



Question no.	Answer	Mark allocation		
	<table border="1" data-bbox="349 132 1518 368"> <tr> <td data-bbox="349 132 936 368"> <ul style="list-style-type: none"> <li>• Vascular bundles are spread throughout the stem</li> <li>• Fibrous root system</li> <li>• No cambium present - no secondary growth in stem</li> <li>• Stem often hollow</li> </ul> </td> <td data-bbox="940 132 1518 368"> <ul style="list-style-type: none"> <li>• 2 seed leaves on germination</li> <li>• Vascular tissue is arranged to encircle the stem</li> <li>• Taproot usually present</li> <li>• Cambium is present - secondary growth occurs</li> <li>• Stem usually solid</li> </ul> </td> </tr> </table> <p data-bbox="349 483 376 512">c)</p> <ul data-bbox="398 520 1675 624" style="list-style-type: none"> <li>• It uses a scientific form of Latin that can be used as a common standard throughout the world for clear understanding and identification. The use of common names will vary between regions and countries.</li> <li>• Uses just the genus and species to simplify plant naming compared to full classification.</li> </ul> <p data-bbox="349 663 376 692">d)</p> <p data-bbox="439 663 741 692">iv <i>Taraxacum officinale</i></p> <p data-bbox="439 699 925 727">vii <i>Potentilla fruticosa</i> 'Gloire de Nancy'</p>	<ul style="list-style-type: none"> <li>• Vascular bundles are spread throughout the stem</li> <li>• Fibrous root system</li> <li>• No cambium present - no secondary growth in stem</li> <li>• Stem often hollow</li> </ul>	<ul style="list-style-type: none"> <li>• 2 seed leaves on germination</li> <li>• Vascular tissue is arranged to encircle the stem</li> <li>• Taproot usually present</li> <li>• Cambium is present - secondary growth occurs</li> <li>• Stem usually solid</li> </ul>	<p data-bbox="1832 467 1854 496">2</p> <p data-bbox="1832 695 1854 724">2</p>
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2	<ul style="list-style-type: none"> <li>• Thick waxy cuticle – prevents water loss from strong windy conditions</li> <li>• Reduced leaf area (smaller leaves or close to stem, succulents) – reduces water loss due to small surface area.</li> <li>• Reduced leaf area (smaller leaves or close to stem) – reduces salt spray damage as less leaf area to capture salt laden air.</li> <li>• Low growth habit – to reduce wind damage.</li> <li>• Specialised rooting systems – stabilising in sand or pebble ground conditions.</li> <li>• Hairy leaves – reduces wind damage and water loss.</li> <li>• Low nutrient requirements – enables them to survive in poor soil conditions</li> <li>• Succulent leaves – allows the plant to survive in prolonged drought.</li> </ul>	4		
3	<ul style="list-style-type: none"> <li>• pH: All plants have a preferred pH range at which they will thrive. So you should select plants that suit your soil rather than try to alter the soil as this is not cost effective or practical.</li> <li>• Water content and drainage: some plants have adapted and can cope with damp and wet soils whilst some demand free draining conditions. In the wrong conditions plants will not thrive.</li> <li>• Aspect of site (sun or shade, prevailing wind and frost pockets): plants in the wrong aspect will not thrive e.g. shade loving plants will scorch in full sun, plants that like full sun will put on more leaf and less flower in shade conditions.</li> </ul>	4		

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	<ul style="list-style-type: none"> <li>• Rainfall: areas of sustained heavy rainfall tend towards acidity therefore that will limit the range of plants that can be grown successfully.</li> <li>• Presence of pernicious weeds, pests and diseases: Their presence may limit the selection of plants you can choose (eg if honey fungus (<i>Armillaria</i> spp.) is present), or it may be necessary to eradicate them before planting to avoid plant damage later.</li> <li>• Designated protected areas e.g. SSSIs: There may be legal restrictions on what can be planted or you may need to seek advice from Natural England etc. before planting.</li> </ul>	
4	<p>Equipment provided for use at work must be:</p> <ul style="list-style-type: none"> <li>• suitable for the intended use</li> <li>• safe for use</li> <li>• maintained in a safe condition</li> <li>• used only by people who have received adequate information, instruction and training</li> <li>• accompanied by suitable safety measures, e.g. protective devices, markings, warnings.</li> </ul>	4
5	<p>Tractor mounted machine</p> <ul style="list-style-type: none"> <li>• Powered by tractor engine through power take off shaft (PTO) which is then connected to a gear box, direct drive, hydraulic motor or chain drive system which drives the mechanism of the machine (rotors, seed drill, sprayer etc).</li> <li>• Large areas covered by one operator, increased speed and capacity, can be operated for long periods of time.</li> </ul> <p>Pedestrian operated or self-propelled machine</p> <ul style="list-style-type: none"> <li>• Power unit can be a small petrol or diesel engine, electric motor with battery or mains supply, or engine powers a small hydraulic motor. Direct drive or driving through belts and chains and normally a clutch to the mechanism.</li> <li>• Easy to transport between jobs, suitable for working in confined areas, lower cost to purchase and run, normally straight forward to operate.</li> </ul>	4
6	<p><b>a) Soil stability and erosion-</b> machinery use can cause soil compaction, rutting, wear and scuffing of soil and turf surfaces, compaction will lead to root and plant death which in turn leads to soil erosion as there is no root binding of soil particles and aggregates. Compaction and erosion will also limit soil oxygen and drainage which in turn will lead to a significant reduction in the numbers and activity of important soil organisms. Over cultivation of soil with machinery will cause a loss of good soil structure and allow wind and water erosion to occur.</p> <ul style="list-style-type: none"> <li>• Avoid cultivations on wet or waterlogged soil, prevent compaction by using low ground pressure vehicles or modifications such as flotation tyres. Relieve compaction by slitting, spiking and hollow-tining, top dressing. Or careful surface cultivations around shrubs etc. addition of organic matter to soil will improve structure and</li> </ul>	4

