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2015

2015 Environmental Science

New Higher

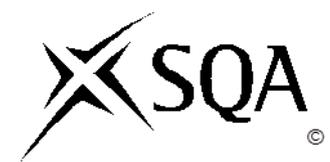
Finalised Marking Instructions

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General Marking Principles for Environmental Science Higher

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

- (a) Marks for each candidate response must always be assigned in line with these General Marking Principles and the Detailed Marking Instructions for this assessment.
- (b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.
- (c) If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader.
- (d) Half marks may not be awarded.
- (e) Where a candidate makes an error at an early stage in a multi-stage calculation, credit should normally be given for correct follow-on working in subsequent stages, unless the error significantly reduces the complexity of the remaining stages. The same principle should be applied in questions which require several stages of non-mathematical reasoning.
- (f) Unless a numerical question specifically requires evidence of working to be shown, full marks should be awarded for a correct final answer (including units if required) on its own.
- (g) Larger mark allocations may be fully accessed whether responses are provided in continuous prose, linked statements or a series of discrete developed points.
- (h) In the detailed Marking Instructions, if a word is **underlined** then it is essential; if a word is **(bracketed)** then it is not essential.
- (i) In the detailed Marking Instructions, words separated by / are alternatives.
- (j) If two answers are given where one is correct and the other is incorrect, no marks are awarded.
- (k) Where the candidate is instructed to choose one question to answer but instead answers both questions, both responses should be marked and the better mark awarded.
- (l) The assessment is of skills, knowledge and understanding in Environmental Science, so marks should be awarded for a valid response, even if the response is not presented in the format expected. For example, if the response is correct but is not presented in the table as requested, or if it is circled rather than underlined as requested, give the mark.
- (m) Unless otherwise required by the question, use of abbreviations (eg DNA, ATP) or chemical formulae (eg CO₂, H₂O) are acceptable alternatives to naming.
- (n) Content that is outwith the course assessment specification should be given credit if used appropriately eg metaphase of meiosis.
- (o) If a numerical answer is required and units are not given in the stem of the question or in the answer space, candidates must supply the units to gain the mark. If units are required

on more than one occasion, candidates should not be penalised repeatedly.

- (p) If incorrect **spelling** is used:
- and the term is recognisable then give the mark;
 - and the term can easily be confused with another scientific term then do not give the mark eg ureter and urethra;
 - and the term is a mixture of other scientific terms then do not give the mark, eg mellum, melebrum, amniosynthesis.
- (q) When presenting data:
- if a candidate provides two graphs or charts in response to one question (eg one in the question and another at the end of the booklet), mark both and give the higher mark
 - for marking purposes no distinction is made between bar charts (used to show discontinuous features, have descriptions on the x-axis and have separate columns) and histograms (used to show continuous features, have ranges of numbers on the x-axis and have contiguous columns)
 - other than in the case of bar charts/histograms, if the question asks for a particular type of graph or chart and the wrong type is given, then do not give the mark(s) for this. Where provided, marks may still be awarded for correctly labelling the axes, plotting the points, joining the points either with straight lines or curves (best fit rarely used), etc.
 - the relevant mark should not be awarded if the graph uses less than 50% of the axes; if the x and y data are transposed; if 0 is plotted when no data for this is given (ie candidates should only plot the data given)
- (r) Marks are awarded only for a valid response to the question asked. For example, in response to questions that ask candidates to:
- **identify, name, give, or state**, they need only name or present in brief form;
 - **calculate**, they must determine a number from given facts, figures or information;
 - **compare**, they must demonstrate knowledge and understanding of the similarities and/or differences between things;
 - **describe**, they must provide a statement or structure of characteristics and/or features;
 - **evaluate**, they must make a judgement based on criteria;
 - **explain**, they must relate cause and effect and/or make relationships between things clear;
 - **outline**, they must provide a brief sketch of content - more than naming but not a detailed description;
 - **predict**, they must suggest what may happen based on available information;
 - **suggest**, they must apply their knowledge and understanding of Environmental Science to a new situation. A number of responses are acceptable: marks will be awarded for any suggestions that are supported by knowledge and understanding of Environmental Science.

