



National
Qualifications
2026

2026 Environmental Science

Higher - Paper 2

Question Paper Finalised Marking Instructions

These marking instructions have been prepared by examination teams for use by Qualifications Scotland appointed markers when marking external course assessments.

The information in this document may be reproduced in support of Qualifications Scotland qualifications only on a non-commercial basis. If it is reproduced, Qualifications Scotland must be clearly acknowledged as the source. If it is to be reproduced for any other purpose, written permission must be obtained from Qualifications Scotland.

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 which require several stages of non-mathematical reasoning.
- (d) Award full marks for a correct final answer (including units if required) on its own, unless a numerical question specifically requires evidence of working to be 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. Do not penalise candidates repeatedly if units are required on more than one occasion.
- (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 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.
- do not award the relevant mark 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)

(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;
- **determine**, they must work out an answer through information provided or a calculation
- **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.

Marking Instructions for each question

Question			Expected response	Max mark	Additional guidance
1.	(a)		Intentional activities which initiate or accelerate the recovery of a habitat or an ecosystem (with respect to its health, integrity, and sustainability.	1	Must refer to recovery.
	(b)		Correct scale for both axes (1 mark) correct labelling of both axes. (1 mark) Correct plotting of data and joining of points with straight lines. (1 mark)	3	Do not award plotting mark if a bar graph is produced. Do not accept a line of best fit.
	(c)	(i)	An animal that must meet its energy requirements by ingesting other organisms or organic matter derived originally from plants.	1	Must refer to consuming something else to gain energy. Do not accept 'eating' in place of consuming.
		(ii)	Elk consume lodgepole pine/quaking aspen, bison do not. OR Bison consume willow, elk do not.	1	Comparison must be drawn with both species. Do not accept: they have different diets on its own
		(iii)	Carrying capacity	1	
		(iv)	Less food availability/competition/disease/migration of wolves to areas outside the park/illegal killing/natural disaster/other valid response.	1	
		(v)	With the decline of the elk there is more lodgepole pine/greater food supply for the beaver/other valid response.	1	Do not accept: decrease in wolf population
	(d)		Creates areas of space/light, (1 mark) which encourages plant growth. (1 mark) OR Offers opportunity for greater range of habitats, (1 mark) increasing the range of species. (1 mark) Or other valid response.	2	1 mark for impact. 1 mark for explanation.

Question			Expected response	Max mark	Additional guidance
1.	(e)		Erosion control/reforestation/use of local native species/removal of non-native species/removal of invasive plant species/creation of wildlife or habitat corridors to link habitat fragments/other valid response.	2	Any two Do not accept: afforestation/ planting trees in new areas

Question			Expected response	Max mark	Additional guidance
2.	(a)	(i)	Sedimentation	1	Do not accept: primary treatment
		(ii)	Effluent	1	Accept: treated water
	(b)	(i)	2 128 000 (tonnes)	1	$\frac{50\,000}{23.5} \times 1000$ Must be rounded to the nearest 1000 tonnes.
		(ii) (A)	Improves soil fertility/reduces the need for synthetic fertilisers increases microbial activity in soil/uses a waste product that would otherwise have to be disposed of/other valid response.	1	
		(B)	Pollution of water bodies due to runoff/unpleasant odour/possibility of containing toxic contaminants/increased CO ₂ emissions from heat treatment/other valid response.	1	Accept reference to eutrophication.
		(iii)	A process in which bacteria (are used to) decompose organic matter in an oxygen-free environment.	1	Must refer to the use of bacteria/microorganisms and absence of oxygen. Do not accept fermentation on its own.
		(iv)	SEPA/Scottish Environment Protection Agency	1	Accept: Environmental in place of Environment
		(v)	Fossil fuel combustion/deforestation/rainforest clearance/agriculture/other valid response.	1	Must be an anthropogenic source of CO ₂ .
	(c)	(i)	Point: Effluent/(waste)water discharged from a single location. (1 mark) Diffuse: Runoff from sewage sludge spread on large areas of agricultural land, with no specific point of discharge. (1 mark) Or other valid response.	2	
		(ii)	Bioaccumulation	1	Do not accept: biomagnification