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	<p>drainage and resist the effects of compaction. Adherence to Defra Code of Practice 'Protecting our Water, Soil and Air'.</p> <p><b>b) Waste Disposal-</b> careless or illegal waste disposal can lead to toxins entering the environment, destruction of habitats, pollution, littering. A considerable amount of waste is associated with machinery use, replaced parts, packaging, worn components, waste oil, oil and fuel filters, air filters etc; through routine servicing; leachate from composting sites; costs of processing bulky waste like branches etc. can lead to illegal dumping. Waste carriage licence may be required. High cost of using landfill (landfill tax)</p> <ul style="list-style-type: none"> <li>• reduce waste by careful management of resources, choosing machines with long service intervals. Consider careful composting instead of burning green waste (can lead to income). Have specialist facilities and contractors for disposal of waste chemicals, oils and fuels. When planning operations include considerations for correct disposal of arisings and any waste produced.</li> </ul>	
7	<p>a)</p> <ol style="list-style-type: none"> <li>i. <i>Hemiptera</i> - True bugs</li> <li>ii. <i>Coleoptera</i> - Beetles</li> <li>iii. <i>Lepidoptera</i> - Butterflies and moths</li> <li>iv. <i>Hymenoptera</i> - Wasps bees and ants</li> </ol> <p>b)</p> <p><i>NB List is not exhaustive:</i></p> <p><b>Shoot boring-</b>leads to loss of apical dominance, poor form, twisted growth, loss of value in crops. Loss of amenity value (flower, fruiting, foliage effect).</p> <p><b>Bark boring-</b> leads to bark necrosis and loss of phloem tissue, introduction of diseases (vectors), damage to phloem reduces stem and root growth leading to stunted habit.</p> <p><b>Root eating-</b> damage to fine water absorbing roots and root hairs leading to reduced water and nutrient uptake. Which in turn leads to poor growth, susceptibility to drought and diseases, generally weakened state. Dieback to upper parts of plant.</p> <p><b>Sap sucking-</b> distortion, discolouration of foliage and young shoots, secondary infections of fungal diseases, introduction of fungal, bacterial and viral diseases through insect vectors. Poor growth of plant through reduced photosynthetic effort.</p> <p><b>Leaf mining-</b> Damage to leaf tissue causing unsightly leaf necrosis, reduction of photosynthetic effort due to large areas of leaf not functioning.</p> <p><b>Gall forming-</b> Gall structures forming on plant tissues, unsightly, damaging to flowers and fruit, can affect reproduction and lower amenity value.</p>	<p>4</p> <p>9</p>



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	<p>Detailed evaluation of the implications of cultural controls with a range of examples used to support the discussion. Good understanding of the topic with positive and negative implications considered. To access the higher marks in the band, a wide range of implications given and evaluated.</p> <p><b>Band 3: 9-12 marks</b></p> <p>Thorough understanding of implications of cultural controls with a range of specific and appropriate examples used to fully support the discussion. Clear and fully developed evaluations were made. To access the higher marks in the band, a comprehensive range of implications and detailed evaluations were given.</p> <p><b>Indicative content</b></p> <ul style="list-style-type: none"> <li>• Effectiveness of method</li> <li>• Cost effectiveness</li> <li>• Feasibility (e.g. staffing, training, location/site, equipment)</li> <li>• Environmental concerns</li> <li>• Public perceptions</li> <li>• Aesthetics</li> <li>• Legislation</li> <li>• Health &amp; Safety</li> <li>• Sustainability</li> </ul>	