

Mark Scheme (Results)

January 2020

BTEC Level 1/Level 2 First
Certificate 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 judgment 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.

SECTION A

Question Number	Answer	Mark
1	One mark for each correct answer. B- Structural insulated panels C- Engineered joists	(2)

Question Number	Answer	Mark
2	Award one mark for each reason why materials should be stored correctly. Any one from: <ul style="list-style-type: none">• To prevent damage to the materials (1)• To prevent the risk of injury to operatives (1)• To prevent theft (1) Accept any other appropriate answer.	(1)

Question Number	Answer	Mark
3	One mark for each correct answer. D- Sheep's wool E- Flax	(2)

Question Number	Answer	Mark
4	Award one mark for each reason for a large number of vacant buildings in an area. Up to two marks. Any two from: <ul style="list-style-type: none">• Overdevelopment (1)• Recession (1)• Undesirable (high crime rate/area is run down/environmental factors) (1) Accept any other appropriate answer.	(2)

Question Number	Answer	Mark
5	<p>Award one mark for each way the distance travelled by suppliers delivering to a building site can be reduced. Up to two marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Bulk deliveries (1) • Locally sourced materials (1) • Variety of materials from one supplier (1) • Efficient route planning (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
6	<p>Award one mark for why lights on a building site opposite a housing estate are fitted with light shades.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Prevent light from spilling outside of the site (1) • Prevent light pollution of the housing estate (1) • Prevent glare impacting on passing motorists (1) • Prevent glow affecting enjoyment of the night sky (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
7	<p>One mark for each correct answer:</p> <p>A- Automatic external door closers D- Draught sealing</p>	(2)

Question Number	Answer	Mark
8	<p>Award one mark for each advantage for a community of building on a brownfield site other than to preserve greenfield sites. Up to a maximum of two marks. Any two from:</p> <ul style="list-style-type: none"> • The regeneration of an area (1) • Improved visual amenity (1) • Provide a social hub for an area (1) • Increase feelings of safety in the community (1) • Meet specific needs of the community (1) • Improve property values (1) • Increase employment opportunities (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
9	<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"> • Factory process (1) so process can be more controlled/higher degree of accuracy (1) • Efficient use of materials (1) because cutting of materials can be better controlled/planned (1) • Offcuts are reduced (1) because there is little or no on-site cutting required (1) • Higher degree of waste recycling/reuse (1) because factory environment allows for better segregation and collection of material (1) <p>Accept any other appropriate answer.</p>	(4)

Question Number	Answer	Mark
10	<p>Award one mark for a way waste material can be transported safely in skips without the risk of it falling out.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Covering skips (1) • Not overfilling skips (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
11	<p>One mark for each correct answer.</p> <p>A- Energy consumption is minimised B- Natural habitats are retained</p>	(2)

Question Number	Answer	Mark
12	<p>Award one mark for a way biomass boilers contribute to sustainability.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Use of non-fossil fuels (1) • Use of sustainable/renewable fuels (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
13	<p>Award one mark for each timber prefabricated structural building component used in housing. Up to two marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Stairs • Roof/roof truss • Wall/timber frame • Engineered joists / eco-joists • SIPS <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
14	<p>Award one mark for each process in the life of a material that adds to its embodied energy. Up to two marks.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Winning the raw material (e.g. mining/cutting down) (1) • Manufacturer/processing (1) • Storage (1) • Transportation (1) • Placing (1) • Recycling (1) <p>Accept any other appropriate answer.</p>	(2)

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"> • Provides a habitat for wildlife (1) as vegetation provides a food source/home for some species of wildlife (1) • Aesthetics (1) because the vegetation can break up an urban landscape (1) • Rainwater attenuation (1) because the growing medium will absorb rainwater and attenuate the runoff of rainfall (1) • Helps to reduce noise pollution (1) by absorbing external sound (1) • Helps to reduce pollution (1) by the conversion of CO₂ into oxygen (1) <p>Accept any other appropriate answer.</p>	(4)

Question Number	Answer	Mark
16	<p>Award one mark for one form of mass transport other than buses.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Trams (1) • Trains (1) • Underground / Metro (1) • Water taxi (1) • Ferries (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
17	<p>Award one mark for a high embodied energy material used in the construction of the bus station.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Metal sheeting • Glass • PVCu <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
18	<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"> • There are no emissions at the bus station (1) because no fossil fuels are being used at the bus station (1) • Electricity can be purchased from green sources (1) reducing the use of fossil fuels being used (1) • Heat pumps are very efficient (1) reducing the amount of input energy required (1) 	

