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Mark Scheme (Pre-standardisation)
Jan 2018

BTEC Level 1/Level 2 First Certificate

Construction and the Built Environment
(21635E)

Unit 11: Sustainability in Construction

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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	A Reduce heat loss D Reduce noise transmission	(2)

Question Number	Answer	Mark
2(a)	Award 1 mark for stating the purpose of settlement tanks. <ul style="list-style-type: none"> • Separate solid particles from liquids (1) Accept any other appropriate answer.	(1)

Question Number	Answer	Mark
2(b)	Award 1 mark for stating the purpose of light shading. Any one from: <ul style="list-style-type: none"> • Reduces light pollution (1) • Prevents light shining on neighbours (1) Accept any other appropriate answer.	(1)

Question Number	Answer	Mark
3	1 mark for each correct answer: C Servicing E Regular maintenance	(2)

Question Number	Answer	Mark
4	Award 1 mark for naming each phase of development. Any two from: <ul style="list-style-type: none"> • Planning (1) • Construction (1) • Completion (1) • Long term (operation) (1) • Demolition (1) Accept any other appropriate answer.	(2)

Question Number	Answer	Mark
5	<p>Award 1 mark for giving each way to reduce energy costs for lighting in a new school.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Low- energy lighting (1) • Movement control (1) • Turn off lights when not in use (1) • Maximise natural light (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
6(a)	<p>Award 1 mark for giving one use for rain harvested water in a building.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Flushing toilets (1) • Watering indoor plants (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
6(b)	<p>Award 1 mark for giving one reason for an overflow on the storage tank for harvested rainwater.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Allows excess water to be disposed of safely (1) • Stored water may not be used fast enough (1) • To prevent tank from overflowing (1) • To prevent damage to the fabric of the building (1) • Prevent flooding (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
7	<p>Award 1 mark for giving one reason for off-cuts of plasterboard are separated from other waste.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • The material needs specialist disposal (1) • The off-cuts can be recycled (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
8	<p>Award 1 mark for naming each component of a green roof, other than the plants.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Decking (1) • Waterproof membrane (1) • Soil/growing medium (1) • Insulation (1) • Drainage layer (1) • Filter sheet (1) • Protection layer (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
9	<p>Award 1 mark for giving each element of a building covered by Part L.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Heating (1) • Lighting (1) • Ventilation (1) • Cooling (1) • Hot water (1) • Fabric of the building (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"> • To encourage new employers (1) to regenerate the area/provide employment for local people made redundant (1) • To keep the buildings in use (1) to prevent vandalism/the area becoming run down (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
11	<p>B Needs less cutting D Reduced wastage</p>	(2)

Question Number	Answer	Mark
12(a)	<p>Award 1 mark for giving one way to prevent air leakage from doors.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Weather stripping (1) • Sound barrier (1) • Keep them shut when not in use (1) • Auto door closers (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
12(b)	<p>Award 1 mark for giving each reason for reducing air leakage from a building.</p> <p>Any two from:</p> <ul style="list-style-type: none"> • Preventing heat loss (1) • Reduce the passage for sound (1) • Reduce heating costs (1) • Improve energy efficiency (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
13(a)	<p>A linked response that makes reference to any one of the following points. Up to two marks for an explanation.</p> <ul style="list-style-type: none"> • Ground source heat recovery/geo-thermal (1) because the house has a large garden to lay out pipework/locate a borehole (1). <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
13(b)	<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"> • Photovoltaic panels (1) because the panels are not in direct sunlight for much of the day due to the trees (1) • Wind turbine (1) prevent a steady flow of wind (1) • Air source heat recovery (1) because plant would need siting outside of the property (1) <p>Accept any other appropriate answer.</p>	(4)

Section B

Question Number	Answer	Mark
14(a)	<p>Award 1 mark for giving one method to prevent dust and debris from being deposited on the road to the front of the site by vehicles leaving the site.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Wheel cleaning (1) • Covering loads (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
14(b)	<p>Award 1 mark for naming one use that may have contaminated the sub-soil and will need specialist treatment.</p> <p>Any one from:</p> <ul style="list-style-type: none"> • Vehicle maintenance (1) • Diesel storage (1) <p>Accept any other appropriate answer.</p>	(1)

