



National
Qualifications
2024

2024 Environmental Science

Higher - Paper 2

Question Paper Finalised Marking Instructions

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General marking principles for Environmental Science Higher

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

- (a) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.
- (b) If a 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 should seek guidance from your team leader.
- (c) Where a candidate makes an error at an early stage in a multi-stage calculation, award marks for correct follow-on working in subsequent stages. Do not award marks if the error significantly reduces the complexity of the remaining stages. Apply the same principle in questions that require several stages of non-mathematical reasoning.
- (d) Award full marks for a correct final answer (including units if required) on its own with no working shown.
- (e) Candidates may access larger mark allocations fully, whether they respond in continuous prose, linked statements, or a series of discrete developed points.
- (f) In the detailed marking instructions, if a word is **underlined** then it is essential; if a word is **(bracketed)** then it is not essential.
- (g) In the detailed marking instructions, words separated by / are alternatives.
- (h) Do not award marks if a candidate gives two answers, where one is correct and the other is incorrect.
- (i) Where the candidate is instructed to choose one question to answer but instead answers both questions, mark both responses and award the better mark.
- (j) Award marks for a valid response, even if the response is not presented in the format expected. For example, award the mark if the response is correct but is not presented in the table as requested, or if it is circled rather than underlined as requested.
- (k) Candidates may use abbreviations (for example, BOD or GPP) or chemical formulae (for example, CO₂ or H₂O) as acceptable alternatives to naming, unless required by the question, but these must be correct. For instance, chemical formulae with an incorrect subscript or superscript component (for example CO²), or full-size number (for example CO2) should not be awarded the mark.
- (l) Award marks, up to the maximum mark allocation for the question, for content that is outwith the course specification but used appropriately at the correct level for Higher.
- (m) If candidates are required to give a numerical answer, and units are not given in the stem of the question or the answer space, they must supply the units to gain the mark.
- (n) If incorrect **spelling** is used:
 - and the term is recognisable, then award the mark;
 - and the term can easily be confused with another scientific term, then do not award the mark, for example bioaccumulation and biomagnification, or qualitative and quantitative;
 - and the term is a mixture of other terms, then do not award the mark.

- (o) When presenting data:
- 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 award the plotting mark. Marks may still be awarded for other required components, as specified in the detailed marking instructions.
 - do not award the relevant mark if the graph too small to check the accuracy of plotting; or if 0 is plotted when no data for this is given (ie candidates should only plot the data given)
- (p) Award marks 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;
 - **define**, they should give a statement of the definition;
 - **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;
 - **justify**, they must give reasons to support their suggestions or conclusions;
 - **discuss**, they must write about a topic in detail, taking into account different issues or ideas;
 - **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.

Note that this list is not exhaustive.

Marking instructions for each question

Question		Expected response	Max mark	Additional guidance
1.	(a)	Invasive non-native species/INNS	1	Do not accept only 'non-native species' or 'invasive species'.
	(b)	(i) Grey and red squirrels are two different species	1	
		(ii) The grey squirrel population increased because they had few predators in UK OR The grey squirrel's birth rate has exceeded the death rate. Or other valid response.	1	Accept valid reference to other biotic factors. Do not accept competition alone.
		(iii) 87(%)	1	$138\,000 - 18\,000 = 120\,000$ $\frac{120\,000}{138\,000} \times 100 = 87\%$ Accept 86.96%
	(c)	(i) The variety of genetic characteristics involved in the genetic makeup of a species.	1	Accept correct use of complex terms such as alleles/genes.
		(ii) Simple	1	

Question			Expected response	Max mark	Additional guidance
1.	(c)	(iii)	<p>Advantages:</p> <p>Does not injure/distress/harm the organism</p> <p>OR</p> <p>Does not alter the organism's behaviour</p> <p>OR</p> <p>Allows organisms to be studied in their natural habitat</p> <p>Or other valid response.</p> <p>Disadvantages:</p> <p>Analysis can be time consuming</p> <p>OR</p> <p>Lack of certainty over number of organisms in sample area</p> <p>Or other valid response.</p>	2	<p>1 mark for advantage.</p> <p>1 mark for disadvantage.</p>
	(d)	(i)	0.22	1	Value on the line of best fit.
		(ii)	<p>Pine cones provide food</p> <p>OR</p> <p>Fewer grey squirrels are present in pine trees/forest</p> <p>OR</p> <p>Pine trees provide canopy to allow red squirrels to move round forest with less chance of encountering predators</p> <p>Or other valid response.</p>	1	Do not accept habitat alone

