

# Mark Scheme (Results)

Summer 2013

Principal Learning  
Construction and the Built  
Environment (CB307/01)

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Publications Code DP035653

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Question Number	Answer	Mark
1	<p>Parts of the external envelope include:</p> <ul style="list-style-type: none"> <li>• External walls e.g. repointing to masonry, cladding repairs, repair of rendering, redecoration</li> <li>• Roof e.g. replacing broken tiles/slates, repointing of ridge and hip tiles</li> <li>• Doors / Windows e.g. redecoration, replacing broken glass, repair of flashings, replacement of sealant, furniture repair/replacement</li> <li>• Rainwater goods e.g. cleaning/clearing of leaves</li> <li>• Tanking/waterproofing e.g. repairing leaks</li> <li>• Fascia/soffit e.g. redecoration</li> <li>• Skylights e.g. replacing broken glass</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any four 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>	(8)

Question Number	Answer	Mark
2	<p>Ways of increasing a buildings lifespan include:</p> <ul style="list-style-type: none"> <li>• Carrying out planned maintenance to the building fabric, services etc</li> <li>• Updating the building to comply with new/updated legislation</li> <li>• Cleaning the building to prolong the life of elements, components etc</li> <li>• Carrying out repairs to defective parts of the building</li> <li>• New installations to meet current demand</li> <li>• Updating heating/ventilation/air conditioning services</li> <li>• Maintaining a safe and healthy environment</li> <li>• Extending the building to provide additional functional space</li> <li>• Refurbishment to meet current demand or for change of use</li> <li>• Life-cycle replacement</li> </ul>	(8)

	<ul style="list-style-type: none"> <li>• Cyclical maintenance to building fabric/ services etc</li> <li>• Servicing of mechanical installations</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any four 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>3</b>	<p>Environmental benefits of using green roof technology include:</p> <ul style="list-style-type: none"> <li>• Reduced urban 'heat islands' effect</li> <li>• Extended roof life</li> <li>• Aesthetics</li> <li>• Reduce heating by adding mass and thermal resistance value</li> <li>• Reduce cooling</li> <li>• Reduce stormwater run off</li> <li>• Natural Habitat Creation</li> <li>• Filter pollutants and carbon dioxide out of the air</li> <li>• Filter pollutants and heavy metals out of rainwater</li> <li>• Help to insulate a building for sound</li> <li>• Increase agricultural space</li> <li>• Can provide recreational area</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any four 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>(8)</b>

Question Number	Answer	Mark
<b>4</b>	<p>Relevant Acts and Regulations include:</p> <ul style="list-style-type: none"> <li>• The Building Regulations eg conservation of fuel and power</li> <li>• The Town and Country Planning Act eg limits change of use and extension and adaptation</li> </ul>	<b>(6)</b>

	<ul style="list-style-type: none"> <li>• The Health and Safety at Work Act eg safe working practices</li> <li>• The Construction (Design and Management) Regulations eg designing for safe maintenance</li> <li>• The Equality Act eg access and egress</li> <li>• The Disability Discrimination Act</li> <li>• The Building Act eg compliance with building regulations</li> <li>• The Environmental Protection Act eg control of emissions</li> <li>• Landlord and Tenant Act eg leases</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any three descriptions. 1 mark for a simple description. 2 marks for a more detailed description. No mark for identification only.</b></p>	
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Question Number	Answer	Mark
5	<p>Benefits of using proactive maintenance include:</p> <ul style="list-style-type: none"> <li>• Overall lower maintenance costs</li> <li>• Flexible maintenance intervals</li> <li>• Reduced need for invasive maintenance</li> <li>• Helps identify potential breakdown causes</li> <li>• Increases asset availability</li> <li>• Increases asset performance</li> <li>• Increases asset operational effectiveness</li> <li>• Avoids expensive consequential losses</li> <li>• Improves planning accuracy</li> <li>• Increased life of asset</li> <li>• Improve safety for the personnel and public</li> <li>• Improves maintainability</li> <li>• Environmental benefits of a well maintained building</li> <li>• Predicts when an asset needs attention before damage occurs</li> <li>• Improved ability to accurately budget for maintenance work</li> <li>• Maintains high corporate image standards</li> </ul> <p>Any other appropriate response</p> <p><b>Max 2 marks for each of any three</b></p>	(6)

