

Mark Scheme (Results)

Summer 2013

Principal Learning  
Construction and the Built  
Environment (CB304/01)

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Question Number	Answer	Mark
1	<p>Disadvantages of using wind power include:</p> <ul style="list-style-type: none"> <li>• Wind strength may be too low to support a wind turbine</li> <li>• Unreliability - some days have no wind</li> <li>• Construction can be very expensive</li> <li>• Noise pollution to immediate area</li> <li>• Risk to bats and birds from the turning blades</li> <li>• Can affect the aesthetics of landscape</li> <li>• Cost of maintenance</li> <li>• Planning consent in terms of cost and time to the applicant</li> <li>• Cost effectiveness for individual consumer</li> <li>• Size of required turbine for individual consumer</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any two descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only</b></p>	(4)

Question Number	Answer	Mark
2	<p>Economic costs to a contractor include:</p> <ul style="list-style-type: none"> <li>• Lost production time</li> <li>• Fines</li> <li>• Investigation costs</li> <li>• Management time</li> <li>• Legal costs</li> <li>• Compensation claims</li> <li>• Product or material damage</li> <li>• Sick pay</li> <li>• Failure of business</li> <li>• Clean-up costs</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any two descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b></p>	(4)

	<b>No mark for identification only.</b>	
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Question Number	Answer	Mark
3	<p>Safe working practices include:</p> <ul style="list-style-type: none"> <li>• Stored in a secure area</li> <li>• Used by trained and competent personnel</li> <li>• Follow manufacturers' instructions</li> <li>• Use of appropriate personal protective equipment</li> <li>• Use of data hazard sheets</li> <li>• Spillage control</li> <li>• Prevention of unauthorised use</li> <li>• Use of COSHH risk assessments</li> <li>• Use of risk control measures</li> <li>• Avoid eating and drinking whilst using hazardous substances</li> <li>• Awareness of emergency procedures</li> <li>• Prevention of unauthorised access to work area</li> <li>• Use of correct disposal methods</li> </ul> <p>Any other appropriate response</p> <p>Can award twice for risk control measures providing that they are for different operations/activities.</p> <p><b>Max 2 marks for each of any two descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only.</b></p>	(4)

Question Number	Answer	Mark
4	<p>Low carbon materials include:</p> <ul style="list-style-type: none"> <li>• Sheep's wool insulation is a renewable source that does not use fossil fuels in production.</li> <li>• Straw bales are a renewable natural product, use minimal fossil fuels in their production.</li> <li>• Flax is a renewable natural product, use minimal fossil fuels in their production.</li> <li>• Cork is a renewable natural product, use minimal fossil fuels in their production.</li> <li>• Wood from certified/managed forests is considered a renewable material and uses minimal fossil fuels in its production.</li> </ul>	(4)

	<ul style="list-style-type: none"> <li>• Bamboo, particle/ply board/matting is considered a renewable material and uses minimal fossil fuels in their production.</li> <li>• Bricks, sun dried do not consume fossil fuels in their production.</li> <li>• Calcium silicate bricks /tiles do not consume as much fossil fuel in their production as standard bricks.</li> <li>• Clay roofing tiles require less heat to produce than concrete tiles.</li> <li>• Unfired clay products</li> <li>• Rammed earth products</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any two descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only.</b></p>	
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Question Number	Answer	Mark
5	<p>Duties of a contractor include:</p> <ul style="list-style-type: none"> <li>• To ensure that all work at height is properly planned and organised</li> <li>• To ensure that all work at height is properly supervised by competent persons</li> <li>• To provide information, instruction and training on the safe use of equipment and how to identify and report defects</li> <li>• To ensure that those involved in work at height are competent</li> <li>• To ensure the risks from work at height are assessed</li> <li>• To ensure that appropriate work equipment is selected and used</li> <li>• To ensure the risks from fragile surfaces are properly controlled</li> <li>• To ensure equipment for work at height is properly inspected and maintained</li> <li>• To avoid work at height where possible</li> <li>• To use work equipment or other measures to prevent falls where they cannot avoid working at height</li> <li>• To use work equipment or other measures to minimise the distance and consequences of a fall</li> <li>• To do all that is reasonably practicable to</li> </ul>	(6)

	<p>prevent anyone falling</p> <p><b>Max 2 marks for each of any three descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only.</b></p>	
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Question Number	Answer	Mark
<b>6</b>	<p>Environmental benefits include:</p> <ul style="list-style-type: none"> <li>• Avoidance of depletion of natural resources for future generations, because they can never be replaced</li> <li>• Sustainable energy resources</li> <li>• Reduction in emissions/pollution</li> <li>• Reduction in noise</li> <li>• Produces little or no waste products such as carbon dioxide or other chemical pollutants</li> <li>• Reduced waste products to landfill</li> <li>• Reduction in thermal pollution</li> <li>• Reduction in adverse land-use minimising the need to use land for the production of bio fuels</li> <li>• Reduction in the consumption and pollution of water</li> <li>• Produces less dust, soot, smoke, and other suspended matter</li> <li>• Reduction in distribution distances/facilities</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any three descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only.</b></p>	<b>(6)</b>