Detailed Marking Instructions for each question

Question			Expected Answer(s)	Max Mark	Additional Guidance
1.	(a)	(i)	<ul style="list-style-type: none"> • Aquifer • Water table • Soil moisture • Other reasonable response. 	1	Several possible phrases for water held in the sub-surface environment. Accept any one that is realistic.
		(ii)	<p>A - Sublimation - the conversion of solid water (ice) to water vapour without first becoming liquid.</p> <p>B - Evaporation/transpiration - the loss of moisture from plants (transpiration) and surface water from leaf surfaces/soil etc.</p>	2	<p>A - A common process in polar and high altitude environments. Do not accept evaporation as diagram shows A coming from ice cap.</p> <p>B - accept evapotranspiration.</p>
	(b)	(i)	<ul style="list-style-type: none"> • Tributary A has a peak discharge of approximately 25 cubic metres per second, while Tributary B is 35 cubic metres per second/cumecs. • Tributary A takes longer to reach its peak than Tributary B. • Tributary B has a far steeper gradient before and after its peak than Tributary A. • Both Tributaries return to base flow (normal conditions) after approximately 8 hours from the start of the rainfall event. • Other reasonable response. 	3	<p>Any three.</p> <p>Statements must refer to BOTH tributaries.</p> <p>Candidates may use specific hydrograph terminology as this content crosses over with Higher Geography. Answers that use such terms should be credited. Terminology might include cumecs, peak flow/discharge, rising & falling limb, basin lag etc.</p>
	(b)	(ii)	<ul style="list-style-type: none"> • Afforestation of agricultural land would decrease and/or delay maximum discharge because the trees hold the water/evaporate the water. • Urbanisation of agricultural land/overuse of concrete would result in increased flow because the water can't seep away. • Deforestation to agricultural/urban land would result in increased flow/water levels rising more quickly because there's less vegetation to hold the water. • Other reasonable response. 	2	<p>Must explain how the factor impacts on the discharge, not simply name the factor.</p> <p>1 mark for the change (from/to).</p> <p>1 mark for the effect.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
2.	(a)	<ul style="list-style-type: none"> • Afforestation/re-afforestation. • Legal protection/Wildlife and Countryside Act 1981. • Changed attitudes to wildlife/ reduced killing by gamekeepers. • Other reasonable response. 	2	Any two.
	(b)	<p><i>Validity:</i></p> <ul style="list-style-type: none"> • Only 7 scats per 4 km means less than 2 per km, so possibility of missing the presence of pine martens is high. • Only one forest (per hectad) was sampled, so much of habitat was left unsampled. • Other reasonable response. <p><i>Improvement:</i></p> <ul style="list-style-type: none"> • Increasing the distance walked <u>to 4 km (or other suitable distance)</u> is more likely to give more chance of finding scats. • Other techniques might be used eg (live) traps would allow animals to be counted or tagged/camera traps would allow much wider sampling without disturbing animals/ tracks indicate presence without disturbing animals/hair traps indicate presence without disturbing animals. • Other reasonable response. 	3	<p>1 mark for validity of technique. Must state problem AND its effect.</p> <p>2 marks for improvement. Must give change AND why it is an improvement.</p>
	(c)	(i) red 6 : 11 grey	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance
	(ii)	Pine martens may: <ul style="list-style-type: none"> • catch the greys in preference to the reds as they are larger • catch greys more easily in the trees because they are too heavy to go to smallest branches • catch more greys because they spend more time on the ground • other reasonable response. 	2	Any two.
	(iii)	Appropriate scales (zero should be included) and key. Points correctly plotted and joined using straight lines.	2	1 mark for appropriate scales and key. 1 mark for correct plotting and joining of points. Graph should fill most of grid.

