

Mark Scheme (Results)

June 2016

BTEC Level 1/Level 2 Firsts in
Construction and the Built
Environment

Unit 11: Sustainability in Construction
(21635E)

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Publication Code 21635E_MS

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if a candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt about applying the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed-out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1	<p>1 mark for each correct answer:</p> <p>B Damping down E Wheel cleaning</p> <p>Accept no variation</p>	(2)

Question Number	Answer	Mark
2	<p>1 mark for identifying each type of pollution from the facility that may affect the local environment</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Carbon emissions/exhaust fumes (1) • Particulates (1) • Dust (1) • Light (1) • Litter (1) • Spillage of contaminants (1) • Noise (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
3	<p>1 mark for each correct answer:</p> <p>A Use of weather stripping materials C Use of automatic external door closers</p> <p>Accept no variation</p>	(2)

Question Number	Answer	Mark
4 (a)	<p>1 mark for giving a reason for the categorisation of waste materials</p> <p>Any one from:</p> <ul style="list-style-type: none"> • For disposal to general or specialist disposal sites (1) • Prevent contamination that will prevent recycling/ease of recycling (1) • Materials don't get mixed up (1) <p>Accept any other appropriate answer</p>	(1)

Question Number	Answer	Mark
4 (b)	<p>1 mark for giving a reason why a licensed waste disposal contractor should be used.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Avoid fly tipping (1) • Materials will be handled /disposed of / transported correctly (1) • To comply with legislation (1) • To avoid fines (1) • To avoid pollution (1) <p>Accept any other appropriate answer</p>	(1)

Question Number	Answer	Mark
4 (c)	<p>Award 1 mark for identifying a material from a traditionally built house that could be recycled when the building is demolished. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Bricks (1) • Blocks (1) • Plastics (1) • Timber (1) • Metals (1) • Glass (1) • Slate (1) • Stone (1) • Concrete (1) • Plasterboard (1) • Roof tiles (1) <p>(Do not accept components that could be reused e.g. fireplaces or doors)</p> <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
5	<p>A linked response that makes reference to any one of the following points. Up to two marks.</p> <p>Any one from the following ways:</p> <ul style="list-style-type: none"> • Contractor uses local labour/employees (1) because of the higher cost of importing from outside the area (1) • Agreement with contractor to provide training (1) because of high unemployment in the local area (1) • Local training providers could increase provision (1) to meet demand to upskill workforce (1) • Other local businesses need additional labour/employees (1) because of increased business from the development (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
6 (a)	<p>Award 1 mark for identifying each community facility that needs to be considered when planning sustainable developments. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Infrastructure (1) • Retail (1) • Education (1) • Health (1) • Recreation (1) • Social facilities (1) • Community green spaces (1) <p>Accept any other appropriate answer Accept answers that fall within the categories</p>	(2)

Question Number	Answer	Mark
6 (b)	<p>Award 1 mark for each way features of the built environment can improve the feeling of community safety. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Well maintained buildings and streets (1) • Lighting (1) • CCTV (1) • Absence of alleyways/blind spots/dead ends (1) • Door entry systems to apartments/gated communities (1) • Local police station (1) • Secure doors/locks (1) • Road safety features (crossings/railings) (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
7	<p>Award 1 mark for giving each reason for a developer to involve the local community at the design stage of a construction project. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • To find out community needs/opinions (1) • Answer objections before planning (1) • Develop trust/goodwill with the community (1) • Develop a working relationship at an early stage(1) • To provide information/receive feedback (1) • To identify local labour skills/shortages (1) • Reduce the impact on the community (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
8	<p>1 mark for each correct answer:</p> <p>A Would attract commercial enterprise C Would reduce insurance costs</p> <p>Accept no variation</p>	(2)

Question Number	Answer	Mark
9	<p>Award 1 mark for each benefit to the local community provided by the centre. Up to 2 marks.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Protects the natural habitat/resources/ecosystems (1) • Provides employment for local communities (1) • Awareness and respect of nature (1) • Positive experience for visitor and host (1) • Benefits of associated commercial enterprise (1) • Attract people/visitors to the area (1) • Education facility for local schools (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
10	<p>A linked response that makes reference to any two of the following points. Up to two marks for an explanation.</p> <p>Any one from the following explanations:</p> <ul style="list-style-type: none"> • More efficient use of existing technologies (1) therefore making best use of the resource (1) • More use of new technologies (1) which reduces embodied energy in materials (1) • Use of a renewable/sustainable/recycled materials (1) therefore preserving the finite resource (1) • Bulk deliveries (1) to cut pollution from additional journeys (1) • Use of alternative energy sources (1) because they do not use fossil fuels (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
11	<p>A linked response that makes reference to any two of the following points. Up to two marks for an explanation.</p> <p>Any one from the following explanations:</p> <ul style="list-style-type: none"> • Construction methods / techniques are carefully chosen (1) so to reduce the noise created during construction (1) • Use of (acoustic) hoardings (1) therefore retaining the noise within the site and reducing its impact outside of the site (1) • Turning machines off when not in use (1) will reduce the continuous level of noise (1) • Use of hand tools (1) to reduce mechanical noise (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
12	<p>A linked response that makes reference to any two of the following points. Up to two marks for each explanation.</p> <p>Any two from the following reasons:</p> <ul style="list-style-type: none"> • Environmental benefits (1) because previous pollution will need to be cleaned up/ because of the need to clean the site of contaminants (1) • Regeneration of disused site (1) because an existing derelict site will be redeveloped / new development may provide community facilities / improve a run-down area / employment opportunities / reduction in crime / greater feeling of community safety(1) • Allows communities to benefit from improved natural environment (1) by allowing eco-system/habitat to improve/return (1) • Less greenfield sites used (1) thus retaining/protecting the natural environment (1) <p>Accept any other appropriate answer</p> <p>Do not accept answers that do not focus on development of the contaminated site</p>	(4)

