

# Mark Scheme (Results) Summer 2010

Principal Learning

## Environmental and Land-based Studies ES101 The Natural Environment

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)	<p>1 mark for any suitable answer such as</p> <p>trees grass ferns bushes bracken</p> <p>Accept more specific answers such as types of tree (beech, birch, elm) or grass (wire grass, slender rush, common rush) or plants or flowers.</p>	(2)

Question Number	Answer	Mark
1(b)	<p>Do not accept <b>structure</b>.</p> <p>1 mark for each correct answer.</p> <p>e.g. 1 mark for each of the following examples</p> <p><b>The type of soil:</b> clay, sandy, silty, peaty, chalky, loamy, texture</p> <p><b>The contents of the soil?</b> air, water, humus, rock particles, pebbles, (worms, insects), droppings.</p> <p><b>The water in the soil:</b> contains water, drainage capacity, moisture retention, nutrients, sedimentation</p>	(4)

Question Number	Answer	Mark
1(c)(i)	<p>There are many possible answers.</p> <p>Each answer is acceptable if it offers a positive or negative <b>change</b> to the food web, such as:</p> <p>The number of rabbits (squirrels, mice) may fall/rise. (1)</p> <p>The number of owls may increase/decrease. (1)</p> <p>There may be an increase/decrease in foxes. (1)</p> <p>Disease may decrease the number of main predators such as foxes and owls. (1)</p> <p>Drought could cause the number of insects to fall. (1)</p> <p>Increased invasion of alien species may upset the balance of the food web. (1)</p> <p>Human interference (farming, building, fencing, recreation, shooting, trapping) will cause the number of animals to fall or increase. (1)</p>	(1)

Question Number	Answer	Mark
1(c)(ii)	<p>There is NO mark for stating the change or the animal.</p> <p>Award 1 mark for a comment about the <b>change</b> to the life of the animal such as:</p> <ul style="list-style-type: none"> <li>the feeding habits</li> <li>its home</li> <li>the decision to move</li> <li>the fact they will die</li> <li>and therefore their young will die</li> <li>their mating habits</li> <li>the knock on effect on the whole food web.</li> </ul> <p>Each of these comments could gain a mark if they extend their description.</p> <p>e.g. the feeding habits will force them into an more urban area its home and this may cause conflict with other animals mating habits will change and the species may die out in that area.</p>	(3)

Question Number	Answer	Mark
2(a)	<p>One mark for an instrument or piece of equipment</p> <ul style="list-style-type: none"> <li>Barometer</li> <li>Rain gauge</li> <li>Wind gauges (anemometers)</li> <li>Weather balloons</li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>Temperature thermometers</li> <li>Humidity (wet and dry) thermometers</li> <li>Min max thermometers</li> <li>Wind/rain/temperature sensors</li> <li>Weather stations</li> <li>Stevenson screens</li> <li>Digital/indoor/outdoor thermometers</li> <li>Hand held prediction</li> <li>Weather watches</li> </ul> <p>Accept other suitable answers</p>	(2)

Question Number	Answer	Mark
2(b)(i)	Between 16° C and 17°C because the space between them could be perceived as July	(1)

Question Number	Answer	Mark
2(b)(ii)	17° C - 5° C = 12° C (accept 11°, 12° or 13°)	(2)

Question Number	Answer	Mark
2(b)(iii)	The answer should be drawn in the correct place on the graph. Accept 2mm either side of 70mm.	(1)

Question Number	Answer	Mark
2(c)(i)	<p>A straightforward, correct, description means 1 mark and an extension deserves an extra mark - expect simpler language</p> <p>The plants will be:  growing rapidly (1) because of the abundance of sun (1) or nutrients (1)  flowering (1) in order to reproduce as much as they can during the warm months (1)  fertilised easily (1) because of the abundance of insects (bees, butterflies) (1)  in full leaf (1) as they take advantage of the sun's energy/ photosynthesising (2)  fertilising (1) in order perpetuate their species (1)  developing deep roots (1) in order to ensure a constant supply of nutrients (1)  evapotranspiring (1) to maintain the life giving functions of the organism (1)</p> <p>There may be negative observations which deserve credit;  Heavy rainfall may flood the plants (1) or flatten the plants (1)  Lightening might strike trees (1)  Drought will leave them struggling for water (1)</p>	(2)