Question		Expected Answer(s)	Max Mark	Additional Guidance	
3.	(a)	<p>Due to the nature of baryte, several possible responses are possible:</p> <ul style="list-style-type: none"> • stratiform deposits/formed by precipitation on/near seafloor • veins/formed by precipitation from hot barium-rich fluids in faults and fractures • residual/dissolution of surrounding rock, leaving baryte in a clay matrix • concretions • void-filling crystals • sometimes in association with oceanic thermal plumes • other reasonable response. 	1	<p>Any one.</p> <p>The internationally accepted spelling is baryte but may also be expressed as barytes, barite or barites. Accept any of these.</p>	
	(b)	(i)	505 %	1	$37979 - 6276 = 31703$ $31703 / 6276 \times 100$ Unit is required.
		(ii)	<p>Many possible answers, including:</p> <ul style="list-style-type: none"> • a new deposit was exploited • global price made greater extraction viable • greater demand made greater extraction viable • other reasonable response. 	1	Accept any sensible response that could feasibly account for a one-year spike in production.
	(c)		<p>Heavy weathering of rocks rich in baryte result in accumulations.</p> <p>AND</p> <p>These accumulations usually occur at the parent material-soil interface (or the C horizon).</p>	2	<p>1 mark for weathering.</p> <p>1 mark for accumulation in soil.</p> <p>Knowledge of weathering and soil structures (C horizons) represents crossover with the biosphere section of the Unit.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
	(d) (i)	<ul style="list-style-type: none"> • Baryte is used as a weighting agent due to its very high specific gravity. • The mineral is heavy and therefore used to add weight to drilling fluid and prevent a blow-out. • It is cheap, non-corrosive, non-abrasive, insoluble and non-toxic. • The high density baryte mud suspends rock cuttings (from drilling) and carries them back to the surface. • Baryte mud acts as a coolant for the drill bit. • Other reasonable response. 	1	Any one.
	(ii)	<ul style="list-style-type: none"> • Baryte has a high molecular weight (1 mark) resulting in the absorption of x-rays (1 mark), so benefiting medical imaging. • Baryte has a low solubility (1 mark) so protecting patients from its highly toxic properties (1 mark). • Other reasonable response. 	2	1 mark for the property. 1 mark for how this property makes it appropriate for a barium meal.

Question		Expected Answer(s)	Max Mark	Additional Guidance
4.	(a)	<ul style="list-style-type: none"> Resources used Raw materials used Transport Energy Disposal 	2	Any two.
	(b)	289 296 (tonnes)	1	(107 000) x (73/27)
	(c)	<ul style="list-style-type: none"> Limits opportunity to continually cycle resources. Produces carbon dioxide emissions. Potentially reduces progress to encourage recycling. Possible health concerns from pollution. Other reasonable response. 	2	Any two.
	(d)	(i) <ul style="list-style-type: none"> Uses less energy and resources. Less water usage. Reduction of carbon emissions. Reduction of resources ending up as waste. Reduction of pollution associated with waste disposal and repeated manufacturing of disposable products. Sustainable in the long term as takes into account non-economic factors. Other reasonable response. 	2	Any two.

Question		Expected Answer(s)	Max Mark	Additional Guidance
	(d) (ii)	<ul style="list-style-type: none"> • New infrastructure required could be more costly to set up and operate. • Motive of business could be profit not sustainability. • Consumers might not wish to change their purchasing habit. • Changing fashions and new materials favour manufacturing new products rather than reusing old ones. • Other reasonable response. 	2	Any two.