Question			Expected response	Max mark	Additional guidance
2.	(a)	(i)	(The) waste hierarchy	1	
		(ii)	<p>Recycling requires a significant energy input to turn waste into a new product, whereas prevention requires no energy input</p> <p>OR</p> <p>Recycling requires transportation to waste facilities therefore there would be an increase in emissions, whereas prevention requires no transportation</p> <p>OR</p> <p>A loss of quality can occur when a product is recycled which often results in disposal, whereas prevention does not generate waste</p> <p>OR</p> <p>Prevention is more cost effective than recycling</p> <p>Or other valid response.</p>	2	<p>Any two.</p> <p>There must be a comparison between recycling and prevention.</p> <p>Accept reference to benefit of prevention over recycling.</p>
	(b)	(i)	Bacteria/microorganisms are used to decompose organic matter in an oxygen-free environment, (producing biogas and sludge).	1	Do not accept fermentation without reference to anoxic conditions.
		(ii)	<p>Reduces the need to use fossil fuels, (1 mark) thus reducing total carbon emissions (1 mark)</p> <p>OR</p> <p>The waste product does not go to landfill, (1 mark) so uses less land/prevents methane release/does not add to landfill leaching (1 mark)</p> <p>Or other valid response.</p>	2	

Question			Expected response	Max mark	Additional guidance
2.	(b)	(iii)	13.8 tonnes	2	Unit required $\frac{37\,300}{10\,000\,000} = 3.73 \times 10^{-3} \quad (1 \text{ mark})$ $3700 \times 3.73 \times 10^{-3} = 13.8 \quad (1 \text{ mark})$ OR $10\,000\,000 \div 3700 = 2702.7 \quad (1 \text{ mark})$ $37\,300 \div 2702.7 = 13.8 \quad (1 \text{ mark})$ OR $10\,000\,000 \div 37\,300 = 268.1 \quad (1 \text{ mark})$ $3700 \div 268.1 = 13.8 \quad (1 \text{ mark})$ Accept 14, 13.80, 13.801
		(iv)	Lower cost of disposal/landfill tax OR Income from selling electricity to National Grid OR Will reduce their own energy bills Or other valid response.	1	
		(v)	Circular Because it is an approach where resources/waste/emissions/energy loss are minimised through use of design/maintenance/repair/reuse/reprocessing/recycling.	1	1 mark for justification.

Question			Expected response	Max mark	Additional guidance
3.	(a)	(i)	Margin has not been ploughed/ disturbed OR Margins often have long/dense vegetation so high organic matter content OR Limited pesticide application Or other valid response.	1	
		(ii)	(A) Anecic Burrows will be destroyed by ploughing/lack of decaying organic matter for food Or other valid response.	1	Do not accept lack of organic matter for habitat.
			(B) Epigeic Surface litter/humus could be in short supply in intensively farmed soil Or other valid response.	1	
		(iii)	Some worms may have moved out of the survey area before they were counted OR Some worms may have been affected by the disturbance and moved deeper into burrows OR Some worms may have been too small to see/hidden in clods of soil Or other valid response.	1	Accept reference to the data relating to a sample of a population.
		(iv)	1: Detritivore 2: Keystone species	2	1 mark for each valid response. Do not accept: decomposer

Question		Expected response	Max mark	Additional guidance
3.	(b)	<p>Y is a brown earth, (1 mark) is found in deciduous woodland/ forest (1 mark) which has high leaf fall/ accumulation of leaf litter/ organic matter content/humus. (1 mark)</p> <p>Brown earth horizons provide suitable conditions for all four ecotypes. (1 mark)</p> <p>Epigeic and compost species inhabit the organic-rich horizon/surface horizon/leaf litter and humus. (1 mark)</p> <p>Endogeic species inhabit the A-horizon/topsoil. (1 mark)</p> <p>Anecic species inhabit the A-horizon/ topsoil and B-horizon/subsoil. (1 mark)</p> <p>pH is higher in Y so more suitable environment for a wider range of earthworm ecotypes. (1 mark)</p> <p>Or other valid response.</p>	4	Accept valid reasoning for why soil X would not contain a high earthworm abundance, but focus of response should be on soil Y.