Question			Expected response	Max mark	Additional guidance
3.	(a)		Tropical/monsoonal climate pattern may cause damage or disruption to infrastructure. OR Challenging terrain (eg mangrove forest) makes construction/access difficult. Or other valid response.	1	Do not accept points relating to human factors such as economic or political factors. Do not accept reference to tectonic activity or sea level rising.
	(b)	(i)	Emissions associated with the transportation of the goods. OR Additional resources needed to store and transport the product. Or other valid response.	1	
		(ii)	Oil price goes up: Leads to a decrease in supply (due to increasing costs), (1 mark) leading to an increase in demand (due to scarcity). OR Investment in alternative fuel sources. (1 mark) Oil price goes down: Leads to an increase in supply costs, (1 mark) in demand. (1 mark) OR Leads to an increase in supply and demand (1 mark) due to stockpiling (1 mark) Or other valid response.	2	Must refer to a change in oil price, otherwise max of 1 mark. 1 mark for supply. 1 mark for demand.
	(c)		Employment opportunities/food security/rural development/change in cultural practice/increased mechanisation may lead to job losses. Or other valid response.	1	Must relate to large-scale agriculture. Do not accept economic or environmental factors.

Question			Expected response	Max mark	Additional guidance
3.	(d)	(i)	1 : 20 : 7	1	
		(ii)	Cashews rely less on blue/irrigated water supplies than pistachio. OR Pistachios require more blue water/irrigation than cashews. OR Cashews are better suited to areas of high rainfall compared to pistachios. Or other valid response.	1	Must include or infer a comparison between cashews and pistachios.

Question			Expected response	Max mark	Additional guidance
4.	(a)	(i)	Constructive	1	Accept: divergent
		(ii)	The area of the mantle closest to the core is heated intensely. (1 mark) The warmer, less dense material rises and the cooler, more dense material sinks. (1 mark) This (exchange of cooler and warmer material) forms a circulation pattern of rising and sinking material within the mantle. (1 mark)	3	Do not accept reference to lighter/heavier as opposed to less/more dense. Do not accept reference to magma. Accept valid reference to differential heating. Accept valid reference to slab pull-ridge push theory. Accept a correctly annotated diagram.
	(b)	(i)	(Deep) faults form when ocean plates move apart. (1 mark) Cold water percolates down through the faults and is superheated through contact with magma. (1 mark) The (less dense) superheated fluid returns to the seafloor (with dissolved minerals). (1 mark)	2	Any two Do not accept reference to magma rising upwards through the faults. Accept reference to the dissolved minerals precipitating out of solution, forming the vent.
		(ii)	Micro-organisms form the base of a marine food web (supporting multiple species).	1	
		(iii)	9	2	$Q_1 = 17$ $Q_3 = 26$ both Q values correct. (1 mark) Allow follow through from an incorrectly identified Q_1 and Q_3 value(s). (max 1 mark)
		(iv)	The length of shrimps in the second data set is more consistent/shows less variation (than the first data set).	1	Or consistent with (iii) Both data sets must be mentioned/inferred.
		(v)	The population is divided into categories (strata). (1 mark) A random sample is selected from each category. (1 mark)	2	1 mark for categorisation. 1 mark for selection from each category. Do not accept random on its own.

Question			Expected response	Max mark	Additional guidance
5.	(a)	(i)	Named human activity. (1 mark) Valid description of effect of named activity. (1 mark) Example: Landfill (1 mark) Decomposition of organic matter releases methane. (1 mark)	2	0 marks if there is no reference to human activity. Accept positive or negative changes eg increased oxygen through afforestation.
		(ii)	Example: Methane contributes to the (enhanced) greenhouse effect leading to global warming/climate change.	1	Must relate to the activity and effect stated in (i). Allow follow through from an incorrect answer to (i).
	(b)	(i)	A biofuel that has been subject to an industrial process.	1	
		(ii)	The carbon dioxide released on combustion is equivalent to the carbon dioxide sequestered during the growth of biomass.	1	Accept valid reference to carbon neutrality.
		(iii)	Greenhouse gas emissions from processing/transport. Or other valid response.	1	
	(c)	(i)	31 kJ g^{-1}	2	$\frac{4.18 \times 0.10 \times 20}{0.27}$ (1 mark) Accept: 31.0, 30.96 Must include unit.
		(ii)	Valid because key variables (eg mass of water heated) were controlled. OR Invalid/not valid due to loss of heat (to surroundings). Or other valid response.	1	1 mark for justification.
		(iii)	Add a heat shield/reduce distance between spirit burner and flask/replace conical flask with copper can/other valid response.	1	
		(iv)	Repeat the experiment (for each bio-alcohol) and calculate the mean.	1	Must include reference to calculating the mean.

