Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

ENVIRONMENTAL MANAGEMENT **0680/22**

Paper 2 **March 2017**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(a)(i)</td><td>1 plot correct;
or
all plots correct;;
correct shading;</td><td>3</td></tr>
<tr><td>1(a)(ii)</td><td>6 correct [3]
4 to 5 correct [2]
2 to 3 correct [1]

<table><tr><td>source</td><td>methane %</td><td>nitrous oxide %</td></tr><tr><td>agriculture</td><td>40</td><td>61</td></tr><tr><td>fossil fuel production</td><td>30</td><td>0</td></tr><tr><td>waste disposal</td><td>18</td><td>3</td></tr><tr><td>burning biomass</td><td>6</td><td>27</td></tr><tr><td>industry</td><td>0</td><td>6</td></tr><tr><td>shops, offices and houses</td><td>6</td><td>3</td></tr></table>;;;</td><td>3</td></tr>
<tr><td>1(b)(i)</td><td>245;;
(allow answer in the range 240–250 [2])
(if answer incorrect, allow one mark for correct method, e.g. 1810 – 1565 [1])</td><td>2</td></tr>
<tr><td>1(b)(ii)</td><td>any one of:
nitrous oxide increases at constant rate, whereas methane rate slows down after about 1993;
nitrous oxide fluctuates, whereas methane smooth;</td><td>1</td></tr>
<tr><td>1(b)(iii)</td><td>any three of:
from, animals / cattle;
from growing rice;
from, breakdown of animal waste / slurry;
from breakdown of vegetable matter;
burning of, biomass / crop (waste);</td><td>3</td></tr>
</table>

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Question	Answer	Marks
1(b)(iv)	3 to 4 points correctly plotted and joined;; (*allow 3 to 4 points correctly plotted but not joined [1]* *or* *2 points correctly plotted and joined [1]*)	**2**
1(b)(v)	*any three of:* increase in burning of fossil fuels; examples of above;; deforestation / eq; fewer trees means less carbon dioxide used; more countries, developing / becoming industrialised;	**3**
1(c)(i)	*any three of:* without greenhouse gases Earth would be too cold for, plants / animals; they, trap heat / trap heat reradiated by the Earth; but maintain a balance so earth doesn't overheat; more detailed explanation of natural greenhouse effect;; carbon dioxide necessary for plant respiration; details of how plants use carbon dioxide;	**3**
1(c)(ii)	*any four of:* increase in, temperature / global warming; (causing) melting of, ice caps / glaciers; leading to rise in sea level; leading to flooding of land; change in, climate / weather patterns; areas too, hot / dry for farming; causing famine; increase in storms; loss of habitats; leading to, plant / animal extinctions;	**4**

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Question	Answer	Marks
1(d)(i)	*any three of:* farmland, contaminated / flooded by salt / saline / saltwater, harms crops; (most) plants won't grow in salty soils; details of how salt affects plant growth;; drinking water contaminated with salt;	**3**
1(d)(ii)	33 000 (people);	**1**
1(d)(iii)	*any three of:* insufficient, food / fresh water; think sea level will continue to rise in future; so even less, land / food / fresh water; islands may disappear below the ocean;	**3**
1(d)(iv)	*any three of:* many more people / 50 million people compared to 113 thousand / such a large population movement, difficult / expensive to undertake; so large(r) area of land needed; most land that can be farmed is already settled; other countries resistant to such large-scale immigration; Bangladesh unable to afford to buy sufficient land; Bangladesh densely populated so no room to resettle people;	**3**

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Question	Answer	Marks
1(e)	*Level of response marked question:* Level 3 [5–6 marks] Answers the question and provides at least three reasons explained well for max 6. Max 5 if two explained well, but other in less detail. Level 2 [3–4 marks] Some detail of two or three reasons. May answer the question but provide only sketchy reasons for 3 marks. For max 3 may argue one point very thoroughly. Level 1 [1–2 marks] Basic descriptive points / reasons with little or no explanation. May just provide one or two very brief reasons with little or no explanation. No response or no creditable response [0]. *Level of response marking indicative content:* *Kyoto agreement expired in 2012. While governments sign up to various Kyoto and post-Kyoto agreements, they often do little to implement them within their own countries. Hard to reduce as much industry and power generation in private companies. Increasing wealth and industrialisation in countries like China, India, Brazil, etc. e.g. vast number of coal fired power stations built in China in recent years. Developing countries seek to become more like developed so increased use of fossil fuels, meat consumption (which is a source of methane), etc. World population continues to expand so more demand for goods and services.* *Do not expect all aspects to be covered even in the best answers for L3.*	**6**