Question			Expected response	Max mark	Additional guidance
4.	(a)	(i)	Methods and principles needed to achieve the policy are set out in a strategy. (1 mark) Legislation and initiative are then implemented to achieve the aims of the strategy/policy. (1 mark)	2	Accept response in the context of reducing GHGs from transport.
		(ii)	Increased costs to drivers, (1 mark) as they will have to buy more petrol to travel the same distance. (1 mark) Or other valid response.		
	(b)	(i)	1.56 (tonnes)	2	2.17 × 0.28 = 0.6076 (1 mark) 2.17 - 0.6076 = 1.56 (1 mark) Accept: 1.6, 1.562, 1.5624
		(ii)	More cars are compatible with E10 as older cars are being replaced. OR More drivers have switched to electric vehicles. Or other valid response.		1
	(c)	(i)	Growing biofuel crops reduces the land available for food crops. Or other valid response.	1	
		(ii)	Food waste (from fruit & vegetables) can be fermented to produce bioalcohols Or other valid response.		
		(iii)	Biodiesel is likely to have less impact on food security than bioalcohols, (1 mark) because biodiesel does not rely on food crops as much as bioalcohols. (1 mark) Or other valid response.	2	Response must refer to both bioalcohols and biodiesel.

Question		Expected response	Max mark	Additional guidance
5.	(a)	The balance between incoming and outgoing solar radiation.	1	
	(b)	(i) Cell in correct position, labelled Ferrel cell (1 mark) Arrows in a clockwise direction. (1 mark)	2	For full marks, the cell must lie between the polar and Hadley cells, be labelled Ferrel, and arrows face the correct direction.
		(ii) Warm air rises at the equator and travels to around 30° N (or S), (1 mark) where it cools and sinks to the surface, (1 mark) before it returns to the tropics. (1 mark)	3	Ignore any reference to pressure. Do not accept: cooler air 'falls'.
	(c)	Equatorial rainforest	1	Accept: tropical rainforest Do not accept rainforest alone.
	(d)	Coriolis effect	1	

Question			Expected response	Max mark	Additional guidance
6.	(a)	(i)	The uninterrupted availability of energy sources at an affordable price.	1	Answer must refer to availability of energy AND affordable price. Accept valid reference to the association between national security and the availability of natural resources for energy consumption.
		(ii)	Power stations (eg coal, oil, gas, nuclear) need water to heat to generate steam (1 mark) which turns turbines, generating electricity. (1 mark) OR Water is needed for electrolysis, (1 mark) to produce hydrogen for hydrogen power. (1 mark) OR Water is required for anaerobic digestion, (1 mark) which generates biogas. (1 mark) OR Hydroelectric energy needs water to flow down gradient/hill, (1 mark) which turns turbines, generating electricity. (1 mark) OR Thermal power stations need water for cooling, (1 mark) to extract heat from the process. (1 mark) Or other valid response.	2	1 mark for reference to the need for water. 1 mark for energy production.
	(b)	(i)	Hot rocks/steam (or hot water)	1	
		(ii)	Geothermal gradient	1	
		(iii)	150 °C	1	Unit required $2.5 \times \frac{6000}{100}$

Question			Expected response	Max mark	Additional guidance
6.	(c)	(i)	<p>Pipes are buried below ground, containing a (circulating) liquid. (1 mark)</p> <p>Heat (is absorbed from the ground and) can be removed using a heat exchanger (and used to heat the house). (1 mark)</p>	2	Do not accept use of water alone.
		(ii)	<p>Heating buildings through geothermal energy releases less greenhouse gases/emissions than traditional fossil fuels. (1 mark)</p> <p>Therefore, less heat energy is trapped/more heat energy can escape (keeping temperatures lower). (1 mark)</p> <p>Or other valid response.</p>	2	