Question			Expected Answer(s)	Max Mark	Additional Guidance
5.	(a)	(i)	<p><i>How pesticide used:</i></p> <ul style="list-style-type: none"> • On treated seeds planted in fields • In sprays applied to crops • Used as a treatment in fish farming • Anti-fouling paint on boats <p><i>Entry into ecosystem:</i> Washed/leached/blown into streams/lakes/sea.</p>	2	<p>1 mark for stating how the pesticide was applied.</p> <p>1 mark for stating how it entered into the water.</p> <p>Accept entry into freshwater ecosystem as this is likely to eventually enter the marine environment.</p>
		(ii)	<p>Bioaccumulation is the increase in concentration of pesticide within an organism.</p> <p>Fish eats many times its own mass of food, taking in pesticides from other organisms, but does not excrete/break down the pesticide and so the pesticide builds up in the fish's body over time.</p>	2	<p>1 mark for stating definition.</p> <p>1 mark for explaining how the process develops over time.</p>
		(iii)	<p>Organic farming does not use artificial pesticides.</p> <p>Biodegradable pesticides can be broken down by organisms, so do not build up in the environment.</p> <p>Or other reasonable response.</p>	2	1 mark for each.
	(b)		(Less biomass can be supported because) energy is lost from the system at each trophic level (as heat/movement/undigested waste)	1	
	(c)	(i)	<p>'Predator' consumes contaminated prey, and the pesticide from the prey is then stored within their own (fat and liver) tissues.</p> <p>This is repeated at each trophic level, so concentration of pesticide increases, reaching lethal levels at top of food chain.</p>	2	<p>1 mark for movement of the pesticide from one organism to another up the food chain.</p> <p>1 mark for increasing concentration at each step, until reaches lethal level.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
	(ii)	<ul style="list-style-type: none"> Ectotherms lose much less of their energy intake as heat Endotherms lose much more of their energy intake as heat <p>More of the energy entering a trophic level is available to next trophic level from ectotherms (<i>or v.v. for endotherms</i>)</p>	2	<p>1 mark for how energy is lost/retained.</p> <p>1 mark for energy transfer.</p>

Question			Expected Answer(s)	Max Mark	Additional Guidance
6.	(a)	(i)	Emissions were fairly stable until a sharp increase started in the 1800s.	1	
		(ii)	<ul style="list-style-type: none"> Increased burning of fossil fuels (for energy use, transport, industrialisation etc). Increased livestock rearing/rice farming (leads to methane increase). Industrial revolution. Agricultural revolution. Other reasonable response. 	2	Any two.
	(b)		<ul style="list-style-type: none"> Scientific predictions include a degree of uncertainty. May be due to natural causes. Other reasonable response. 	1	Do not accept “they do not know” or similar general comment.
	(c)	(i)	<ul style="list-style-type: none"> Reduced available shipping capacity to deliver goods. More ships would be needed to carry out the same amount of transport work (in the same time). Other reasonable response. 	1	
		(ii)	<ul style="list-style-type: none"> Will take a number of years to be efficient as shipping has a relatively long life cycle. Although new ships will be built, the shipping they replace will be used elsewhere (meaning the impact on greenhouse gas emissions will take longer to materialise). Scheme is not compulsory. Other reasonable response. 	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance
	(d)	<p>Environmental Impact Assessment is required for assessing:</p> <ul style="list-style-type: none"> • impact on marine/terrestrial ecology • impact of traffic increase on land and sea • impact of noise and other pollution • impact on coastal processes • natural hazards • geology and sediments • cultural/heritage/socio-economic impact • landscape and visual impact • other reasonable response. 	2	<p>Any two. (not life cycle assessment)</p> <p>Is not necessary to identify Environmental Impact Assessment as the legislation.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
7.	(a)	<ul style="list-style-type: none"> The higher than average rainfall zone has moved further north. Greater variation in rainfall distribution in January (or vice versa). Other reasonable response. 	2	<p>Accept any two relevant points that state a change in the overall rainfall distribution.</p> <p>Not looking for locations. However, a candidate may answer by identifying a change for a specific area (1 mark only).</p>
	(b)	(i) <p>Climate change is warming the Earth's atmosphere (1 mark) and a warmer atmosphere can hold more moisture (1 mark).</p> <p>Or other reasonable response.</p>	2	<p>Candidates may make reference to the movement of the Jet Stream, delivering greater precipitation to the UK. The more intense jet stream in 2013-14 was associated with temperature gradients between the relatively warm sea and very cold North American landmass - responses that make reference to this deserve credit.</p>
		(ii) <p>Named factor (1 mark) Description of contribution (1 mark)</p> <p>For example: A volcanic eruption (1 mark) can:</p> <ul style="list-style-type: none"> reduce the amount of solar radiation (reaching the Earth's surface) lower temperatures in the atmosphere change atmospheric circulation any reasonable response for 1 mark 	2	<p>Candidates may make reference to cosmic changes, plate tectonics, volcanic activity, sunspot activity (or another reasonable response).</p> <p>The description of the contribution should be relevant to the named factor.</p>