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Question	Answer	Marks
2(a)(i)	7166;	**1**
2(a)(ii)	Europe;	**1**
2(a)(iii)	4343;; (*if answer incorrect, allow one mark for correct method, e.g. (4300 × 1/100) + 4300 [1]*)	**2**
2(a)(iv)	*any four of:* traditional factors such as culture or religion;; availability of, contraception / family planning;; education level of women (explained);; age of population;; death rate falls more slowly than birth rate as a country develops; government policies (e.g. China); for work / care of parents; max [2] on other factors, although these have small effect compared to factors affecting birth and death rates, e.g. famine; war; migration; drought;	**4**
2(b)(i)	*allow any year in the range:* 1985–1990;	**1**
2(b)(ii)	*any two of:* both increasing; but Europe more quickly than Africa; comparative, figures / data; African rate increases after 1900;	**2**
2(b)(iii)	Europe (predicted) to decrease (after initial rise); Africa big increase;	**2**

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Question	Answer	Marks
2(b)(iv)	*any three of:* ageing population so fewer women of child-bearing age; women waiting longer to have children; availability of contraception / family planning used; high cost so most have just one or two children; death / migration due to (civil) war / famine (e.g. Syria); China one child policy;	**3**
2(c)	*any five of:* (*loss of natural habitat due to*) increased need for farmland; increased mining of minerals; expansion of, towns / cities / housing; land needed for industry; and needed for transport infrastructure; fishing damaging, sea bed / coral reefs / mangroves; destruction of forests for timber; reclamation of, mangroves / salt marshes; pollution of, seas / lakes / rivers; flooding for, dams / reservoirs; climate changes;	**5**
2(d)(i)	*any three of:* lack of water; plants / crops cannot grow / cannot farm (as too dry); no / very little vegetation for animals to graze; bare rock / no soil;	**3**

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Question	Answer	Marks
2(d)(ii)	*any four of:* long tap roots to reach deep water; roots spread wide to take water from large area / plants spread to avoid competition; leaves adapted to reduce transpiration; leaves waxy; leaves narrow; stomata, on underside of leaves / recessed; can lie dormant for many years and then grow when rains come; short life cycle when water available; succulents store water;	**4**
2(e)(i)	*any three of:* shanty squatter settlement / eq; built of corrugated iron; with some other, scavenged / scrap material / wood; on sloping land; houses well-spaced apart; single storey / small;	**3**
2(e)(ii)	*any three of:* migration from countryside to cities; reasons for migration;; shortage of housing / space, in city; housing in city, unaffordable / too expensive;	**3**

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Question	Answer	Marks
2(e)(iii)	*Level of response marked question:* Level 3 [5–6 marks] Must look at alternatives to community participation. Answers the question, i.e. reaches a conclusion based on evidence and provides at least two reasons explained in some detail or three in less detail. Level 2 [3–4 marks] either: Some detail of at least two reasons for or against without looking at alternatives to community participation or just looking at alternatives. or: May answer the question i.e. look at alternatives to community participation but provide only brief reasons. Level 1 [1–2 marks] Basic descriptive points with little or no reasoning. May just be a list of for and/or against. No response or no creditable response [0]. *Level of response marking indicative content:* *The syllabus lists planning, environmental improvement and community participation as strategies for managing urban environments, however, expect others such as aid, government and NGOs. Community participation will need to be explained, such as site and service schemes, co-operatives, etc. The others would be more top-down with local or national governments providing improvements in terms not only of housing, but also in infrastructure (electricity, water supply, sanitation, etc.). Some may be funded by overseas aid from governments or charities.* *There is no correct answer. Mark on quality of answer.*	**6**

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