be a list with little or no mention of other strategies.</p> <p>no response or no creditable response; 0.</p> | <b>6</b>     |
| 2(a)            | <p>photosynthesis;<br/> food web;<br/> plant (vegetational) succession;<br/> respiration;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>4</b>     |

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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                                                                                                                                                           | <b>Marks</b> |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 2(b)(i)         | <i>average annual temperature</i><br>increases 0.7 °C;<br><br><i>annual temperature range</i><br>increases 4.8 °C;<br><br>if just written 'increases' for both = max 1 mark                                                                                                                                                                                                             | <b>2</b>     |
| 2(b)(ii)        | 1380;                                                                                                                                                                                                                                                                                                                                                                                   | <b>1</b>     |
| 2(b)(iii)       | negative / as rainfall increases range of temperature decreases (or vice versa);                                                                                                                                                                                                                                                                                                        | <b>1</b>     |
| 2(b)(iv)        | <b>A</b> tropical rainforest;<br><b>B</b> savannah;<br><b>C</b> desert;<br>accept alternative names where appropriate                                                                                                                                                                                                                                                                   | <b>3</b>     |
| 2(c)(i)         | All 4 correctly plotted;; = 2 marks<br>2 or 3 correctly plotted; = 1 mark                                                                                                                                                                                                                                                                                                               | <b>2</b>     |
| 2(c)(ii)        | line drawn at 200 mm;                                                                                                                                                                                                                                                                                                                                                                   | <b>1</b>     |
| 2(c)(iii)       | 7;                                                                                                                                                                                                                                                                                                                                                                                      | <b>1</b>     |
| 2(d)(i)         | <i>any 4 of:</i><br>deep roots, to reach deep underground water;<br>roots spread, to take water from large area;<br>store water in plant (succulents)<br>narrow leaves to reduce transpiration;<br>small stomata to reduce transpiration<br>resinous leaves to reduce transpiration;<br>shed leaves / dormancy when lack of water;<br>grow flower and produce seed quickly, after rain; | <b>4</b>     |

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| <b>Question</b> | <b>Answer</b>                                                                                                                                                                                                                                   | <b>Marks</b> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 2(d)(ii)        | <i>any 2 of:</i><br>at risk from fire;<br>burial by moving sand;<br>rainfall very unreliable;<br>overgrazing by nomadic herds;<br>extraction of underground water;<br>tourist vehicles;                                                         | <b>2</b>     |
| 2(d)(iii)       | <i>any 2 of:</i><br>irrigation from underground water;<br>irrigation from rivers flowing through the desert (e.g. Nile);<br>at oases;<br>low density grazing / nomadic herding;                                                                 | <b>2</b>     |
| 2(e)(i)         | <i>any 2 of:</i><br>in the north of Botswana;<br>bordering the Chobe river;<br>close to Namibia / Zambia / Zimbabwe;                                                                                                                            | <b>2</b>     |
| 2(e)(ii)        | <i>any 2 of:</i><br>to conserve natural environment;<br>that may be at risk;<br>for future generations;<br>and the survival / increase of flora / fauna;                                                                                        | <b>2</b>     |
| 2(e)(iii)       | <i>hunter-gatherer</i><br>most or all food is obtained from wild plants and animals;<br><br><i>nomadic pastoralist</i><br>livestock are herded in order to find fresh pastures on which to graze (and follow an irregular pattern of movement); | <b>2</b>     |
| 2(e)(iv)        | April / May;                                                                                                                                                                                                                                    | <b>1</b>     |
| 2(e)(v)         | vegetation dies back in dry season;<br>water scarce in dry season / need for water;                                                                                                                                                             | <b>2</b>     |

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| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Marks |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2(e)(vi) | any 2 of:<br>to view wildlife;<br>example of wildlife;<br>that would not see in own country;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2     |
| 2(f)     | <p><i>Indicative content</i><br/><i>Arguments in favour:</i><br/>brings income; foreign exchange to country. Provides employment in park; hotels; transport; AVP; Tax revenues can be spent on development of country and on protecting wildlife and environment</p> <p><i>Arguments against:</i><br/>lots of tourists damage environment and may scare animals away. (Lions in Masai Mara breed less often than others where fewer tourist for example.) Need to build infrastructure. Most will fly in – large carbon footprint.</p> <p>Level 3                      5–6 marks<br/>answers the question and provides details of at least two arguments for and against with some depth/detail which must include environmental issues.</p> <p>Level 2                      3–4 marks<br/>may answer the question in just one way so that detailed arguments are on one side only. Or provides some detail on both sides. Minimal detail on environmental issues</p> <p>Level 1                      1–2 marks<br/>basic descriptive points with little or no explanation. May just be a list with little or no answer to the part on environment.</p> <p>no response or no creditable response; 0.</p> | 6     |