	<b>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>	
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Question Number	Answer	Mark
<b>6</b>	Benefits of reed bed filtration include: <ul style="list-style-type: none"> <li>• Provides carbon dioxide emission capture and sequestration</li> <li>• Adds to the local bio diversity</li> <li>• Provides habitat for wildlife</li> <li>• Improves water quality outflow</li> <li>• Provides an aesthetic environment</li> <li>• Protects watercourses from pollutants</li> <li>• Protects adjacent land from pollutants</li> </ul> Any other appropriate response  <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>	(6)

Question Number	Indicative Content
<b>7</b>	Asset management activities include: <ul style="list-style-type: none"> <li>• Annual budgeting</li> <li>• Capital expenditure forecasts</li> <li>• Planned maintenance schedules</li> <li>• Asset management plans</li> <li>• Cost/benefit models</li> <li>• Inspection tasks</li> <li>• Whole life cycle costing</li> <li>• Operating strategies</li> <li>• Maintenance cycles</li> <li>• Renewal or decommissioning decisions</li> <li>• Best value mix of activities</li> <li>• Maintenance work programming</li> <li>• Maintenance work forecasting</li> <li>• Task bundling</li> <li>• Resourcing materials</li> <li>• Cost/risk impact</li> <li>• Planning resourcing efficiencies</li> <li>• Energy management plan</li> <li>• Monitoring and assessment of built asset performance</li> <li>• Asset valuations and depreciation</li> </ul>

		<ul style="list-style-type: none"> <li>Valuing and revaluing assets</li> <li>Determination of depreciation</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>1-2</b>	Limited understanding of asset management demonstrated with one or two activities briefly described and no application to the scenario
<b>2</b>	<b>3-4</b>	Clear understanding of asset management demonstrated with some activities described in more detail and increasing application to the project scenario
<b>3</b>	<b>5-6</b>	Sound understanding of asset management demonstrated with a range of activities fully described specifically focussed on the project scenario

Question Number	Indicative Content	
<b>8</b>	<p>Future maintenance requirements:</p> <p>High cost/specification materials are generally matched by improved environmental and operational performance over the long term, and have reduced maintenance requirements. Whereas cheaper low specification materials tend to deteriorate at a faster rate than high specification materials requiring more frequent or more extensive maintenance or repair. A material might be particularly durable in operational terms but be unacceptable in environmental terms, or conversely it could be that the adverse environmental impacts of a particular material were outweighed by its operational benefits, which could affect maintenance requirements.</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 specification of materials demonstrated with brief description and no application to the scenario.
<b>2</b>	<b>3-4</b>	Clear understanding of specification of materials demonstrated with a more detailed description and increasing application to the project scenario.
<b>3</b>	<b>5-6</b>	Sound understanding of specification of materials demonstrated and fully described, specifically focussed on the project scenario.

Question Number	Indicative Content	
<b>9</b>	Features of a sustainable community Include:	

		<ul style="list-style-type: none"> <li>• Households and social groups that are active, inclusive and safe</li> <li>• Environmentally sensitive in terms of waste, traffic, pollution, resource depletion, etc</li> <li>• Good relationship between diverse economy, social and cultural interactions</li> <li>• Well governed</li> <li>• Well designed and built including good public spaces</li> <li>• Well connected to appropriate local services</li> <li>• Good transport and connectivity links</li> <li>• Suitable residential density</li> <li>• Adaptive to changing economic and environmental conditions</li> <li>• A flourish in local economy to provide jobs and wealth</li> <li>• Effective engagement by local people groups and businesses</li> <li>• Safe and healthy local environment with well designed public and green space</li> <li>• Sufficient size, scale and density and the right layout to support amenities</li> <li>• Buildings both individually and collectively that meet different needs over time</li> <li>• A well integrated mix of decent homes of different types and tenures to support a range of household sizes, ages and incomes</li> <li>• Good quality local public services including education and training opportunities, health care and community facilities, especially for leisure</li> <li>• A diverse, vibrant local culture encouraging pride in the community and cohesion within it</li> <li>• A sense of place</li> <li>• The right links with the wider regional, national and international communities</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>1-2</b>	Limited understanding of sustainable communities demonstrated with one or two components briefly described and no application to the scenario
<b>2</b>	<b>3-4</b>	Clear understanding of sustainable communities demonstrated with some components described in more detail and increasing application to the project scenario
<b>3</b>	<b>5-6</b>	Sound understanding of sustainable communities demonstrated with a range of components fully described specifically focussed on the project scenario.

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