Question	Expected Answer(s)	Max Mark	Additional Guidance
(c)	<p>Flooding fills soil pore spaces and channels with water (1 mark)</p> <p>AND any one from:</p> <ul style="list-style-type: none"> • Could result in leaching of minerals from A-horizon into B-horizon. • Creates anaerobic soil conditions, killing off soil biota. • Reduced soil biota results in lack of mixing and aeration. • Damage to trees or other large plants may cause damage to soil structure and expose the soil to erosion. • Addition of nutrients/sediments. • Other reasonable response. 	2	<p>Must include reference to waterlogging of soil.</p> <p>Second mark given for impact of the water on soil composition.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
8.	(a)	<p>New CAP (post-2013):</p> <ul style="list-style-type: none"> • Direct payments to farmers (Pillar 1) to support/stabilise their income. • Promotion of rural development (Pillar 2). • Greening of agriculture/ requirement to follow specific environmental farming practices (crop diversification, maintenance of permanent grassland, establishment of Ecological Focus Areas). • Young farmer/Active farmer/ Small farmer schemes <p>Old CAP (2003-2013):</p> <ul style="list-style-type: none"> • Decoupling of farm subsidies from production of specific crops. • Single Farm Payment in return for maintaining land in good agricultural and environmental condition/cross-compliance. • Guaranteed stable income. • Grants for joining agri-environment schemes. • Alternative income opportunities/diversification. <p>Other reasonable responses.</p>	2	<p>Any two.</p> <p>Not market support as this is stated in the question stem.</p> <p>While it is assumed that candidates will have been taught about the new CAP, credit should be given for relevant responses related to the old CAP.</p> <p>Credit should be given for responses relating to the Scottish Rural Development Programme.</p>

Question	Expected Answer(s)	Max Mark	Additional Guidance
(b)	<ul style="list-style-type: none"> • Sustainable development is development that meets the needs of today without compromising the ability of future generations to meet their own needs. • To improve food security • To protect soil/water • To reduce intensive unsustainable practises. • To reduce overproduction • To promote diversification • To produce higher quality/safer food • To improve animal welfare standards • Other reasonable response 	2	Any two.
(c)	<ul style="list-style-type: none"> • Changes to water/soil quality • Threats to habitats/biodiversity • Extreme weather events • Other reasonable response 	2	Any two. Do not accept climate change/ global warming unless it has been qualified with how it impacts on food production.
(d)	<ul style="list-style-type: none"> • Oilseed rape or linseed - oils or named chemical use. • Switchgrass or willow - biofuel. • Straw - building materials. • Hemp or flax fibre or maize - renewable or compostable packaging. • Other reasonable response 	2	1 mark for crop 1 mark for use. Do not accept trees as a crop. Timber as a biofuel would be acceptable
(e)	<ul style="list-style-type: none"> • Sports • Tourism • Rural crafts • Retail outlets • Other reasonable response 	1	Many different examples but ensure the example is a non-agricultural land use. Do not accept biofuel.

