

Mark Scheme (Results)

Summer 2013

Principal Learning
Construction and the Built
Environment (CB301/01)

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Question Number	Answer	Mark
1(a)	<p>Designing for public spaces –</p> <p>Description of any two of the following considerations:</p> <ul style="list-style-type: none"> • Public spaces can link the built environment community to the natural environment (1) creating an opportunity for recreational use (1). • Can link the built environment community to the natural environment (1) creating an opportunity for social use (1). • Can link the built environment community to the natural environment (1) creating an opportunity for educational use (1). • Can provide an improvement in the local ecology and environment (1) with an example (1). • A balance needs to be found between the project footprint and the public space (1) ie. one should complement the other (1). • Can provide character and a sense of place (1) increasing the image or reputation of the area (1). • The provision of street furniture, landscaping and signage (1) needs to be in keeping with the surrounding area (1). • Access requirements for emergency service vehicles, people with disabilities etc. • Planting can clean up contaminated or derelict land. • Design to minimise crime (1) eg layout and lighting (1). • Neighbouring or adjoining land use impacts on the potential use of the public space (1) eg use for children’s play in a residential area, or relaxation area in a commercial zone (1). <p>Any other appropriate answer. No marks for identification only 1 mark for a brief description 2 marks for a clear description</p>	(4)

Question Number	Answer	Mark
1(b)	<p>Influence of site location, views and neighbours –</p> <p>Description of any two of the following ways:</p> <ul style="list-style-type: none"> • The design of the proposed building(s) will be affected by the architectural style of the surrounding properties (1) in terms of type, usage, size and scale (1). • The size and shape of the site will determine the density of houses allowed (1) and layout of the roads etc. (1). • The views in and out of the site will affect the layout of the building (1) location of specific rooms and the degree of prominence of the building(s) (1). • Planning objections by the local community or neighbours could affect the initial design (1) to apply with the use of local materials or the architectural style (1). • Access and circulation including vehicular and pedestrian circulation (1) and rights of way, accessibility etc. (1). • The location of the site will influence both land and house values. • The availability of services, including mains, public transport, shops, banks schools etc. • Supply and demand can influence land prices that will impact upon the type and market sector of the project. • If the site is located close to a source of noise and disturbance measures will need to be incorporated into the design. • Orientation of the building in order to maximise solar gain and natural daylight. This may be limited by the location and shape of the site. • Electromagnetic services eg local sub-station, electricity pylons may affect the orientation and the type of building. • Specific designs and materials may be required to ensure harmony with the locality eg national parks. 	(4)

	<ul style="list-style-type: none"> The topography of the site may result in a split-level or elevated design. <p>Any other appropriate answer. No marks for identification only 1 mark for a brief description 2 marks for a clear description</p>	
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Question Number	Answer	Mark
2	<p>The potential benefits of using recycled materials</p> <p>Description of any three of the following benefits:</p> <ul style="list-style-type: none"> Using recycled materials conserves natural resources (1) by reducing the demand for raw materials (1). Using recycled materials in the manufacture of components etc. conserves energy and water (1) because recycled materials require less processing than raw materials (1). Using recycled materials can reduce air and water pollution (1) because the processing stage is cleaner and uses less energy (1). Using recycled materials minimises the amount of waste going to landfill (1) with a subsequent reduction in disposal costs (1). Using recycled materials can give a competitive advantage (1) because they are less expensive than virgin materials (1). Some recycled materials perform better than virgin materials (1) eg foundry sand, coal ash used as a bedding material for green roofs are a lighter weight than traditional alternatives (1). Using recycled materials also complements other aspects of green/eco design. Reduction of a building's carbon footprint can be used as a selling point. Can be linked to the designer/developer/contractor's corporate social responsibility/environmental policy. 	(6)

	Any other appropriate answer. No marks for identification only 1 mark for a brief description 2 marks for a clear description	
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Question Number	Answer	Mark
3	<p>Crime reduction measures for the layout of an housing estate –</p> <p>Description of any three of the following measures:</p> <ul style="list-style-type: none"> • Houses should have individual front gardens (1) with a minimum distance of 3 metres depth from the pavement (1). • Streets should be linear with houses on each side of the street (1) this allows natural surveillance as they overlook each other (1). • Where cul-de-sacs are used they should not be linked to other cul-de-sacs or open spaces (1) so preventing escape routes for burglars etc. (1). • Major traffic routes should be kept away from residential development (1). Only light through movement of traffic should be allowed to bring some activity and presence of people into residential streets (1). • Garages should be provided to the whole development (1) or car parking should be located within the view of residents (1). • Street lighting should be to a good standard (1) but appropriate for the immediate environment (1). • Networks of separate pedestrian footpaths to unsupervised areas eg open or green spaces should be discouraged. • No pedestrian walkways to the rear of houses. • The use of changes in road surface colours and textures provide a psychological barrier. • The installation of a CCTV network that covers the whole of the housing estate. • The use of perimeter fencing or a gated community. 	(6)

