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**ENVIRONMENTAL MANAGEMENT**

**0680/11**

Paper 1

**October/November 2016**

MARK SCHEME

Maximum Mark: 60

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**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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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<b>Question</b>	<b>Answer</b>	<b>Mark</b>										
1(a)(i)	1960 to 1997: there is a general decline in level;  1997 to 2015: the level has increased;	<b>2</b>										
1(a)(ii)	(use of) CFC / eq; banned / replaced / reduced;	<b>2</b>										
1(a)(iii)	<table border="1" data-bbox="495 608 956 938"> <thead> <tr> <th>number on graph</th> <th>drawing letter</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>B</td> </tr> <tr> <td>2</td> <td>C</td> </tr> <tr> <td>3</td> <td>A</td> </tr> <tr> <td>4</td> <td>D</td> </tr> </tbody> </table> <p>all 3 = 2, 2 / 1 = 1</p>	number on graph	drawing letter	1	B	2	C	3	A	4	D	<b>2</b>
number on graph	drawing letter											
1	B											
2	C											
3	A											
4	D											
1(a)(iv)	protection against / screens out <u>UV</u> light; which can cause, cancer / cataracts / blindness / mutations;	<b>2</b>										
1(b)	<i>any 2 of:</i> factories usually emit the gases into the air high up / from (tall) chimneys; they then blow (in winds); to other countries; vehicles emit NO <sub>x</sub> / SO <sub>2</sub> / eq;	<b>2</b>										

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<b>Question</b>	<b>Answer</b>	<b>Mark</b>
2(a)(i)	$(9.3/9.4/9.5) - 7 = 2.3/2.4/2.5$ (billion);	<b>1</b>
2(a)(ii)	12.1 billion if 10% bigger; 9.9 billion if 10% smaller;	<b>2</b>
2(a)(iii)	<i>any 4 of:</i> habitat loss ; named example of habitat loss e.g. deforestation / wetland drainage; over hunting / fishing / farming / grazing; urbanization; exploitation of water resources; reduced biodiversity; increased named pollutant; effect of this pollutant described; AVP e.g. soil erosion, desertification;	<b>4</b>
2(b)	<i>any 3 of:</i> family planning / education; contraception;  national policies / laws; one / two child / antinatalist / pronatalist / restricted number of children / incentives;  improved health / standard of living; reduced need for large families; improved general education; focus on career / marry later / have a smaller family;  control migration; border control / eq;	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Mark</b>
3(a)(i)	2005;	<b>1</b>
3(a)(ii)	1.5 (ignore sign)	<b>1</b>
3(a)(iii)	<i>any 3 of:</i> agree / disagree / some support but not total; catch is lower than average when sea temperature is also low; catch is higher than average when sea temperature is also high; but catch high in when sea temperatures are low; quoted correct data to support argument;	<b>3</b>
3(b)	<i>any 3 of:</i> there is shallow water / continental shelf; increase light / photosynthesis (in shallow water); (increasing) phytoplankton / plants; for food for fish; currents meet (cold and warm); cold water holds more oxygen; nutrients / upwelling (where currents meet / cold currents); easy fishing (jn shallow water); more profit;	<b>3</b>
3(c)	<i>any 2 of:</i> quotas; mesh sizes; net size / shape; restricted zones; 'no fishing' times / closed season; moratorium on certain species; return of undersize fish to sea; AVP e.g. subsidies;	<b>2</b>

<b>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
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<b>Question</b>	<b>Answer</b>	<b>Mark</b>
4(a)	<i>any 4 of:</i> from dead organisms / trees / plants; on sea beds / swamps; covered (in sediments); compressed / pressure; reference to millions of years;	<b>4</b>
4(b)(i)	correct plot and key;	<b>1</b>
4(b)(ii)	Argentina;	<b>1</b>
4(b)(iii)	has the highest proportion / amount of shale gas to natural gas / would go from 12 AU to 812 AU / go up by 800 / increase by over 6000% (6566);	<b>1</b>
4(c)	<i>any 3 of:</i> encourage public transport; car pooling / car sharing; hybrid cars; walking / cycling ; insulation / turn off lights / don't leave appliances on stand-by; increase efficiency / decrease use; use of alternative sources of energy / named alternative;	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Mark</b>
5(a)	it is the numbers / variety / eq; of different types / species / biological groups of organisms / living things / plants and animals;	<b>2</b>
5(b)(i)	$(3750 - 1600) = 2150$ ;	<b>1</b>
5(b)(ii)	both gone up / eq; reference to scale of increase (e.g. consumers increase relatively more / faster than producers / both go up about the same number);	<b>2</b>
5(b)(iii)	<i>any 3 of:</i> compete with (existing / native) (primary producers / plants); reduce their numbers / die; reduce food for consumers / less consumers; might have increased food for consumers / more consumers; change biodiversity; AVP e.g. toxins in aliens;	<b>3</b>
5(b)(iv)	<i>any 2 of:</i> ref. CITES / laws / conventions / licence; controls at ports; education / informing;	<b>2</b>

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Question	Answer	Mark
6(a)(i)	11 °C / 22 – 33 °C;	1
6(a)(ii)	<p><i>any 4 of:</i></p> <p>temperature: becomes cooler (from P to S) in Jan and warmer in June / ora; any manipulation (e.g. total fall is 5 °C or total rise is 6 °C);</p> <p>rainfall: becomes much less (from P to S); any manipulation (e.g. total reduction is 1890 mm / 18X);</p> <p>number of dry months rise (from P to S); by 11;</p> <p>max two for each</p>	4
6(b)(i)	<p><i>any 2 of:</i></p> <p>not enough rain / water (for plant growth) / only 450 mm; short growing season / dry for most of year / 9 month; too hot (for plant growth); too hot for the farmers / eq;</p>	2
6(b)(ii)	reference to irrigation / drought resistant crops / change crops grown / greenhouses; allow valid ecf from <b>6(b)(i)</b> ;	1
6(c)	<p>advantage: biofuel cheaper than fossil fuels / reference to total CO<sub>2</sub> reduced / carbon neutral / increases fuel / sell it / renewable / renewable / employment;</p> <p>disadvantage: using land that could be used to grow food / reduces biodiversity / deforestation / habitat loss / introduce alien species;</p>	2