Question Number	Answer	Mark
13 (a)	<p>Award 1 mark for identifying each sustainable material that could be used to insulate Building 1 against heat loss. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Recycled glass mineral wool (1) • Sheep's wool (1) • Hemp (1) • Flax (1) • Cellulose insulation (1) <p>Accept any other appropriate answer</p> <p>Do not accept glass mineral wool or fibreglass without 'recycled'</p>	(2)

Question Number	Answer	Mark
13 (b)	<p>Award 1 mark for identifying each location within Building 1 where insulation could be placed to reduce heat loss. Up to 2 marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Roof void/ceiling (1) • Within floors (1) • On walls (1) • On pipes (1) <p>Accept any other appropriate answer</p>	(2)

Question Number	Answer	Mark
14	<p>A linked response that makes reference to any two of the following points. Up to two marks for each explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> • Mass rapid transport (trams/buses) (1) because they provide a quick means of transport for large volumes of people (1) • Two people car lanes/car sharing scheme/taxi sharing (1) which will reduce the number of cars on the road (1) • Out of town park and ride facilities (1) because they allow commuters to drive to the outskirts of the town and then take a shuttle bus/train/tram (1) • Provision of footpaths (1) to encourage people to walk on short journeys (1) • Walking bus scheme (1) to minimise traffic around town centre/schools (1) <p>Accept any other appropriate answer</p>	(4)

Question Number	Answer	Mark
15	<p>A linked response that makes reference to any two of the following points. Up to two marks for each explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> • Underground storage tank (1) because water needs to be stored for re-use (1) • Water treatment (1) because solid matter needs to be removed / the water needs to be disinfected to remove bacteria (1) • Pumping system (1) because the water will need to be pumped to the toilet cistern water system / watering points / car washing taps (1) <p>Accept any other appropriate answers</p> <p>Do not accept pipes Do not accept collect because all systems collect</p>	(4)

Question Number	Indicative content	Mark
16	<p>Discussion of the technologies and features of Building 2 that will make it more sustainable than Building 1.</p> <p>Sustainable features of Building 2 over Building 1:</p> <ul style="list-style-type: none"> • Built to current standards so it will inherently have a greater degree of sustainability and is likely to have lower running costs • High levels of insulation in the floors, walls incorporated triple glazed windows and the roof will reduce the energy requirements to heat the building. • The airtightness of the building will reduce the energy requirements and will also assist in maintaining a comfortable internal environment for occupants. • The LED lighting will have lower energy requirements than fluorescent lighting. Sensor controls will save energy when rooms are not being used. • The ventilation and temperature control of the building uses energy efficient heating and includes heat recovering. • The computer controls will maintain temperatures and acceptable comfortable levels. The ventilation system will remove stale air and maintain oxygen levels. • The rainwater harvesting and grey water system will reduce the use of drinking water, and reducing running costs. <p>(The discussion must be based on the information in the scenarios and not on supposition where there is no related evidence in the scenario)</p> <p>Accept any other appropriate answer</p>	(8)

Level	Descriptor
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0 marks	No rewardable material
1 1-3 marks	A few key points identified, or one point described in some detail. The answer is likely to be in the form of a list. Only one viewpoint considered. Points made will be superficial/generic and not applied/directly linked to the situation in the question. The learner shows a basic understanding of sustainability.
2 4-6 marks	Some points identified, or a few key points described. Consideration of more than one viewpoint but there will be more emphasis on one of them. The answer is unbalanced. Most points made will be relevant to the situation in the question, but the link will not always be clear. The learner shows a good understanding of sustainability.
3 7-8 marks	Range of points described, or a few key points explained in depth. Most sides of the case are considered and the answer is well-balanced, giving weight to most viewpoints. The majority of points made will be relevant and there will be a clear link to the situation in the question. The learner shows a developed understanding of sustainability.