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Mark Scheme (Results)

January 2012

Principal Learning
CB304 Create the Built Environment: Health, Safety and Environmental Influences

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Question Number	Answer	Mark
1	Advantages of using renewable energy include: • It does not create 'greenhouse gasses' • The energy source is cost free • The energy source will not run out • Does not cause pollution • It is a clean energy • It is environmentally friendly • It is sustainable over the long term • Less maintenance than traditional generators • The costs of operation are reduced • Little or no waste products produced • It is carbon dioxide free • No chemical pollutants produced • Minimal impact on the environment • Energy can be sold back to the national grid • Cheaper production costs than oil, gas or solid fuel • Reduces demand for other sources of energy • Properties are more marketable • Improvement company reputation resulting in potential expansion • Minimises the extraction of fossil fuels Any other appropriate response **Max 2 marks for each of any two descriptions.** **1 mark for a simple description.** **2 marks for a more detailed description.** **No mark for identification only.**	**(4)**

Question Number	Answer	Mark
2	Methods of reducing waste during concreting operations includes: • Avoiding over mixing of the concrete materials including accurately measuring and calculating quantities • Correct storage of cement to prevent premature set • Correct storage of aggregates to prevent contamination • Avoid spillage of concrete during the concreting operations • Use within specified setting time including	

	correct timing of deliveries • Avoiding over ordering and therefore wasting of materials • Mixing incorrect proportions of materials • Avoiding contamination from oil, debris, dust, water etc. • Formwork effectively reused on multiple occasions • Reducing the risk of loss due to concreting in cold conditions eg do not commence until 1°C on a rising thermometer and not starting below 3°C on a falling thermometer Any other appropriate response **Max 2 marks for each of any two descriptions.** **1 mark for a simple description.** **2 marks for a more detailed description.** **No mark for identification only**	**(4)**

Question Number	Answer	Mark
3	Uninsured costs include: • Extra wages for example overtime payments • Sick pay for absent workers • Lost time • Production delays • Loss of contracts • Legal costs associated with court cases for example for breach of legislation • Investigation time following an on-site accident • Excess on claims for unforeseen or additional work • Loss of business reputation • Clearing up costs • Damage to products, plant, buildings, tools, equipment • Management time for addition on-site activities • Fines for breach of legislation • Failure of business for example due to unforeseen expense • Rising insurance premiums • Implementation of liquidated and ascertained damages	

	Any other appropriate response **Max 2 marks for each of any two descriptions.** **1 mark for a simple description.** **2 marks for a more detailed description.** **No mark for identification only.**	**(4)**

Question Number	Answer	Mark
4	Benefits of using combined heat and power include: • Local generation of electricity is usually cheaper than buying off-grid • Can use a wide range of different fuel types • Excess electricity can be sold to the national grid • Generate electricity at times which corresponds with peaks in demand. • Fuels are used efficiently and efficiently • Lower emissions from the fuel source • Recovers and turns heat lost during power generation into usable thermal energy Significantly reduces emissions of CO_2 into the air • Reduces vulnerability to power outages • Ratio of electrical and thermal energy can be easily varied • Reduced overall energy costs / reduced energy demand • Continuity in the supply of energy • Increased reliability of energy supply • Flexible and responsive heat supplies • Reduced maintenance because only one unit to service e.g. single flue, burner etc • Centralised controls Any other appropriate response **Max 2 marks for each of any two descriptions.** **1 mark for a simple description.** **2 marks for a more detailed description.** **No mark for identification only.**	**(4)**

Question Number	Answer	Mark
5	Topics that could be included as part of a site induction include: • Accident reporting processes and procedures • Permits to work e.g. hot or cold work permits • Training requirements to ensure competency for example when using machinery. • Protection zones, for example areas of high noise levels • Site traffic management to ensure safe movement and use of plant etc. • Safe working procedures for all site activities • Site welfare facilities including wet rooms, eating and sanitary facilities • Manual handling techniques and procedures to prevent personal injury • Restricted areas for high risk activities for example hoisting and lifting • On-site emergency procedures including fire, first aid and emergency evacuation • Hazard identification reporting to supervisors or managers • Site security methods and systems • Site layout for materials storage, vehicle access and work areas • Site rules for safe procedures • Task specific personal protective equipment use • Site access arrangements to maintain separate personnel and vehicles/plant • Maintaining a tidy site and work area Any other appropriate response **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.**	**(6)**