Question		Expected response	Max mark	Additional guidance
7.	(a)	Site of Special Scientific Interest/ SSSI	1	
	(b)	(i) <p>2. Has purple-blue flowers: <i>Cicerbita macrophylla</i> Does not have purple-blue flowers: Go to 4</p> <p>3. Has purple-blue flowers: <i>Cicerbita alpina</i> Does not have purple-blue flowers: <i>Sonchus palustris</i></p> <p>4. Has matt grey-green leaves/has shiny green leaves/has flowerheads > 40 mm wide: <i>Sonchus arvensis</i> Does not have matt grey-green leaves/shiny green leaves/ flowerheads > 40 mm wide: <i>Sonchus asper</i></p>	3	<p>1 mark for each correct paired statement.</p> <p>Accept: correct alternative statements. Must not include habitat information.</p> <p>Each paired statement must be comparative.</p>
		(ii) <p>Muirburn for grouse, (1 mark) could kill plants/seeds. (1 mark)</p> <p>OR</p> <p>Increased climbing/ walking, (1 mark) could result in trampling of seedlings/plants. (1 mark)</p> <p>OR</p> <p>Plant collectors, (1 mark) could be removing last viable population. (1 mark)</p> <p>Or other valid response.</p>	2	<p>1 mark for a local human activity.</p> <p>1 mark for valid impact of the activity on the alpine sow-thistle distribution.</p>

Question			Expected response	Max mark	Additional guidance
7.	(b)	(iii)	<p>No change (in genetic diversity) (1 mark) because the new plant will be a clone of the parent plant. (1 mark)</p> <p>OR</p> <p>Decrease (in genetic diversity) (1 mark) because there may be loss of plants with unique genetic characteristics. (1 mark)</p> <p>OR</p> <p>(Slow) increase (in genetic diversity) (1 mark) Because new genetic mutations may occur. (1 mark)</p>	2	<p>1 mark for potential change in genetic diversity.</p> <p>1 mark for appropriate justification.</p> <p>If no attempt to justify the prediction - award 0 marks.</p>
		(iv)	<p>Plant is insect-pollinated so relies on pollinators being present at the right time/moving between populations (which are scarce)</p> <p>Or other valid response.</p>	1	Do not accept reference to wind alone.
		(v)	<p>(Physical) protection of wildlife sites/targeting action on priority species or habitats/engaging people and encouraging behavioural change.</p> <p>Or other valid response.</p>	1	<p>Any one</p> <p>Do not accept rewilding alone.</p>

Question			Expected response	Max mark	Additional guidance
8.	(a)	(i)	Condensation	1	
		(ii)	\$1.25 million	1	1000 h ÷ 4 h = 250 (flights) 250 × \$5000 = \$1.25 million Must include unit.
	(b)	(i)	The process of removing salt from (sea)water.	1	
		(ii)	Less water lost through evaporation (as it is directed only to the plants/ roots that need it) OR Drip irrigation prevents run-off.	1	
		(iii)	Grow drought-resistant or less water-intensive crop/optimize watering times/use hydroponics/ other valid response.	1	Any one
		(iv)	Modification of industrial processes/ replacement of equipment/reduce leaks/reuse of greywater or blackwater/rainwater collection and storage Or other valid response.	1	Any one
		(v)	108 000 000/108 million (gallons)	2	450 × 10 000 000 = 4 500 000 000 (1 mark) 4 500 000 000 ÷ 1 000 000 000 = 4.5 4.5 × 24 000 000 = 108 000 000 (1 mark)
	(c)		Changes in: weather patterns/snow and ice cover/soil stability (including desertification)/sea level/ocean currents. OR Impacts on: ecosystems/species distribution/biodiversity/food production. Or other valid response.	1	Any one
	(d)		Global warming is a gradual increase in the overall temperature of the atmosphere, (1 mark) and is encompassed in climate change, (1 mark) which is the large-scale, long-term shift in weather patterns or average temperatures. (1 mark)	2	Must refer to the relationship between the two terms, otherwise maximum of 1 mark.