	Any other appropriate answer. No marks for identification only 1 mark for a brief description 2 marks for a clear description	
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Question Number	Answer	Mark
4	<p>Features of a low energy building -</p> <p>Description of any four of the following features:</p> <ul style="list-style-type: none"> • The building is designed to achieve/exceed the minimum standards of the Building Regulations (1) in terms of thermal insulation ie super thermal insulation (1). • The building is designed to achieve/exceed the minimum standards of the Building Regulations (1) in terms of thermal insulation ie air tightness (1). • The building is designed to reduce energy consumption (1) through the use of energy efficient lighting (1). • The building is designed to reduce energy consumption (1) A rated appliances (1). • The building is designed to reduce energy consumption (1) white goods etc. (1) • The building is designed to reduce energy consumption (1) thermal mass (1). • The building is designed to reduce energy consumption (1) earth sheltered construction (1). • The building is designed to reduce energy consumption (1) thermostatic radiator valves (1). • The building is designed to reduce energy consumption (1) building management system (1). • The building is designed to reduce energy consumption (1) south facing to maximise daylight including Brise Soliel (1). • The building is designed to reduce energy consumption (1) sun tubes (1). • The building is designed to reduce energy consumption (1) triple glazing (1). • The design incorporates methods of 	(8)

	<p>producing/harvesting its own energy (1), through wind turbines (1).</p> <ul style="list-style-type: none"> • The design incorporates methods of producing/harvesting its own energy (1) through a conservatory (1). • Linked to a community energy scheme. • The use a heat exchange wind driven ventilation. • Solar water heating. <p>Any other appropriate answer. No marks for identification only 1 mark for a brief description 2 marks for a clear description</p>	
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Question Number	Answer	Mark
5	<p>Life cycle costs for a proposed building –</p> <p>Description of any three of the following costs:</p> <ul style="list-style-type: none"> • Acquisition costs – in terms of land purchase. • Design costs – including architects fees, planning and building control and other consultants involved in the design. • Construction costs – cost of constructing a building, commissioning and handing over to a client. • Financing costs - cost of raising the capital to finance a project and loan payment charges. • Maintenance costs - cost of maintaining the building to keep it in good repair and working condition. • Occupation costs - costs to perform the functions for which the building is intended. • Operating costs - costs of for example: cleaning, energy, etc. that are necessary for the building to be used. • Refurbishment and change of use throughout the building's life. • Disposal costs - total cost to the client of disposing of the building when it has failed or is no longer required for any reason. <p>Any other appropriate answer. No marks for identification only</p>	(6)

	1 mark for a brief description 2 marks for a clear description	
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Question Number	Answer	Mark
6	<p>Elements that need to be considered in the design section of a design and access statement –</p> <p>Explanation of any three of the following elements:</p> <ul style="list-style-type: none"> • Use This element should explain what the building(s) and space(s) will be used for, where they will be located (1), how they will fit in with the area and how they support local aims (1). • Layout This element should explain how the layout of the buildings and spaces in and around the site would work together (1). Features that should also be considered include orientation, location of entrances/access/gradients and how crime prevention is to be addressed (1). • Scale This element should explain why the size of the buildings is right for the site (1) including how the size relates to existing neighbouring buildings (1). <p>Any other appropriate answer. No marks for identification only 1 mark for a brief explanation 2 marks for a detailed explanation</p>	(6)

Question Number	Indicative Content
7	<p>Priorities that satisfy the needs of the local community when designing a new housing development –</p> <p>Coherent and balanced discussion that includes some of the following approaches and priorities:</p> <ul style="list-style-type: none"> • The provision of suitable housing for the elderly. • The availability of flats and one-bedroom facilities that are affordable. • The provision of a mixed range of housing from detached to three, two and one bedroom. • Permitted affordable developments in rural areas for the local population.

		<ul style="list-style-type: none"> • Restricting developers by requiring them to produce up to 50% affordable housing as part of their schemes. • Availability of houses at an affordable social rent. • Ensuring suitable housing is available for expansion plans for communities. • Increase the safety of communities. • Engaging tenants in community decision making with regard to housing by enabling representation on committees. • Reduce homelessness. • Locations near to work opportunities. • Access to local amenities and shops. • Shared use of renewable technologies eg. solar, wind, biomass. • Links to local employers who have staff with commuting problems or the company finds it difficult to recruit. <p>Other acceptable answers would be considered.</p>
Level	Mark	Descriptor
	0	No rewardable material, no marks for identification only.
1	1-5	Description of one or two undeveloped and/or unsupported ideas. May lack cohesion. No discussion. Lacks appropriate terminology.
2	6-10	General description of four points for discussion or two points that have been fully discussed. Minimal use of appropriate terminology.
3	11-15	Discussion of four points not fully developed. Some use of appropriate terminology.
4	16-20	A good range and development of relevant points. Clear discussion. Sound use of appropriate terminology.

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