Question			Expected Answer(s)	Max Mark	Additional Guidance
9.	(a)	(i)	(Is a fossil fuel, forming when) organic matter is buried, compressed and heated (within the Earth's crust) (1 mark). (Shale gas is natural) gas that accumulates within shale deposits (1 mark).	2	Process is often known as thermogenic methane production.
		(ii)	Hydraulic fracturing/fracking (1 mark) uses pressurised water mixed with chemicals and sand to create fractures (in the shale to release the gas) (1 mark). or Acidising (1 mark) uses pressurised acids to create fractures (in shale and release the gas) (1 mark).	2	
	(b)	(i)	<ul style="list-style-type: none"> Increases energy security/helps a nation move towards self-sufficiency of energy. Creates employment. Effective lobbying by multi-national companies keen to develop the technology. Other reasonable response. 	1	Any one.
	(b)	(ii)	<ul style="list-style-type: none"> Fear of groundwater pollution. Possibility of small seismic events associated with shale gas extraction. Objections to further fossil fuel exploitation Other reasonable response. 	2	Any two.
	(c)		<p><i>Example:</i> Site of Special Scientific Interest/SSSI. (1 mark)</p> <p>Rocks and landforms are protected by law and it is an offence to (intentionally or recklessly) damage them. (1 mark)</p> <p>Other land designation.</p>	2	<p>1 mark for current land designation.</p> <p>1 mark for outlining the legality of the designation.</p> <p>Designations should have a legal standing (for example Geoparks would not be appropriate but some National Parks would be).</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
10.	A	<ul style="list-style-type: none"> Named example (1 mark) Impact on local biodiversity. (1 mark for each well-structured statement. Up to 7 marks in total) Minimisation of the impact. (1 mark for each well-structured statement. Up to 5 marks in total) <p><i>Example:</i></p> <ul style="list-style-type: none"> <i>Rhododendron ponticum</i> (1 mark) <p><i>Impacts:</i></p> <ul style="list-style-type: none"> Forms extensive dense thickets (1 mark) which shade out other species (1 mark) Spreads by seed/layering (1 mark) and colonises new habitat quite rapidly (1 mark) Out-competes native plant species (1 mark) for resources such as space/light/water/nutrients (1 mark) Releases chemical that inhibits (germination or seedling establishment of) other plant species (1 mark) Influences presence/absence of fauna (1 mark) Host for disease pathogens affecting other plants (1 mark) Other reasonable responses, up to max of 7 marks. <p><i>Minimisation:</i></p> <ul style="list-style-type: none"> Control strategies and programmes eg SNH/FCS Species Action Framework (1 mark) Cut and burn (1 mark) Stump/stem treatment with herbicide (1 mark) Use of bio-herbicides (1 mark) Uprooting (1 mark) Educating the public (1 mark) Other reasonable responses, up to max of 5 marks. 	10	<p>The focus should be on the impacts of non-native species and their minimisation, using named examples, rather than on just naming examples.</p> <p>Responses to a) and b) could be linked for a single species, but credit candidates who use more than one named species.</p> <p>1 mark for naming minimum of 2 species without any discussion.</p> <p>Maximum of 7 marks for impacts on local biodiversity.</p> <p>Maximum of 5 marks for minimisation of the impacts.</p> <p>Other examples could include:</p> <ul style="list-style-type: none"> Sika deer American mink Red signal crayfish Himalayan balsam Japanese knotweed Rosebay willowherb Ruddy duck Muntjac deer <p>Responses should be well-structured and candidates should be advised not to use bullet points.</p>