	<ul style="list-style-type: none"> Heat is taken out of the surrounding air and multiplied (1) rather than converting electricity into direct heat (1). <p>Accept any other appropriate answer.</p>	(4)
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Question Number	Answer	Mark
19	<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"> Potential thieves will be frightened off (1) for fear of being picked up on the CCTV (1) Users of the facilities feel safer (1) because the area is being monitored/recorded by the CCTV (1) Should there be an incident (1) help will come quickly as someone will see things happening through the CCTV (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
20	<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"> The surface water will be treated (1) adding to the cost of its disposal (1) The surface water will drain to a treatment facility (1) requiring larger capacity sewers/not returning the rainwater to the ground where it fell (1) Heavy rain may overload the sewers (1) causing flooding downstream (1) The drainage system may have stormwater overflows (1) leading to the pollution of watercourses (1) <p>Accept any other appropriate answer.</p>	(4)

Question Number	Indicative content	Mark
21	<p>Discussion on how buses and cycling can contribute to sustainability within communities. The response should be based on the material from the scenario and show the learner's understanding of the topic. Learners should aim to relate their response to sustainability within communities and not to provide a generic response.</p> <p>Key points to consider:</p> <p>Buses</p> <ul style="list-style-type: none"> • Buses are a form of mass transport and can reduce the number of cars being used within a town or local area. • Reducing car use will have an effect on exhaust emissions and pollution. • Reducing car use may reduce the need for inner city car use – car drivers can leave their car in a park and ride car park on the edge of the city. • Buses can run on alternative fuels reducing the use of fossil fuels. • Dedicated bus lanes and traffic signals can speed up journey times. • Air quality can be improved. <p>Cycling</p> <ul style="list-style-type: none"> • Cycling can reduce the use of cars. • Cycle paths provide a safe place to cycle. • Cycle paths may be routed as the crow flies, reducing travel distance. • Safe storage facilities may help those who only cycle for part of their journey, generally in inner urban areas. • Cycle hire schemes may encourage those who do not own a bicycle or have a safe place to store a cycle to cycle within an urban area. • By reducing the use of cars and exhaust emissions air quality will be improved. • Cycling can also be beneficial to the health of the community and keep people fit. 	

- Cycling can also be a social activity and people can meet at cycle tracks or trails to cycle with friends.

Level 3 model answer:

Many urban areas are becoming clogged up with cars and the exhaust emissions are pumping pollution into the atmosphere leading to poor air quality.

The use of buses, which are a form of mass transport, has the potential of removing many cars off the road. There are many benefits to using buses. Buses can travel in the dedicated bus lane and the buses cause the traffic lights to change in their favour. This all speeds up the journey time and means that people in the community can get to school or work quicker, or can leave later.

Some buses run on biofuels and thus don't use fossil fuels or emit the same gases from their exhausts. The buses also run from the out-of-town park and ride car parks to the city centre bus station. Therefore, commuters don't have to drive into town and take up car parking spaces all day while they are at work.

The use of bicycles can also reduce the number of people using their cars. Cycle paths make it safe to ride a bike without the danger of being hit by a car. Some cycle paths run across parks and pedestrian areas meaning that by cycling a shorter route can be taken than if travelling by car. This helps to speed up the journey by bike.

In some cities like London it is possible to hire a bike. This means that you don't have to own a bike and a bike can be picked up and dropped off at the end of the journey. This is very useful for people who live in the city and don't have anywhere to keep a bike.

At park and ride car parks and train stations there are safe places to store a bike. This means that those who travel by car and train can pick their bike up for the last part of the journey, which is probably the most congested.

Cycling can help people to keep fit and keep their weight down. You can also cycle with your friends at a local cycle track or at a woodland trail.

	In conclusion, the use of buses and bicycles can help to reduce the reliance on the private car. This should result in an improvement in air quality and mean the air that we breathe will not be as polluted. Cycling can keep us all fit and is something that we can do with our mates.	(8)
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. Points made will be superficial/generic and not applied/directly linked to the scenario and question. Shows a basic understanding of sustainable transport.	
2 4-6 marks	Some points identified, or a few key points described or explained. The answer is unbalanced. Most points made will be relevant to the scenario and the question, but the link will not always be clear. Shows a good understanding of sustainable transport.	
3 7-8 marks	Range of points described, or a few key points explained in depth. The majority of points made will be relevant and there will be a clear link to the scenario and the question. Shows a developed understanding of sustainable transport.	



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