Question Number	Answer	Mark
<b>7</b>	<p>Methods of protection include:</p> <ul style="list-style-type: none"> <li>• Provision of flying shores to provide structural support</li> <li>• Provision of raking shores to provide structural support</li> <li>• Provision of dead shores to provide structural support</li> <li>• Use of protective impact screens</li> </ul>	<b>(6)</b>

	<ul style="list-style-type: none"> <li>• Vibration less excavation systems</li> <li>• Underpinning to provide structural support</li> <li>• Permanent strengthening techniques</li> <li>• Bracing of openings</li> <li>• Use of soil stabilisation techniques</li> <li>• Use of bored piling systems</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any three descriptions.</b>  <b>1 mark for a simple description.</b>  <b>2 marks for a more detailed description.</b>  <b>No mark for identification only</b></p>	
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Question Number	Indicative Content	
<b>8</b>	<p>The purpose of an energy audit is to:</p> <p>Assess the efficiency and condition of mechanical systems such as heating and ventilation equipment within a building, to identify energy use and energy losses. The audit determines cost effective options for improving energy efficiency while maintaining or improving human comfort.</p> <p>Any other appropriate response</p>	
Level	Mark	Descriptor
	<b>0</b>	No rewardable material / No marks for identification only
<b>1</b>	<b>1-2</b>	Limited understanding of energy audits demonstrated with the purpose briefly explained
<b>2</b>	<b>3-4</b>	Clear understanding of a energy audits demonstrated with the purpose explained in more detail
<b>3</b>	<b>5-6</b>	Sound understanding of a energy audits demonstrated with the purpose fully explained

Question Number	Indicative Content	
<b>9</b>	<p>Methods used to achieve effective waste management include:</p> <ul style="list-style-type: none"> <li>• Avoiding over ordering</li> <li>• Coordinated design and materials sizes</li> <li>• Using 'just in time' principles for materials delivery</li> <li>• Storing materials correctly on site</li> <li>• Avoiding double handling</li> <li>• Careful materials handling on site</li> <li>• Avoiding cutting and fixing errors</li> <li>• Protection of fixed materials</li> <li>• Using 'off-cuts'</li> <li>• Recycling of materials</li> <li>• Re-use of materials</li> </ul>	

		<ul style="list-style-type: none"> <li>• Avoid exceeding shelf life of materials</li> <li>• Methods to avoid theft or vandalism of materials and components</li> <li>• Site waste management plan</li> <li>• Segregation of waste materials</li> <li>• Application of Considerate Contractors Scheme</li> </ul> <p>Any other appropriate response</p>
Level	Mark	Descriptor
	<b>0</b>	No rewardable material / No marks for identification only
<b>1</b>	<b>1-4</b>	Limited understanding of waste management demonstrated with one or two methods briefly described and no application to the scenario.
<b>2</b>	<b>5-8</b>	Clear understanding of waste management demonstrated with some methods described in more detail and increasing application to the project scenario.
<b>3</b>	<b>9-10</b>	Sound understanding of waste management demonstrated with a range of methods fully described specifically focussed on the project scenario.

Question Number	Indicative Content	
<b>10</b>	<p>Methods used for mechanical movement of materials and components include:</p> <ul style="list-style-type: none"> <li>• Rough terrain fork lifts</li> <li>• Telescopic handlers</li> <li>• Mobile cranes</li> <li>• Dumpers</li> <li>• Hoists, pulleys and winches</li> <li>• Board hoist</li> <li>• Concrete pumps</li> <li>• Skips</li> <li>• Conveyor belt</li> <li>• Vehicle only routes</li> <li>• Site speed limits</li> <li>• Segregated pedestrian walkways</li> <li>• Communications eg signage, banksmen, site briefing</li> <li>• Safe working loads</li> </ul> <p>Any other appropriate response</p>	
Level	Mark	Descriptor
	<b>0</b>	No rewardable material / No marks for identification only
<b>1</b>	<b>1-4</b>	Poorly structured report with no introduction or conclusion. Limited understanding of material movement demonstrated with one or two methods briefly described, and no application to the scenario.
<b>2</b>	<b>5-8</b>	Reasonably well structured report which attempts introduction and conclusion. Clear understanding of material movement demonstrated with some methods described, and

		increasing application to the project scenario.
<b>3</b>	<b>9-10</b>	Well structured report with clear introduction and conclusion. Sound understanding of material movement demonstrated with a range of methods described, specifically focussed on the project scenario.

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