

20. Human influences on ecosystems

20.4 Conservation

Paper 3 and 4

Marking Scheme

Q1.

(b)	it is produced as rapidly as it is used / AW ; it does not run out / it is renewable ;	2	
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Q2.

(c)	<i>any three from:</i> climate change / global warming / drought / enhanced greenhouse effect ; habitat destruction / deforestation ; poaching / (over)hunting / (over)fishing ; overharvesting ; introduced species / new predators ; AVP ; e.g., disease / lack of food / lack of mates / (named) natural disaster	3	
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Q3.

(d)	produced / replaced ; run out ;	2	
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Q4.

(d)	<i>any three from:</i> habitat / environment / AW, is destroyed ; an increase in predation ; ref. to disruption of, food chains / webs ; pollution / waste / plastic / rubbish / sewage / AW ; diseases ; climate change / warming of oceans / acidification of oceans / AW ; hunting / (over) fishing ; competition from other species ; AVP ; e.g. effects of tourism	3	
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Q5.

(a)	increased / AW ; paper ; plastic ; metal ;	4	
(b)	18(%) ;	1	

Q6.

(a)(i)	whooping crane ;	1	
(a)(ii)	574 ;;	3	one mark for correct numbers from table one mark for correct calculation one mark for correct rounding to a whole number
(b)(i)	hunting / collecting / poaching ; introduced species / competition (for named resource) / AW ; food, chain / web, disrupted or over predation or lack of food : (named) pollution ; disease ; loss / change, of habitat or natural disasters ; global warming / climate change ;	3	
(b)(ii)	growing in a glasshouse / AW ; seed banks ; legislation ; nature reserves / protected areas ; botanical gardens ; AVP ;	1	

Q7.

(a)	72 (%) ;	1	
(b)	fossil fuels cannot be replaced when they run out / they take millions of years to form / used up faster than they build up / finite supply / AW ;	1	

Q8.

(b)(i)	1 habitat destruction ; 2 hunting / poaching (of animals) ; 3 introduction of new, species / predator ; 4 lack of food ; 5 (named) pollution ; 6 climate change / global warming ; 7 disease ; 8 hard to find a mate / AW ; 9 more predators ;	4	A deforestation A collecting, plants / animals
(b)(ii)	monitoring / protecting, species ; remove predators ; remove vectors of disease ; protecting / preserving / making new, habitats ; education ; captive breeding ; seed banks ; DNA banks ; zoos / wild life parks / conservation areas ; preserved embryos ; banning hunting ;	1	A AW throughout

Q9.

(a)(i)	66 (%) ;	1	
(a)(ii)	1985 to 1990 ;	1	
(b)	<i>any three from:</i> reduction in genetic variation / reduced gene pool ; inbreeding ; <i>idea of</i> an increase in the frequency of recessive alleles ; (described) consequence of having too many recessive alleles ; risk of extinction ; <i>idea of</i> unable to find mates / AW ; AVP ;	3	
(c)	<i>any six from:</i> 1 education / awareness ; 2 monitoring the populations ; 3 ref. to net type ; 4 ref. to mesh size ; 5 reduced demand (to eat from unsustainable fish stocks) ; 6 alternative sources of fish ; 7 treaties / licenses / fines / laws / making it illegal ; 8 (legal) quotas / restricted catch weight ; 9 no-catch zones / nursery zones / protected areas / Marine Protected Areas / AW ; 10 fish farms ; 11 closed fishing season / AW ; 12 restocking / captive breeding and release ; 13&14 AVP ;;	6	

Q10.

(c)	food source(s) ; nesting / breeding, sites ; shelter / shade / protection from predators ; leaf litter for decomposers ; ref. to nutrient cycling ; (named) resources for humans ; AVP ;	2	
(d)	<i>any two from:</i> ref. to genetic, diversity / variation ; <i>importance of genetic diversity:</i> plants (grown from seeds) may be adapted to changes in the environment ; plants (grown from seeds) may be resistant to, diseases / pests ; (seeds collected) may not, be viable / germinate ; (seeds collected) may, be diseased / have parasites / AW ; (seeds collected) may have harmful, alleles / mutations ; AVP ; e.g., increase in fitness	2	

Q11.

(e)	<p><i>any two from:</i></p> <p>1 reduces, extraction / conserves, (named) fossil / non-renewable, fuels ;</p> <p>2 (temporarily) removes, carbon dioxide / greenhouse gases (from atmosphere) / does not add more, carbon dioxide / greenhouse gas (to the atmosphere) / <i>idea that the process is carbon neutral</i> ;</p> <p>3 does not cause / prevents a further increase in, <u>enhanced</u> greenhouse effect ;</p> <p>4 does not cause / prevents further increase in global warming / prevents further climate change ;</p> <p>5 it is a sustainable process / uses renewable fuel source / described ;</p> <p>6 AVP ; e.g. described example of less environmental impact caused by use of non-renewable (fossil) fuels ;</p>	2	
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Q12.