Question			Expected response	Max mark	Additional guidance
6.	(a)		Laterite	1	
	(b)	(i)	Open cast (mining)	1	Accept: strip mining Do not accept surface mining on its own.
		(ii)	Landscape changes (eg removal of timber, vegetation, rock, soil) may decrease biodiversity/degrade ecosystem(s). OR Removal of vegetation may increase soil erosion/flooding/runoff. OR Leaching/runoff may result in contamination of water. OR Mining may disrupt the movement of water, reducing water quality/change in distribution of water. Or other valid response.	1	Any one Must be an explanation implying a cause and effect. Do not accept reference to transportation.
		(iii)	Life cycle analysis/LCA	1	Accept: life cycle assessment
		(iv)	Manufacturers can identify improvements to existing waste management practices. Or other valid response.	1	Must relate to disposal of materials. Accept valid examples eg use/reuse of a waste product.
	(c)	(i)	Renewable resource/low (greenhouse gas) emissions/reliable energy supply/continuous energy supply/low visual impact/can be small or large scale/small land footprint/other valid response.	1	
		(ii)	Location dependent/high capital costs/drilling can cause land instability (eg earthquake, subsidence)/other valid response.	1	

Question			Expected response	Max mark	Additional guidance
7.	(a)	(i)	(Natural gas/methane/coal is reacted with steam) in the presence of a catalyst, (1 mark) producing hydrogen and carbon. OR Breaking down the natural gas/methane/coal. (1 mark)	2	Accept reference to oxides of carbon.
		(ii)	Gasification requires the presence of air/oxygen (and/or steam). AND Pyrolysis operates in the absence of air/oxygen.	1	Must be a comparison of the two named methods.

Question			Expected response	Max mark	Additional guidance
7.	(b)	(i)	Strategy	1	
		(ii)	UK's fossil fuel reserves are decreasing, so green hydrogen can be used as an alternative. OR UK's coal/natural gas reserves are decreasing, so grey/blue/turquoise hydrogen production will be less sustainable than green hydrogen. (1 mark) Harnessing renewable energy sources to power (green) hydrogen production will reduce the need to import fuels. (1 mark) Plentiful access to renewables in the UK, which can be used to power (green) hydrogen production. (1 mark) Or other valid response.	2	Must conclude why green hydrogen would help ensure energy security. Any two
		(iii)	More energy may be required to isolate hydrogen than can be recovered, (1 mark) so there could still be a reliance on fossil fuels. (1 mark) OR Requires input of energy and water, (1 mark) and both are under pressure from increasing demand/population/distribution issues. (1 mark) OR Production of hydrogen gas/fuel cells/new infrastructure is expensive, (1 mark) so there is an increased cost to consumers. (1 mark) OR Hydrogen is low density so requires large storage facilities, (1 mark) so requires change of land use. (1 mark) Or other valid response.	2	1 mark for disadvantage. 1 mark for impact/consequence.

Question			Expected response	Max mark	Additional guidance
8.	(a)	(i)	Social: Motion detection/alarm control/keyless entry provides security. Keyless entry/temperature control/lighting control/energy management are convenient for householders. Or other valid response.	1	
		(ii)	Economic: Financial savings through use of controlled appliances/energy management/controlled irrigation. Smartphone (app) can be used to control lighting/temperature remotely, saving money. Or other valid response.	1	
		(iii)	Environmental: Controlled irrigation reduces water use/directs water only where needed. Temperature control/energy management reduces greenhouse gas emissions. Or other valid response.	1	

Question			Expected response	Max mark	Additional guidance
8.	(b)	(i)	Conflict (eg between nations or companies)/a natural disaster/supplier failure/change in consumer demand/adoption of new technologies/other valid response.	1	
		(ii)	618 (\$ billion)	1	$595 + \left(\frac{3.9}{100} \times 595\right)$ Must be rounded to nearest billion \$.
		(iii)	Yes: An increase in revenue (of \$156 billion) over 5 years. No: Revenue/% growth rate is too variable. Or other valid response.	1	
		(iv)	2.6(%)	2	$\% \text{ CAGR} = \left(\sqrt[5]{\frac{627}{596}} - 1 \right) \times 100$ (1 mark) Accept 2.57, 2.568, 2.5677
	(c)		The process of falling into disuse or becoming out of date.	1	Accept valid description of technological, psychological, or planned obsolescence.
	(d)		The circular economic model is based on minimisation of resources/waste/emissions/energy loss through design, maintenance, repair, reuse, reprocessing, and recycling, (1 mark) whereas the linear economic model makes no attempt to recover materials or energy. (1 mark)	2	1 mark for circular economy focus on reducing resource use. 1 mark for linear economy following a 'produce, use, dispose' model. Must be a comparison of the two models.