Question			Expected response	Max mark	Additional guidance
9.	A	(a)	<p>Changes in land management</p> <p>Examples could include:</p> <ul style="list-style-type: none"> • larger fields • crop rotation • drainage • hedgerow removal • cultivation of marginal land • conservation practices • diversification • or other valid example. <p>For example: Hedgerow removal (1 mark) enlarges fields and makes planting/harvesting more efficient (1 mark)</p>	10	<p>Responses must refer to change.</p> <p>Maximum of 7 marks for valid discussion of changes in land management.</p> <p>Maximum of 7 marks for valid discussion of changes in technology.</p> <p>Maximum of 4 marks for listing valid strategies without associated discussion.</p> <p>Do not double credit.</p> <p>Do not accept: irrigation.</p>
		(b)	<p>Changes in technology</p> <p>Examples could include:</p> <ul style="list-style-type: none"> • mechanisation • agrochemicals (fertilisers, pesticides) • selective breeding • high yield varieties • GM crops/organisms • hydroponics • or other valid example. 		

Question			Expected response	Max mark	Additional guidance
9.	B	(a)	<p>Advantages</p> <p>Produces very low greenhouse gas emissions, (1 mark) helping to mitigate against climate change. (1 mark)</p> <p>Does not release pollutants (eg sulfur dioxide, nitrogen oxides, particulate matter), (1 mark) that contribute to air quality or health issues. (1 mark)</p> <p>Nuclear fuel has high energy density, (1 mark) so a small amount of fuel can produce a lot of energy, (1 mark) and the reactor can run for an extended period before needing refuelled. (1 mark)</p> <p>There is a plentiful supply of uranium. (1 mark)</p> <p>Nuclear power plants can operate continuously without interruption, (1 mark) providing a reliable source of electricity. (1 mark)</p> <p>Reduces dependence on fossil fuels, (1 mark) enhancing the country's energy security. (1 mark)</p> <p>Or other valid response.</p>	10	<p>Maximum of 7 marks for advantages.</p> <p>Maximum of 7 marks disadvantages.</p> <p>Maximum of 4 marks for listing advantages and disadvantages without associated discussion.</p> <p>Give credit for use of examples with appropriate supporting discussion, for example Chernobyl or Fukushima. (max of 1 mark).</p>

Question			Expected response	Max mark	Additional guidance
9.	B	(b)	<p>Disadvantages</p> <p>Is non-renewable. (1 mark)</p> <p>Generates radioactive waste that requires long-term, secure storage and management, (1 mark) which could be expensive. (1 mark)</p> <p>Nuclear power generation is classed as low risk but high hazard, (1 mark) meaning that the risk of a nuclear accident is low if the generation process is properly managed but could be catastrophic if radiation is released. (1 mark)</p> <p>(Older) nuclear power stations have high operating costs. (1 mark)</p> <p>Costs of construction/safety measures/and regulatory compliance are very high (1 mark)</p> <p>Security challenges in preventing theft of nuclear materials. (1 mark)</p> <p>Public concerns (1 mark) about: nuclear accidents/ transportation/storage and disposal of radioactive waste/potential health risks. (1 mark)</p> <p>Complex safety and environmental regulations. (1 mark)</p> <p>Or other valid response.</p>		

Question		Expected response	Max mark	Additional guidance
10.	A	<p>Essential inputs in soil formation: parent material, organisms, relief/topography, climate, time (max of 2 marks)</p> <p>Formation processes</p> <ul style="list-style-type: none"> • weathering • decomposition and humification • translocation <p>Weathering (1 mark) is the breaking down of rocks in situ (ie in place, not transported) at the Earth's surface (over geological time) due to interaction with the atmosphere. (1 mark)</p> <p>Weathering may be physical/mechanical/chemical/biological. (1 mark)</p> <p>Physical/mechanical weathering is caused by changes in temperature/freeze-thaw/wind/rain/waves. (1 mark)</p> <p>Chemical weathering occurs when rainwater reacts with mineral grains in rocks, (1 mark) forming new minerals (clays) and soluble salts. (1 mark) These reactions occur particularly when rainwater is slightly acidic. (1 mark)</p> <p>Biological weathering is a form of physical/mechanical weathering caused by living organisms (eg animals, plants, fungi, micro-organisms). (1 mark)</p>	10	<p>Focus must be on processes rather than inputs.</p> <p>For maximum marks all three processes must be discussed.</p> <p>Maximum of 5 marks for each process.</p> <p>Maximum of 8 marks if only two processes discussed.</p> <p>Credit valid use of complex terms and process descriptions. For example, carbonation, oxidation, hydration, hydrolysis, acidification as examples of chemical weathering.</p>