Question		Expected Answer(s)	Max Mark	Additional Guidance
10.	B	<ul style="list-style-type: none"> • Named example (1 mark) • Argument(s) for the named example. (1 mark for each well-structured statement. Up to 7 marks in total) • Argument(s) against the named example. (1 mark for each well-structured statement. Up to 6 marks in total) <p><i>Example:</i> White-tailed sea eagle (1 mark)</p> <p><i>Arguments for:</i></p> <ul style="list-style-type: none"> • Fairly recent extinction so habitat is relatively unchanged (1 mark) so no habitat adaptation required (1 mark). • Fills vacant niche of apex predator (1 mark), increasing biodiversity (1 mark) • (Are globally threatened so) helps to expand their range (1 mark) • Generates employment (through ecotourism) (1 mark) • Helps highlight the ideals of conservation (1 mark) • Such predators are an indicator of ecosystem health (1 mark) • Aesthetic/ethical view of reintroducing native species (1 mark) • Other reasonable responses, up to max of 7 marks. <p><i>Arguments against:</i></p> <ul style="list-style-type: none"> • Concerns about predation of lambs/reared birds (1 mark) • Concerns about predation on threatened native animal species (1 mark) • Potential for competition with golden eagle (1 mark) • Limited gene pool may undermine reintroduction schemes (1 mark) • Persistent pesticides/pollutants may undermine survival/breeding success (1 mark) • Other reasonable responses, up to max of 6 marks. 	10	<p>The focus should primarily be on the pros & cons of reintroduction, using named examples, rather than on just naming examples.</p> <p>Responses to a) and b) could be linked to provide opposing opinions of a single species reintroduction.</p> <p>Maximum of 7 marks for arguments in favour of reintroduction.</p> <p>Maximum of 6 marks for arguments against reintroduction.</p> <p>‘Fills vacant niche of apex predator’ should only be accepted once.</p> <p>Other examples could include:</p> <ul style="list-style-type: none"> • European beaver • European lynx • European wolf • wild boar • brown bear • other suitable species <p>Responses should be well-structured and candidates should be advised not to use bullet points.</p>

Question	Expected Answer(s)	Max Mark	Additional Guidance
11. A	<p>Benefits & challenges of waste management legislation:</p> <ul style="list-style-type: none"> • Named piece of waste management legislation (1 mark) • Purpose of strategy (1 mark) • Description of how it operates (1 mark) • Benefits (1 mark for each well-structured statement. Up to 6 marks in total) • Challenges (1 mark for each well-structured statement. Up to 6 marks in total) <p><i>Example:</i> Landfill Tax (Scotland) Act 2014 (1 mark)</p> <ul style="list-style-type: none"> • <i>Purpose of strategy</i> - (use of financial incentives) to reduce amount of biodegradable waste going to landfill/make other treatment options more financially viable (1 mark) • <i>Description of how it operates</i> - landfill operator pays tax and operator passes it on to businesses (1 mark) • <i>Benefits</i> (1 mark for each, up to max of 6 marks) <ul style="list-style-type: none"> ○ Is a tax on waste ○ Inactive waste (eg earth, bricks etc) has lower tax ○ Encourage alternative means of waste disposal (incineration, recycling) ○ Tax can be increased/decreased ○ Polluter pays ○ Income generated through tax is used to fund research & development into new methods of waste minimisation/environment-al projects ○ Other reasonable responses 	10	<p>Candidates may discuss legislation from EU, UK, Scotland or other home nations.</p> <p>1 mark for named piece of legislation, provided the name (excluding year) is given in full and is correct.</p> <p>Maximum of 6 marks for benefits. Maximum of 6 marks for challenges.</p> <p>If a candidate is to achieve max marks they must have explained the purpose of the policy AND discussed the potential benefits and challenges.</p> <p>Other pieces of legislation might include:</p> <ul style="list-style-type: none"> • EU Waste Framework Directive • EU Landfill Directive • Landfill (Scotland) Regulations 2003 • Environmental Protection Act 1990 • Environment Act 1995 • Environmental Protection (Duty of Care) (Scotland) Regulations 2014 • End of Life Vehicles Regulations 2003 • Control of Pollution Act 1974 • Controlled Waste Regulations 1992 • Waste Electrical and Electronic Equipment Regulations 2013 <p>The NetRegs website may be useful for checking legislation http://www.netregs.org.uk/legislation.aspx</p> <p>Responses should be well structured and candidates should be advised not to use bullet points.</p>