Question Number	Answer	Mark
6	Methods used to control dust during demolition work includes: • Avoid demolition blasting that causes dust • Sheet or screen the demolition area to contain the dust • Reduce airborne dust by using water sprays • Enclose debris chutes and skips to contain the dust • Minimise material drop heights that cause dust • Avoid burning materials on-site that causes dust • Limit exposure to wind of stored materials • Sheet vehicles removing demolition materials to contain the dust • Fit equipment with dust bags to contain dust • Use vacuum systems to prevent dust • Use wet cutting processes to reduce dust • Seal windows and openings to prevent dust escaping. • Hand demolition • Covered lorries during transportation Any other appropriate response **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**	**(6)**

Question Number	Answer	Mark
7	Measures that can be used to enforce health and safety legislation include: • Offering face to face information and advice on the legislation. • Offering advice in writing on the health and safety legislation. • Warning a duty holder that they are failing to comply with the legislation. • Issuing informal warnings when legislation is breached. • Varying license conditions or exemptions to comply with legislation. • Withdrawing approvals linked to health and	

	safety • Issuing formal cautions regarding breaches in requirements • Serving an improvement notice requiring compliance with legislation • Serving a prohibition notice requiring compliance with legislation • Issuing a crown notice to comply • Prosecuting a company or individuals who are in breach of the legislation • Take possession of and remove from site plant and equipment • Imposition of fines for non-compliance with regulation Any other appropriate response **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**	**(6)**

Question Number	Indicative Content
8	Purpose of Energy Performance Certificates include: • Gives information on the energy efficiency of the building. • Uses standard methods and assumptions about energy usage of a building and provides an Energy Performance rating on a sliding scale from 'A' to 'G', 'A' being the most efficient and 'G' the least. • Ratings are influenced by the size, age, layout and insulation among other things. Running costs are estimated based on how the property will be used, the number of occupants etc. • Includes recommended measure for making the property more energy efficient. • Allows the energy efficiency of one building to be easily compared with another building of the same type. • Allows prospective buyers, tenants, owners, occupiers and purchasers to see information on the energy efficiency and carbon emissions from a building so they can consider energy efficiency and fuel costs.

		Any other appropriate response
Level	Mark	Descriptor
	0	No rewardable material / No marks for identification only
1	**1-2**	Limited understanding of Energy Performance Certificates demonstrated with one or two purposes briefly explained
2	**3-4**	Clear understanding of Energy Performance Certificates demonstrated with some purposes explained in more detail
3	**5-6**	Sound understanding of Energy Performance Certificates demonstrated with a range of purposes fully explained

Question Number		Indicative Content
9		Hazards to be considered during a risk assessment for the erection of the timber frames include: • Systems of work, for example during mechanical lifting of the pre-fabricated units, use of banksman, sequence of operations. • Plant and equipment for example suitability, safe working load, competent operator, inspection records • Hoisting and lifting of the prefabricated units for example from delivery vehicles to storage or into final position • Working platforms, for example scaffolding, MEWPs, scissors lifts • Possible adverse weather conditions including wind, snow, ice and rain • Falls from height, for example from ladders and working platforms • Falling objects, for example from roofing operations • Operatives , for example competency, training, experience Any other appropriate response
Level	Mark	Descriptor
	0	No rewardable material / No marks for identification only
1	**1-4**	Limited understanding of risk assessment demonstrated with one or two hazards briefly described and no application to the scenario
2	**5-8**	Clear understanding of risk assessment demonstrated with some hazards described in more detail and increasing application to the project scenario
3	**9-10**	Sound understanding of risk assessment demonstrated with a range of hazards fully described specifically focussed on the project scenario.

Question Number		Indicative Content
10		The environmental benefits of using Modern Methods of Construction include: • Reduced waste compared with traditional site activity • Reduced packaging waste from site materials • Standardised units with minimum off-cuts • Reduction of the waste associated with site activity • Increased recycling • Reduced transport due to fewer deliveries or waste removal • Reduced on site activities • Reduced handling damage to components • Minimised defects • Energy in the construction process is reduced • Efficient use of sustainable materials • Reduced potential for site environmental accidents • Maximised recovery of MMC materials at end of life • Reduction of pollution due to controlled manufacture • Reduce embodied energy associate with the manufacture • Improved opportunities for implementing higher levels of insulation Any other appropriate response
Level	Mark	Descriptor
	0	No rewardable material / No marks for identification only
1	**1-4**	Poorly structured report with no introduction or conclusion. Limited understanding of environmental benefits demonstrated with one or two benefits briefly described, and no application to the scenario.
2	**5-8**	Reasonably well structured report which attempts introduction and conclusion. Clear understanding of environmental benefits demonstrated with some benefits described, and increasing application to the project scenario.
3	**9-10**	Well structured report with clear introduction and conclusion. Sound understanding of environmental benefits demonstrated with a range of benefits described, specifically focussed on the project scenario.

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