Question		Expected response	Max mark	Additional guidance
10.	A	(continued)		
		<p>Decomposition and humification (1 mark)</p> <p>Decomposition is the breakdown of organic materials into smaller constituent parts by decomposers/ fungi/bacteria, (1 mark) which obtain their energy from the dead organic material. (1 mark)</p> <p>Humification is the total transformation (ie no recognisable original parts) of raw organic matter/remains of dead organisms (plants or animals) into humus (1 mark) and involves a combination of fungi, micro-organisms (bacteria), and macro-organisms (worms, insects). (1 mark)</p> <p>Humus enhances soil fertility/ improves soil structure/retains soil moisture. (1 mark)</p> <p>Translocation (1 mark)</p> <p>Is the movement of water or materials within the soil. (1 mark)</p> <p>The movement can create horizons with distinct physical and chemical properties. (1 mark)</p> <p>Translocation processes include leaching, eluviation, illuviation, and capillary action. (1 mark)</p> <p>Leaching is the movement/ percolation of substances dissolved in rainwater under the influence of gravity or capillary action. (1 mark)</p> <p>Eluviation is the leaching process that moves suspended/dissolved compounds from an upper horizon into a lower horizon. (1 mark)</p> <p>The suspended/dissolved compounds accumulate in the lower/illuviated horizon. (1 mark)</p>		

Question			Expected response	Max mark	Additional guidance
10.	A		(continued)		
			<p>Capillary action is the movement of water through pore spaces from wet areas to drier areas, (1 mark)</p> <p>and can move salts from groundwater up to the soil surface when evaporation reduces surface moisture. (1 mark)</p> <p>Or other valid response.</p>		

Question		Expected response	Max mark	Additional guidance
10.	B	<p>Destructive plate boundaries occur where convection currents in the upper mantle converge/come together, (1 mark) forcing the plates above to move towards each other. (1 mark) This destroys overlying crust. (1 mark)</p> <p>This type of plate boundary occurs mostly in oceans, with oceanic plate converging with continental plate. (1 mark)</p> <p>A subduction zone forms where the two oceanic and continental plates converge, (1 mark) due to the denser oceanic plate being forced below the less dense continental plate. (1 mark)</p> <p>As the oceanic plate subducts/sinks, friction causes the (subducting) oceanic plate to melt. (1 mark)</p> <p>Subduction also carries sediments and seawater downwards, (1 mark) which lowers the melting point of the (subducting) plate, forming magma. (1 mark)</p> <p>The magma contains high levels of gas and is very explosive. (1 mark)</p> <p>Magma forces its way upwards via faults in the continental plate caused by collision of the plates, (1 mark) erupting as <u>lava</u> from (strato) volcanoes along a belt known as a volcanic arc. (1 mark)</p> <p>A deep ocean trench forms at the subduction point. (1 mark)</p> <p>Subduction also causes crumpling along the edge of the continental plate, forming fold mountain chains. (1 mark)</p> <p>The release of frictional pressure at the subduction zone can result in earthquakes. (1 mark)</p>	10	<p>Accept use of convergent plate margin as an alternative term.</p> <p>Give credit for appropriate annotated diagram(s), which must be supported with descriptive statements. Maximum of 5 marks if no descriptive statements are provided with annotated diagram.</p> <p>Give credit for correct use of complex terms, such as accretionary wedge.</p> <p>Give credit for discussion of alternative scientific theories/hypotheses, such as slab pull/ridge push.</p> <p>Give credit for use of examples with appropriate supporting discussion. These could include the Mariana Trench, the Andes Mountains, Japan, and the Pacific Ring of Fire. (max of 2 marks for examples used in a valid context).</p>

Question			Expected response	Max mark	Additional guidance
10.	B		(continued)		
			<p>Destructive plate mechanisms can also occur where oceanic-oceanic plates/continental-continental plates converge but are less common. (1 mark)</p> <p>The magma erupting at subduction zones carries concentrated metallic minerals into the upper crust, (1 mark)</p> <p>with significant deposits often found near ancient plate boundaries. (1 mark)</p> <p>Or other valid response.</p>		

[END OF MARKING INSTRUCTIONS]