Question	Expected Answer(s)	Max Mark	Additional Guidance
	<ul style="list-style-type: none"> • <i>Challenges</i> (1 mark for each, up to max of 6 marks) <ul style="list-style-type: none"> ○ Has had little impact (although higher tax level ○ has partially addressed this) ○ Landfill still more attractive to local people than incineration ○ Has resulted in increased fly-tipping ○ Businesses can divert waste to household waste stream ○ Can be complicated and bureaucratic ○ Other reasonable responses 		

Question		Expected Answer(s)	Max Mark	Additional Guidance
11.	B	<p>Benefits & challenges of climate change or renewable energy policy/legislation:</p> <ul style="list-style-type: none"> • Named piece of relevant legislation (1 mark) • Purpose (1 mark) • Description of how it operates (1 mark) • Benefits (1 mark for each well-structured statement. Up to 6 marks in total) • Challenges (1 mark for each well-structured statement. Up to 6 marks in total) <p><i>Example:</i> Climate Change (Scotland) Act 2009 (1 mark)</p> <ul style="list-style-type: none"> • <i>Purpose of strategy</i> - to reduce greenhouse gas emissions over time (1 mark) • <i>Description of how it operates</i> - targets set to reduce greenhouse gas emissions (with onus on public bodies and on new government legislation to reduce emissions) (1 mark) • <i>Benefits</i> (1 mark for each, up to max of 6 marks) <ul style="list-style-type: none"> ○ Forces public bodies to reduce emissions of (six) greenhouse gases/transition to a low carbon economy ○ New government policies have to look at direct and indirect impacts on greenhouse gas emissions ○ Sets long term goals ○ Puts focus on renewable energy ○ Provides scope for new environmental taxes (could also be a challenge) ○ Works towards preserving ecosystems and species ○ Other reasonable responses. 	10	<p>Focus is on national policy/legislation. Candidates could discuss legislation from UK or Scotland (or other home nations), but give credit if overarching EU policy/directives is included.</p> <p>1 mark for named piece of legislation, provided the name (excluding year) is given in full and is correct.</p> <p>Maximum of 6 marks for benefits. Maximum of 6 marks for challenges.</p> <p>If a candidate is to achieve max marks they must have explained the purpose of the policy AND discussed the potential benefits and challenges.</p> <p>Maximum of 5 marks for benefits, 5 for challenges from the remaining 8 marks</p> <p>Statements should be well structured and candidates should be advised not to use bullet points</p> <p>Other pieces of policy/legislation might include:</p> <ul style="list-style-type: none"> • UK Climate Change Act 2008 • UK Carbon Plan • (Scottish) Renewables Obligation • Electricity Generation Policy Statement 2013 • Carbon Reduction Commitment • EU ETS <p>The NetRegs website may be useful for checking legislation http://www.netregs.org.uk/legislation.aspx</p> <p>Responses should be well structured and candidates should be advised not to use bullet points.</p>

Question	Expected Answer(s)	Max Mark	Additional Guidance
	<ul style="list-style-type: none"> • <i>Challenges</i> (1 mark for each, up to max of 6 marks) <ul style="list-style-type: none"> ○ Provides scope for new environmental taxes (could also be a benefit). ○ Trade-offs required when moving to a low carbon economy (could cause economic problems). ○ Emission targets are set for UK/Scottish government does not (currently) have the power to regulate energy issues. ○ Scotland already has significant environmental powers, so will these additional powers make a real difference? ○ Nuclear power is not included as an option. ○ Impact on jobs. ○ Can be complicated and bureaucratic. ○ Other reasonable responses. 		

[END OF MARKING INSTRUCTIONS]