Question			Expected response	Max mark	Additional guidance
9. A			Simpson's biodiversity index: Measures the diversity of species in a community. (1 mark) It takes into account the number of species present/species richness in a given area, (1 mark) and the abundance of each species. (1 mark) The diversity of an area can be assessed using a quadrat (1 mark) along/on a transect. (1 mark) The number of species within each quadrat, and the number of individuals of each species is recorded, and the index value calculated. (1 mark) (Max of 3 marks for description of method) For Simpson's Index (D), the index value will range between 0 and 1. (1 mark) 0 represents infinite diversity and 1 represents no diversity/the lower the index value, the greater the diversity in the sampled area. (1 mark) Or other valid response.	10	Maximum of 7 marks for any one index. If named incorrectly, maximum of 6 marks. Give credit for alternative <u>Simpson's</u> indices: Simpson's Index of Diversity ($1 - D$), the index value will range between 0 and 1. (1 mark) The greater the index value, the greater the diversity in the sampled area. (1 mark) Simpson's Reciprocal Index ($1 \div D$), the index starts with a value of 1 (representing a community containing only one species). (1 mark) The highest value is equal to the number of individual species recorded. (1 mark)

Question	Expected response	Max mark	Additional guidance
9. A (continued)			
		Trent biotic index: Is used to assess the quality of a freshwater environment. (1 mark) Is based on the fact that certain species tend to disappear/species diversity decreases as (organic) pollution in a watercourse increases (or vice versa). (1 mark) Aquatic invertebrates are collected through kick sampling. (1 mark) River stones/sediments are disturbed for a set period of time, with the current washing organisms into a (flat-bottomed) net/surber sampler. (1 mark) The collected organisms are placed in a tray and identified (to species level) using a (paired statement) key. (1 mark) (Max of 3 marks for description of method) Unpolluted water is likely to contain pollution-intolerant species (eg stonefly, mayfly, caddis fly). (1 mark) Polluted water is likely to contain pollution-tolerant species (eg bloodworm/tubifex, midge larvae). (1 mark) The total number of groups present is checked against a Trent biotic index table and the index score noted. (1 mark) A high score is considered to be good quality water. (1 mark) Or other valid response.	

Question	Expected response	Max mark	Additional guidance
9. A (continued)			
	Lincoln index: Uses capture-mark-recapture to estimate the population size of an individual (mobile, terrestrial or aquatic) species. (1 mark) A trapping method (eg pitfall trap, baited cage, net) is used to capture (a random sample of) the target organisms in a given area. (1 mark) The captured organisms are counted, marked, and released back into the original area. (1 mark) (After an appropriate period) the trapping process is repeated, and the number of marked and unmarked individuals is counted. (1 mark) (Max of 3 marks for description of method) The proportion of marked to unmarked individuals is used to estimate the population size. (1 mark) Assumptions made include: - the marked individuals disperse back into the original population (1 mark) - marking doesn't affect the survival rate of the marked individuals (1 mark) - the marking remains in place throughout the sampling period (1 mark) - the behaviour/recapture of the marked individuals isn't affected by the original capture process (1 mark) - the population stays the same size during the sampling period. (1 mark) Or other valid response.		Give credit for a valid formula. (Accept word formula). (1 mark) $N = \frac{n_1 \times n_2}{m_2}$ (where: N = population estimate n_1 = number of marked individuals released n_2 = number of individuals in second sample (marked and unmarked) m_2 = number of marked individuals in the second sample).

Question		Expected response	Max mark	Additional guidance
9. B	(a)	Primary productivity: Gross primary productivity (GPP) is the rate at which autotrophs produce biomass in a given area and time period. OR is a measure of the rate at which new organic matter/biomass is produced through photosynthesis. (1 mark) Approximately half the available GPP is used by plants for their own respiration. (1 mark) The remainder is either stored in the plant or used by the plant for new biomass production, (1 mark) and is known as net primary productivity (NPP). (1 mark) Primary productivity is at its highest when light intensity is at its maximum/in summer (or vice versa). (1 mark) Energy stored as biomass is available for consumption by herbivores/ omnivores/heterotrophs, (1 mark) or to saprophytes (eg fungi, bacteria)/detritivores through decomposition of biomass. (1 mark) Trophic relates to feeding and nutrition. (1 mark) A food chain is a (linear) pathway of energy transfer in an ecosystem. (1 mark) A food web is a network of food chains that shows wider feeding relationships within an ecosystem. (1 mark) A food web is organised into a series of trophic levels, (1 mark) comprising groups of organisms that share sources of energy. (1 mark) Or other valid response.	10	Max of 7 marks for primary productivity. Max of 7 marks for secondary productivity & ecological efficiency. Give credit for appropriate diagrams of trophic levels/pyramid, which must be annotated. Discussion/annotations should be commensurate with Higher level. Do not accept general terms such as producers or consumers on their own. Accept: $NPP = GPP - \text{respiration}$, in the absence of other valid description (1 mark)

