



Pearson



Mark Scheme (Results)

Summer 2017

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

Unit 11: Sustainability in Construction (21635E)

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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><b>One</b> mark for each correct answer:</p> <p>A Inclusion of green spaces E Nice places to live are built</p>	(2)

Question Number	Answer	Mark
2	<p><b>One</b> mark for identifying one way that construction may contribute to the depletion of finite resources.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>• Use of existing inefficient technology/supply chains (1)</li> <li>• Use of non-renewable/finite materials/fossil fuels (1)</li> <li>• Over-ordering of materials (1)</li> <li>• Inefficient plant and equipment (1)</li> <li>• Fuel used in transporting materials to site (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
3	<p><b>One</b> mark for each correct answer:</p> <p>C Employment opportunities D Financial return</p>	(2)

Question Number	Answer	Mark
4	<p>Award <b>one</b> mark for giving each benefit of using locally sourced materials. Up to <b>two</b> marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> <li>• Reduced transport costs/use (1)</li> <li>• Reduced local pollution from transport (1)</li> <li>• Stimulates the local economy/employment (1)</li> <li>• Materials will be in sympathy with local architecture (1)</li> </ul> <p>Accept any other appropriate answer. Do not accept: Cheaper/quicker</p>	(2)

Question Number	Answer	Mark
5	<p>Award <b>one</b> mark for giving one benefit to the residents of designing a new development with low density housing.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>• Residents do not feel cramped/too close to other occupants (1)</li> <li>• Providing social/recreational space for residents/open green space (1)</li> <li>• Provision of space for off-street parking (1)</li> <li>• Large gardens (1)</li> <li>• Improved potential for future extensions (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
6	<p><b>One</b> mark for each correct answer:</p> <p><b>B</b> Segregation of waste  <b>C</b> Protective fencing around trees</p>	(2)

Question Number	Answer	Mark
7	<p>Award <b>one</b> mark for giving each way that the efficiency of domestic heating systems can be improved. Up to <b>two</b> marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> <li>• Control systems (1)</li> <li>• Energy efficient boilers (1)</li> <li>• Maintenance (1)</li> <li>• Lagging (1)</li> </ul> <p>Accept any other appropriate answers.  Do not accept:  Insulation of buildings</p>	(2)

Question Number	Answer	Mark
8	<p>A linked response that makes reference to any two of the following points. Up to <b>two</b> marks for an explanation.</p> <p>Any one from the following explanations:</p> <ul style="list-style-type: none"> <li>• The inclusion of silt traps (deep 'yard' gullies', with silt buckets)/catch pits (1) these will collect the silt where it can be removed/prevent build-up of silt (1)</li> <li>• Accessible rodding points (1) to allow for regular cleaning (1)</li> </ul> <p>Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
9	<p>Award <b>one</b> mark for stating each way of providing natural ventilation to buildings. Up to <b>two</b> marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> <li>• Passive stack ventilation (1)</li> <li>• Air bricks/vents (1)</li> <li>• Window trickle vents (1)</li> <li>• Doors (1)</li> </ul> <p>Accept any other appropriate answer. Do not accept: Fans</p>	(2)

Question Number	Answer	Mark
10 (a)	<p>Award <b>one</b> mark for naming each characteristic of solar hot water panels. Up to <b>two</b> marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> <li>• Flat/Thin (1)</li> <li>• Rectangular (1)</li> <li>• Fitted/take up space on the roof (1)</li> <li>• Dark in colour (1)</li> <li>• Series of tubes (1)</li> <li>• Filled with water (1)</li> <li>• Environmentally friendly (1)</li> <li>• Collect energy from the sun (to heat up water) (1)</li> <li>• Efficient use of natural resource (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
10 (b)	<p>Award <b>one</b> mark for giving the ideal direction the panels should face.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>• South (1)</li> <li>• Southwest (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
10 (c)	<p>Award <b>one</b> mark for stating one way that solar hot water panels help sustainable development.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>• Reduction in the use of fossil fuels/emissions (1)</li> <li>• Use of renewable energy (1)</li> <li>• Reduction in energy usage/bills (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
11 (a)	<p>Award <b>one</b> mark for each correct answer.</p> <p><b>A</b> Engineered joists <b>D</b> Cedar boarding</p>	(2)

Question Number	Answer	Mark
11 (b)	<p>Award <b>one</b> mark for each reason why timber is considered to be a sustainable material. Up to <b>two</b> marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> <li>• Naturally occurring (1)</li> <li>• Can be regrown/managed forests/FSC sources/renewable (1)</li> <li>• Is recyclable (1)</li> <li>• Low embodied energy (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
12	<p>A linked response that makes reference to the following point. Up to <b>two</b> marks for an explanation.</p> <p>Any one from the following explanation:</p> <ul style="list-style-type: none"> <li>Rechargeable battery technology (1) recharged by renewable energy source e.g. solar/wind (1)</li> </ul> <p>Accept any other appropriate answers. Do not accept Generator Renewable energy source without reference to a rechargeable battery</p>	(2)

Comment [BL1]: Is this definitely B3?  
Not strong on spec

Question Number	Answer	Mark
13	<p>A linked response that makes reference to any two of the following points. Up to <b>two</b> marks for an explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> <li>Decontamination of the site (1) to make the site safe (1)</li> <li>Demolish existing structures (1) to leave site ready for housing (1)</li> <li>Low off-site infrastructure cost (1) as services present due to previous development (1)</li> <li>Adverse public opinion of sites in industrial areas/chemical sites (1) houses may attract a low selling price (1)</li> </ul> <p>Accept any other appropriate answers. Do not accept housing costs</p>	(4)