Question Number	Answer	Mark
2(c)(ii)	<p>A straightforward, correct, description means 1 mark and an extension deserves an extra mark - expect simpler language</p> <p>The low temperature and rainfall may cause animals to:  Slow their metabolism (1) in order to use minimum energy (1) forage for food over wider areas (1) because of the shortage of resources (1)  Prepare to hibernate (1)  Store food (1)  They may starve to death (1) because of the cold and the lack of food (1) birds will migrate to the south (1) in order to find warmth and food (1) foxes may move into urban areas (1) and scavenge for waste food (1)</p> <p>There may be positive aspects that deserve credit;  Weeds out those animals that are not strong enough (1) Prey may be easier to see (1)</p>	(2)

Question Number	Answer	Mark
3(a)	<p>There could be two distinct reasons for 1 mark each about the survey OR one reason followed by an extension.</p> <p>A quadrat survey (1) where the students would record the percentage natural vegetation in each quadrat (1) over a chosen area (1)</p> <p>A line transect (1) across a pre-chosen line on a map (1) or a footpath (1)</p> <p>Random collection of samples (1) taking practical evidence of different species (1)</p> <p>Photographic evidence of species (1) from chosen pre-study spots in the area (1)</p>	(2)

Question Number	Answer	Mark
3(b)(i)	<p>1 mark for actually <b>naming</b> a plant identification key OR 1 mark for <b>describing</b> a suitable key</p> <p>1 extra mark for <b>extending</b> information about the key such as;</p> <p>Suggesting if it is for a particular species (1), or weaknesses within the keys form (1) or it necessitates following a flow diagram in order to identify the plant (1) or similar specific characteristics.</p>	(2)

Question Number	Answer	Mark
3(b)(ii)	<p>1 mark for naming a relevant example of Digital or Information Technology.</p> <p>An extra mark for extending the information about how it would be used.</p> <p>e.g.</p> <p>A spread sheet (1) to rank the data (1) (or to produce various graphs 1).</p> <p>A power point (1) to show information about the data (1).</p> <p>A video of the pupils (1) collecting the data to use for reflection in the classroom (1).</p> <p>Movie Maker (1) to use as part of an assessment (1).</p> <p>Geographical Information System (1) with overlapping maps</p> <p>Digital mapping (1) to show location of surveys.</p> <p>Use of Internet or interactive board, e-mailing accepted and if specific sites e.g. Google Earth, or creation of web site.</p>	(4)

Question Number	Answer	Mark
4(a)(i)	2004	(1)
Question Number	Answer	Mark
4(a)(ii)	<p>Reward an overall description of how the numbers have risen and fallen/fluctuated.</p> <p>Within such a description credit specific references e.g. years or numbers or some other acceptable observation or pattern.</p> <p>Some may relate birds to the number of plants or animals which would deserve credit.</p> <p>Credit the use of figures i.e. years and number of birds.</p> <p><b>We are expecting a discussion on the number of birds NOT what has happened to them.</b></p>	(3)

Question Number	Answer	Mark
4(b)	<p>It is important to be aware of the Learning Outcomes which emphasise the relationship between the soils and weather and climate and <b>the activities of people</b></p> <p>Two marks are available for each explanation about the reason why the number of plants, birds and animals as a result of the: <b>the activities of people</b> in the context of the specification.</p> <p>Therefore we should be crediting:</p> <ul style="list-style-type: none"> <li>• Farmers may plough the land, grow new crops which alters the structure and content of the soil and therefore the habitats of the plants, birds and animals. (2 marks)</li> <li>• tourists will walk in the area and trample the soil, killing plants and unsettling the food chain (2)</li> <li>• people chop down trees or change the vegetation which spoils the ecosystem (2)</li> <li>• people change the character of the rivers or lakes (1) by building dams/reservoirs (1)</li> <li>• Global warming alters the weather and climate that leads to all kinds of changes in the plants, birds and animals behaviour (2)</li> </ul> <p>Accept other suitable answers of a similar character.</p>	(4)

Question Number	Answer	Mark
4(c)	<p>1 mark for a valid environmental survey that they have taken part in or studied.</p> <p>This will impact on what they write.</p> <p>The marks are for explaining as to why the study has been helpful in looking after the natural environment and then there are marks for an extension.</p> <p>Because:</p> <p>The more we know what is going on the more we can do about it. (1)</p> <p>It will help to stop the causes of damage or disturbance. (1)</p> <p>Whether the natural environment is being abused by humans. (1)</p> <p>Help to offer solutions to problems (1)</p> <p>Global warming might be discussed (1)</p> <p>Offer some aspect of sustainability (1)</p> <p>It has helped them in their future career plans(1)</p> <p>Practical experience is the best way to learn (1)</p> <p>An extra mark should be given for an extension of the basic observation.</p>	(4)

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