Question			Expected response	Max mark	Additional guidance
9. B	(b)		Secondary productivity: Is the conversion of nutrients obtained from outside the body into a useful form that is incorporated into new biomass. OR Is the assimilation of food/energy into new biomass through the transfer of organic material between trophic levels. (1 mark) Ecological efficiency is the percentage of biomass produced by one trophic level that is transferred and incorporated into biomass at the next trophic level. (1 mark) On average, only 10% of the energy that enters a trophic level is passed on to the next trophic level. (1 mark) The remainder is used for respiration and movement, and lost to the system as heat and undigested waste. (1 mark) An ecological efficiency of 10% limits most food chains to only four or five links, (1 mark) and explains why the volume of biomass typically reduces at each trophic level. (1 mark) Or other valid response.		

Question			Expected response	Max mark	Additional guidance
10. A			Movement processes within the atmosphere include: • evaporation • condensation • precipitation • transpiration • evapotranspiration • sublimation. Evaporation (1 mark) If the air/atmosphere is warmer than the ground/water, surface water changes state from liquid to gas, (1 mark) and rises into the atmosphere as water vapour. (1 mark) Condensation (1 mark) Rising water vapour cools and changes back from a gas to a Liquid. (1 mark) The water droplets are suspended in the air/atmosphere as clouds. (1 mark) Precipitation (1 mark) Suspended water droplets condense into larger droplets, eventually falling due to gravity. (1 mark) Precipitation refers to any liquid or frozen water that forms in the atmosphere and falls to earth. (1 mark) The form in which it falls (rain, snow, sleet, hail, drizzle, fog, mist) will depend on air temperature. (1 mark) Transpiration (1 mark) Is the release of water vapour from plant leaves/stems/flowers/pores. (1 mark) Evapotranspiration (1 mark) Is water lost to the atmosphere through evaporation from the land surface AND from plant leaves. (1 mark)	10	Maximum of 4 marks per process. Give credit for appropriate annotated diagram(s), which must be supported with descriptive statements. Maximum of 3 marks if no supporting statements are provided. Do not credit: ground movement processes (infiltration, percolation, runoff) or forms of surface or subterranean storage Accept: advection (1 mark) The horizontal movement of water/water vapour in the atmosphere eg wind transporting water vapour evaporated from oceans towards land (1 mark)

Question			Expected response	Max mark	Additional guidance
10. A (continued)					
			Sublimation (1 mark) Is the process of surface snow and ice changing into water vapour without first melting into water. (1 mark) This can occur at higher altitudes, where low temperatures/high winds/intense sunlight/very low air pressure are common. (1 mark) Or other valid response.		

Question			Expected response	Max mark	Additional guidance
10. B			Oceans have a low albedo, (1 mark) absorbing solar radiation/reflecting little light, (1 mark) and acting as a massive heat reservoir. (1 mark) The global ocean conveyor belt is driven by differences in temperature and salinity that affect water density. (1 mark) As ocean water in polar regions cools, it forms sea ice. (1 mark) The ice formation draws out freshwater, leaving the surrounding water saltier/more saline. (1 mark) The cold, salty water is more dense/has a higher density than the surrounding water, causing the cold, salty water to sink. (1 mark) Surface water is pulled in to replace the sinking water, which in turn becomes cold and salty enough to sink. (1 mark) These differences in seawater density drive thermohaline circulation, (1 mark) which distributes heat energy throughout the oceans. (1 mark) The Gulf Stream transports warm water away from the equator. (1 mark) As more warm water is transported north, the cooler water sinks and moves south of the Equator (towards Antarctica). (1 mark) Eventually the cold bottom waters return to the surface through mixing and upwelling, (1 mark) warming and becoming less dense (continuing the ocean conveyor belt). (1 mark)	10	Give credit for appropriate annotated diagram(s), which must be supported with descriptive statements.

Question			Expected response	Max mark	Additional guidance
10. B (continued)					
			The shape and location of continents/sub-sea landforms/ tectonic activity can determine the ocean's circulation patterns and affect heat transfer. (1 mark) Surface currents are largely wind-driven, moved by wind dragging on the water's surface, (1 mark) and dragging deeper layers of water along in the same direction. (1 mark) The Earth's rotation causes a deflection in surface wind patterns and ocean currents, (1 mark) known as the Coriolis effect. (1 mark) Or other valid response.		

[END OF MARKING INSTRUCTIONS]