Question Number	Answer	Mark
14(c)	<p>A linked response that makes reference to any one 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"> • Ensure contractors have procedures for handling/disposing of materials (1) to prevent pollution/risk to health of operatives (1) • Keep proper records of materials handled and disposed of (1) to provide an audit trail to confirm correct procedures have been followed (1) • Authorities know who is transporting hazardous materials (1) to enable monitoring to ensure compliance with regulations (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 an explanation.</p> <p>Any one from the following explanations:</p> <ul style="list-style-type: none"> To gauge public opinion (1) to assist the developer in promoting their proposals (1) To seek ideas of what the community wants (1) to enable some or all to be incorporated in the design (1) <p>Accept any other appropriate answer.</p>	(2)

Question Number	Answer	Mark
16	<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"> Quick form of construction reducing time on-site (1) which minimises the impact on the natural environment / on wildlife (1) Prefabricated form of construction (1) which will reduce the amount of on-site waste (1) Allows for a large amount of thermal insulation to be incorporated (1) which will reduce the ongoing energy requirements of the building (1) <p>Accept any other appropriate answer.</p>	(4)

Question Number	Indicative content	Mark
17	<p>Discussion on the benefits and drawbacks, to the community, of the development of these two sites. The discussion should be based on the materials provided within the scenario and should be benefits and drawbacks to the local community.</p> <p><u>Greenfield benefits:</u></p> <ul style="list-style-type: none"> Providing land for needed housing Located near to main road to the town centre Allows flexibility within design Able to keep green areas within the development Site has good views across the town 	(8)

- Will create a development on the edge of the town allowing easy access to both urban and natural development.

Greenfield drawbacks:

- Loss of greenfield
- Loss of natural habitats / disruption of habitats
- Existing properties will look out onto the new development and lose their views
- Will put pressure on the existing road and services
- Community services may become under pressure
- Urban sprawl.

Brownfield benefits:

- Will provide a number of new community facilities
- It's close to the existing town centre
- The industrial use will move out of town.

Brownfield drawbacks:

- Existing residents will lose their homes and move from their community
- Potential increase in traffic
- Loss of trade to existing businesses
- Increase the number of people in this area of town.

Level 3 model response:

The town is required to build a number of new houses to meet current demand. To build a large number of properties suitable sites need to be found and this is likely to require the use of greenfield sites. The site selected has a number of advantages.

The site is located on a main road running directly to the town centre. This will make access for construction easy and will provide a good link for the new development for residents to access the new development and the local town.

Building on a greenfield site allows the architects to develop an imaginative design that will create a pleasant place to live and will allow for green spaces to be included in the design. These will provide areas for recreation for families and children.

The photograph shows that there are likely to be pleasant views from the new housing site towards the town, which will allow the residents who move there to have a pleasant view making it a nice place to live.

The drawback with building on site 1 is that it will create urban sprawl with the loss of greenfield space and the potential loss of natural habitats and wildlife.

	<p>Existing houses on the edge of the town will lose their views of the green space. Pressure may also be put on local community services and roads due to the increase of residents.</p> <p>Building on site 2 will create a number of new facilities that will benefit the local community and provide a place to socialise, meet friends and have a good time.</p> <p>The site is close to the town centre so should be easy to get to and close to transportation links. It is also a benefit to the local community to move the industrial businesses out of the town centre to build more community based facilities.</p> <p>The brownfield site being redeveloped will have many negative impacts on the local community.</p> <p>The development requires a number of residents in the housing to be demolished to be rehoused in neighbouring towns. This will take them out of their local community where they know people and may have family living nearby who may not be being rehoused.</p> <p>The existing industrial use of the site will create traffic movements, but these may significantly increase with the new development and attract people to the area, causing traffic congestion and local pollution that will impact on the local community's quality of life. The influx of people may also cause noise and other nuisance as a site that was probably used during working hours will be a buzz of people accessing the bars and cinema.</p> <p>The businesses attracted to the new development may take trade from existing businesses causing local businesses to go out of business and for local people to lose their jobs. Other areas of the town could also become run down.</p>	
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Level	Descriptor	Marks
0	No rewardable material	0 marks
1	A few points identified, or one point described in some detail. 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 situation in the question. The learner shows a basic understanding of sustainability.	1-3 marks
2	Some points identified, or a few points described. 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.	4-6 marks
3	Range of points described, or a few points explained in depth. 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.	7-8 marks

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Llywodraeth Cynulliad Cymru
Welsh Assembly Government

