

# Human Influences on Ecosystems

## Mark Scheme 1

<b>Level</b>	IGCSE
<b>Subject</b>	Biology
<b>Exam Board</b>	CIE
<b>Topic</b>	Human Influences on Ecosystems
<b>Paper Type</b>	(Extended) Theory Paper
<b>Booklet</b>	Mark Scheme 1

**Time Allowed:** — 58 minutes —

**Score:** /48

**Percentage:** /100

1 (a) (i)	vertical axis – numbers / population ; horizontal axis – time / years ; curve showing exponential increase / log phase ;	[3]	I lag phase / curve starting at origin
(ii)	<i>idea that</i> 'birth' / reproduction / breeding, rate is greater than death rate ; no limiting factors ; no / little, competition ; plenty, of food / nutrients / space / mates / oxygen / resources ; no / few, predators ; no / few, parasites / pathogens / disease ; AVP ; e.g. no / little, pollution / waste products / toxins	[max 4]	I definitions of exponential growth
(b)	<i>between 1950 and 2012</i> mass of fish caught increased and levels off ; 17 to 90 million tonnes / increase = 73 million tonnes ;  fluctuations / increases and decreases / described ; e.g. around 1970 / any time after 1990 ;  maximum catch, 94 million tonnes / in 1996 ; steep increase between, 1950–1970 / 1973–1989 ;	[max 3]	<i>units must be used at least once</i>  <b>A</b> 16 to 18 / increase of 72 to 74  mp4 cannot be awarded without mp3

Question		Mark	Guidance
1 (c)	<p><i>answers can refer to seas, lakes and/or rivers</i></p> <p>international, agreements/treaties ;</p> <p>quotas/permits/licenses ;</p> <p>fines/sanctions, for, overfishing/illegal/unauthorised, fishing ; fishery protection vessels/wardens/patrols/AW ;</p> <p>restrictions on times when fishing can occur ;</p> <p>exclusion zones/nursery zones/‘no take’ zones/reserves ;</p> <p>total ban for some species ;</p> <p>regulations on method of fishing ; e.g. mesh size of nets/ban nets/use of lines instead/size of fishing vessel/‘fishing effort’</p> <p>education/raise awareness/any example ;</p> <p>monitoring fish stocks ;</p> <p>captive breeding (of wild fish) ; re-stocking (of wild stocks) ;</p> <p>encourage farmed fish ; e.g. provide subsidies</p> <p>AVP ; e.g. tax on wild fish/increase the cost of wild fish</p>	[max 6]	<p><b>A</b> set maximum mass/number/amount/ quantity <b>A</b> ‘ban unauthorised fishing’</p> <p><b>A</b> consequences other than fines</p> <p><b>A</b> not in breeding season</p> <p><b>A</b> descriptions or examples</p> <p><b>A</b> named examples</p> <p><b>I</b> ban on all wild fish</p>

Question		Mark	Guidance
1 (d)	<i>definition of sustainable resource</i>  renewable / self-renewing / regenerates / described ; e.g. produced as rapidly as it is removed  resource, does not / will not, run out / become exhausted ;  replanting / reseedling / regrowing ;  AVP ; e.g. pollarding / coppicing / leaving mature trees	[max 3]	I reused / recycled
		[Total: 19]	

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Question		Mark	Guidance
2 (a)	timber / paper, manufacture / AW ; firewood ;  <i>clearance for</i> agriculture ; urbanisation / roads / housing / factories / industry / leisure developments ; extraction of minerals / for other natural resources ;	[max 3]	<b>A</b> wood unqualified <b>A</b> fuel
(b) (i)	$118\,545 - 90\,883 = 27\,662$ $\frac{27\,662}{118\,545} \times 100$ ;  23.3(3459) ; 23 (%) ;	[3]	
(ii)	Indonesia has lost the most forest <b>ora</b> ; 9% (8.7%) compared with 23% in Indonesia ;  Indonesian forest has continued to be lost, whereas loss in Malaysia has slowed between 2005 and 2010 ; comparative use of figures with units ;	[max 3]	<b>A</b> 14% more in Indonesia ecf from <b>(b)(i)</b>
(iii)	planted forest, has one (dominant) species / is a monoculture ; loss of <u>biodiversity</u> ; qualification of biodiversity loss ;  (plantation) susceptible to pest / disease ; nutrients removed / soils become infertile ; <i>ref to</i> alien / foreign / invasive / non-indigenous species ; AVP ; e.g. vegetation is removed / lower canopy / all immature	[max 3]	e.g. habitats / example / extinction of a species <b>I</b> homes / organisms die  <b>A</b> use of chemicals



Question	Expected Answers		Marks	Additional Guidance																										
3 (a)	<table><tr><td><i>Triticum aestivum</i></td><td>D</td></tr><tr><td><i>Solanum tuberosum</i></td><td>G</td></tr><tr><td><i>Glycine max</i></td><td>C</td></tr><tr><td><i>Manihot esculenta</i></td><td>F</td></tr><tr><td><i>Ipomoea batatas</i></td><td>B</td></tr><tr><td><i>Zea mays</i></td><td>A</td></tr><tr><td><i>Oryza sativa</i></td><td>E</td></tr></table>		<i>Triticum aestivum</i>	D	<i>Solanum tuberosum</i>	G	<i>Glycine max</i>	C	<i>Manihot esculenta</i>	F	<i>Ipomoea batatas</i>	B	<i>Zea mays</i>	A	<i>Oryza sativa</i>	E	max [3]	5/6 right = 3 3/4 right = 2 1/2 right = 1 0 right = 0												
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Question	Expected Answers		Marks	Additional Guidance
(c) (i)	1 2 3 4 5 6 7	increase in (soil) water / flooding / waterlogging ; decrease in (soil) water / desertification ; soil erosion ; loss of, habitat / places where organisms live ; disruption to food chain ; endangered / extinction, of species or loss of biodiversity ; AVP ; e.g. example of named soil organism in context of a function of a soil ecosystem	max [4]	A landslides / reduced soil volume loss of nutrients / reduced nutrient cycling
(ii)	1 2 3 4 5 6 7 8	collecting / sorting (of paper) ; shredding / AW ; adding water to make, pulp / paste ; cleaned / de-inked / AW ; bleached ; rinsed ; pressed / rolled / flattened / dried, into sheets ; any named product made from recycled paper ; e.g. low quality paper / toilet paper / newspaper	max [3]	
			[Total:11]	

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