Question Number	Answer	Mark
14	<p>Award <b>one</b> mark for stating one way of reducing the amount of mud being transferred to local roads during the construction of Building 1.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>Wheel cleaning/washing (1)</li> <li>Provide clean hardstanding for vehicles entering and exiting the site (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)



Question Number	Answer	Mark
15	<p>Award <b>one</b> mark for giving one way that the energy cost for the internal lighting to the shop in Building 1 could be minimised.</p> <p>Any one from:</p> <ul style="list-style-type: none"> <li>• Low energy lighting (1)</li> <li>• LED lighting (1)</li> <li>• Maximising the use of daylight (1)</li> <li>• Sensors/Timers (1)</li> </ul> <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
16	<p>A linked response that makes reference to any one of the following points. Up to <b>two</b> marks for an explanation.</p> <ul style="list-style-type: none"> <li>• Doors are only opened as customers enter and leave the supermarket (1) which minimises air leakage/ keeps heat in/minimises hot air entering/ minimises draughts (1)</li> </ul> <p>Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
17 (a)	<p>A linked response that makes reference to any two of the following points. Up to <b>two</b> marks for each explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> <li>• Local disposal (1) as the subsoil absorbs the water where it falls (1)</li> <li>• Does not need to be connected to an off-site drainage system (1) thus reducing the potential of downstream flooding (1)</li> <li>• Reduced materials use/embodied energy (1) because the final exit drain is smaller in diameter/not required (1)</li> </ul> <p>Accept any other appropriate answers. Do not award SUDs/soakaways.</p>	(2)

Question Number	Answer	Mark
17 (b)	<p>A linked response that makes reference to any two of the following points. Up to <b>two</b> marks for each explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> <li>• Use of permeable bitumen/block paving/ permeable surfacing (with a granular sub-base) (1) will allow the storm water to flow through the surfacing and permeate into the subsoil (1)</li> <li>• Use of filter strips/swales (1) to transfer water to area where it can permeate into the subsoil (1)</li> </ul> <p>Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
18	<p>A linked response that makes reference to any two of the following points. Up to <b>two</b> marks for each explanation.</p> <p>Any two from the following explanations:</p> <ul style="list-style-type: none"> <li>• Care about the appearance of the site (1) so the site appears professional and well managed (1)</li> <li>• Respect the community (1) by timing of deliveries/ not working unsociable hours/providing information, etc (1)</li> <li>• Protect the environment (1) by not causing operations to damage the environment/take opportunities to enhance the environment (1)</li> <li>• Secure everyone's safety (1) by ensuring the highest levels of safety performance (1)</li> <li>• Value their workforce (1) by providing a supportive and caring working environment (1)</li> </ul> <p>Accept any other appropriate answers.</p>	(4)

Question Number	Indicative content	Mark
19	<p>Discussion on the contribution Building 2 makes to social and economic sustainability of the town.</p> <p>The discussion should be based on the materials that is provided within the scenario and should cover both positive and negative contributions that Building 2 makes to social and economic sustainability of the town.</p> <p>Positives:</p> <ul style="list-style-type: none"> <li>• Built on a brownfield site</li> <li>• Potential improvement of the area</li> <li>• Preventing the use of further greenfield areas</li> <li>• Meeting the community need of retail, health and recreation</li> <li>• Social centre for the community</li> <li>• Employment opportunities</li> <li>• Improving the local economy</li> <li>• Served by local buses</li> <li>• Sustainable disposal of surface water</li> </ul> <p>Negatives:</p> <ul style="list-style-type: none"> <li>• Large amount of land being used for car parking</li> <li>• Encourages the use of private cars</li> <li>• Creating congestion and local pollution</li> <li>• Causing a decline in other areas, with vacant shops and reduction in local economy</li> <li>• Social economic issues associated with gambling</li> </ul> <p>Level 3 model response:</p> <p>The shopping centre and other facilities will provide a social centre for the local community, and will also bring economic benefits to the town. It contains a wide range of facilities all in one location that is easy to get to due to the roads from other parts of the town. It is also on bus routes.</p> <p>While the facilities do provide a social centre for the local community, the casino and bingo may encourage gambling and drinking as an unsocial activity.</p> <p>The shopping centre is built on a brownfield site so it is likely the development will have improved the look of this area of the town and the development will not have taken up greenfield land. Building on greenfield land may take away open spaces, farmland or natural habitats for wildlife.</p> <p>The shopping centre may attract people from neighbouring towns and provide employment opportunities and bring money to the town and improve the local economy for the community.</p>	(8)

	<p>The shopping centre is not without its problems. It is adding to traffic congestion that may result in an increase in pollution from the slow moving or stationary vehicles. The provision of parking will encourage the use of private cars that will add to the congestion and pollution.</p> <p>As a result of the success of the shopping centre other areas of the town are suffering due to the decline in shoppers in these areas. Shops will close and there will be an increase in vacant shops. This may lead to areas looking run down attracting vandalism and crime. This will not be good for the community as a whole.</p> <p>The new shopping centre provides a range of facilities all in one place in sustainable buildings. However, the town must address the issues that the shopping centre is having on other areas of the town and not allow them to detract from the social and economic benefits of the new centre.</p> <p>Accept other appropriate answers.</p>	
Level	Descriptor	
Level	Descriptor	
0 0 marks	No rewardable material.	
1 1-3 marks	A few points identified, or one point described. 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. Shows a basic understanding of social and economic sustainability issues.	
2 4-6 marks	Some points identified, or a few points described or explained. 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. Shows a good understanding of social and economic sustainability issues.	
3 7-8 marks	Range of points described, or a few points explained in depth. Most sides of the case are considered and the answer is well-balanced, giving weight to all viewpoints. The majority of points made will be relevant and there will be a clear link to the situation in the question. Shows a developed understanding of social and economic sustainability issues.	