(a)(i)	<p>habitat destruction / named example ; removing (too many) of a plant species ; (named) pollutants (of plants) ; additional named pollutant (of plant) ; introduced species / disrupted food chains ; disease ; AVP ; e.g. extinction of other species / fewer, pollinators / (named) pesticides killing pollinators / reduced genetic diversity / stated impact of GM crops / war</p>	3	
(a)(ii)	<p><i>any four from:</i></p> <p>more carbon dioxide (is being released / in the atmosphere) ; (carbon dioxide is produced by) burning / use of, fossil fuels ; deforestation (leads to more carbon dioxide in atmosphere) ; more methane (is being released / in the atmosphere) ; (methane is produced by) farming ; (methane produced by) landfill ; increased / increasing human population ; enhanced greenhouse effect ; (greenhouse / named) gases trap, heat / (infra-red) radiation ; AVP ;</p>	4	
(b)(i)	<p><i>any three from:</i></p> <p>ensure (genetic) variation / AW ; represent many environments where the plant grows / able to survive (in a changing environment) / AW ; more chance of cross-fertilisation ; not enough seeds in any one population ; increases chances of successful germination ; AVP ;</p>	3	

Q13.

(c)(i)	<p><i>any three from:</i></p> <p>hunting / poaching ; disease ; lack of, food / prey ; loss of (natural) habitat / urbanization ; pollution / poisoned carcasses ; inbreeding / AW ; climate change ; AVP ;</p>	3
(c)(ii)	<p><i>any three from:</i></p> <p>captive breeding programmes ; local cooperation / education (of farmer / land users) ; national parks / conservation areas / protect habitats ; legislation / public pressure, against hunting ; monitor numbers ; AVP ;</p>	3

Q14.

(b)	<p><i>reasons why endangered:</i></p> <p>(described) overfishing / hunting ; food chain disrupted (described); overconsumption (by humans) ; (named) pollution ; introduced diseases / species ; habitat destruction ; climate change ;</p> <p><i>risks if populations drop:</i></p> <p>reduced variation ; reproduction rate is lower / harder to find a mate ; extinction ; AVP ;</p> <p><i>how to maintain fish stocks:</i></p> <p>education ; quotas ; no-catch zones / nursery zones / seasonal fishing / protected areas / MPAs / Marine Protected Areas ; fines ; restocking ; fish farms ; method of fishing (described) ; AVP ;</p>	6	
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Q15.

(d)	<p>hunting / collecting / AW ; pollution ; pesticide(s) / insecticide / (chemical) spray(s) that kill animals / poisons ; loss of habitat/ any example ; disease ; increased competition / described ; increase in predator(s) ; climate change / any example ; lack of food/loss of prey species ; AVP ;</p>	3	
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Q16.

(c)	drought / lack of rain / lack of (irrigation) water ; flooding ; fire ; tsunamis / cyclones / hurricanes ; earthquakes / volcanic eruptions ; plagues of, animals / insect pests ; pests / diseases, of stored food / livestock ; conflict / war ; rising prices of food ; poverty ; unequal distribution of food ; growing, non-food crops / biomass for fuels / crops for export ; increase in population / migration of people ; soil degradation / soil erosion / desertification / salination of soils / loss of soil fertility / barren land / AW ;	3	
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Q17.

(c)	monitoring / AW, population(s) / individual(s) ; habitat, protection / restoration ; reducing / prevention, of pollution ; removal / AW, of alien species ; preventing colonisation by alien species ; hunting ban / prevent poaching ; government / legislation, to protect species ; create, exclusion zones / reserves (so not disturbed by people) ; specific, times when / areas where, hunting / AW, not allowed ; international agreements to limit trade ; removal to, zoos / botanical gardens / wildlife parks ; captive breeding / breeding programme (<i>in situ</i> or <i>ex situ</i>) ; seed banks / frozen zoos / cryopreservation / AW ; artificial insemination / IVF / use of surrogates / AW ; reintroduction programmes ; education / awareness ;	5	
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(d)	food ; drugs / medicines ; (named) fuel / biomass for energy ; timber / building materials / AW ; <u>water</u> ; ignore rain oxygen ; (named) mineral ; gene(s) ; clothing / fur ; AVP ;;;	3	
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