L2 Lead Examiner Report 1801

January 2018

Level 2 BTEC First in Construction & Built Environment

Unit 11: Sustainability in Construction (21635E)

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your learners at: www.pearson.com/uk

January 2018
Publications Code 21635E_1801_ER

Grade Boundaries

External assessment

The suite of 'next generation' NQF BTECs include an element of external assessment. This external assessment may be through a timetabled paper-based examination, an onscreen, on demand test or a set-task conducted under controlled conditions.

What is a grade boundary?

A grade boundary is where we 'set' the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade (Distinction, Merit, Pass and Level 1 fallback).

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries - this means that they decide what the lowest possible mark should be for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries ensures that a learner who receives a Distinction grade next year, will have similar ability to a learner who has received a Distinction grade this year. Awarding grade boundaries is conducted to make sure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in externally assessed question papers

Each exam we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries year on year because then it wouldn't take into account that a paper may be slightly easier or more difficult than the year before.

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

Unit 11: Sustainability in Construction 21635E

Grade	Unclassified	Leve1 Pass	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Boundary Mark	0	11	21	31	41

Introduction

This report has been written by the Lead Examiner for BTEC Construction and the Built Environment Unit 11 – Sustainability in Construction. It is designed to help you understand how learners performed overall in the exam. For each question there is a brief analysis of learner responses. You will also find some examples of learner responses at a range of different marks. We hope you will find this will help you to prepare your learners for future examination series.

General Comments on Exam

This was the eighth examination for this unit, and overall the paper produced a range of responses.

It is noticeable that some learners did not attempt all the questions; however, learners did appear to manage their time effectively and appeared to be able to complete the paper in the allotted time. There did not appear to be evidence of rushed work towards the end of the paper. Therefore, where questions were not answered this may have been due to learners not having the knowledge to provide a response.

The more demanding questions require learners to apply their knowledge in response to sustainability issues related to a range of construction scenarios. It was evident from the responses to some questions that learners had limited knowledge of sustainability in relation to construction. Learners may have some prior learning in respect of environmental and sustainability issues, but it is important that learners are taught sustainability in the context of construction covering the lifecycle of a development and the full range of topics covered in the unit specification. For example, learners appeared to have limited knowledge and understanding of timber frame construction and rainwater harvesting.

Learners would also benefit from being taught examination skills and techniques as often they did not appear to have read the question properly. This resulted in questions not being answered using an appropriate methodology. Where questions required learners to 'give' many provided extended responses where only naming or a short response is required. Learners should be familiar with the command verbs to be able to effectively answer questions that require them to 'describe', 'explain', 'discuss' and 'compare'. Learners need to provide a response that answers the question and not just repeat information from either the question or the scenario in Section B. Some responses to Question 17 identified information provided in the scenario. Learners did not go on to discuss the advantages and disadvantages of building on the two sites to the local community.

Section A

Question 1

A multiple choice question that required the identification of two reasons for using triple glazing.

Targeted Specification Area: Learning Aim B1

Q1: Many learners were able to identify both of the correct answers 'Reduce heat loss' and 'Reduce noise transmission'.

Question 2

This question required learners to give purposes of methods of reducing pollution on construction sites.

Targeted Specification Area: Learning Aim A2.4

Q2(a): Learners were unable to give a correct response to this question. Learners were required to state the purpose of settlement tanks. The correct response is 'to separate solid particles from liquids'.

Q2(b): A number of learners provided a correct response to the purpose of light shading. Frequent responses were 'reducing light pollution or prevent light shining on neighbours'.

Question 3

A multiple choice question that required the identification of two ways of reducing exhaust fumes from construction plant.

Targeted Specification Area: Learning Aim B1

Q3: Many learners were able to identify both correct responses 'Servicing' and 'Regular maintenance'.

Question 4

This question assessed learners' knowledge of the phases of development.

Targeted Specification Area: Learning Aim A1.1

Q4: A number of learners were able to name at least one phase of development other than design. Frequent responses were 'Planning' or 'Construction'.

Question 5

This question required learners to have an understanding of reducing the energy used for lighting.

Targeted Specification Area: Learning Aim B1

Q5: Many learners were able to identify at least one way of reducing the energy used for lighting and a number of learners were able to identify a second way. Frequent responses included 'low energy lighting', 'movement control' and 'turning lights off when rooms are not in use'.

Question 6

This question required learners to have a knowledge and understanding of rain water harvesting.

Targeted Specification Area: Learning Aim B4

Q6(a): Many learners were unable to provide a correct response to this question. The frequent correct response given by learners was 'flushing toilets'. A number of learners had the misunderstanding that water collected from rain harvesting can be used as drinking water.

Q6(b): Many learners were able to identify one reason for an overflow on the storage tank for collecting rain harvested water. The most frequent reason was 'to prevent flooding'.

Question 7

This question required learners to have an understanding of why waste plasterboard has to be separated from other waste.

Targeted Specification Area: Learning Aim B5

Q7: Few learners were able to give a correct response. The presence of gypsum in plasterboard means that toxic gas can be given off if it is disposed of in landfill with other waste without special precautions being taken. The most frequent correct response given was 'recycled'. Plasterboard manufacturers provide a recycling service.

1 mark example:

7 Give **one** reason why off-cuts of plasterboard are separated from other waste on a construction site.

Plaster Board is Seperated from other waste because it can be recycled.

Question 8

This question required learners to have an understanding of green roof technology.

Targeted Specification Area: Learning Aim B4

Q8: Very few learners were able to provide at least one correct response to this question. Learners were required to name components other than plants and grass. The most frequent correct response given was 'growing medium – soil'.

2 marks example.

8 Plants and grass can be components of a green roof. 2

Name **two** other components of a green roof.

1 A non-permable sheet to stop the water ~~fro~~ from entering the roof into the building

2 earth ~~fro~~ for the plants to ~~grow into~~ grow in

Question 9

This question required learners to state two elements of buildings that are covered by Part L of the building regulations.

Targeted Specification Area: Learning Aim B1

Q9: Learners were not required to have a detailed knowledge of Part L, but to demonstrate an awareness of the parts of a building that Part L relates to. Some learners were able to provide one correct response, with a few learners able to provide two responses. The frequent responses were 'Heating' and 'Lighting'.

2 marks example:

9 Part L of the Building Regulations is about saving energy in buildings.

Give **two** elements of buildings covered by Part L.

1 Heating

2 Ventelation

Question 10

This question required learners to have an understanding of preventing areas becoming run down through empty buildings and unemployment.

Targeted Specification Area: Learning Aim A3.1

Q10: Learners were required to explain one reason why incentives would be given for companies to rent vacant factory space. Some learners were able to identify a reason, but few learners were able to provide a linked response that explains the reason. An acceptable response would be 'Keep buildings in use to prevent the area becoming run down'.

2 marks example:

10 A factory has closed down and its workers have been made redundant. Development grants are being offered to new companies to rent parts of the factory.

Explain **one** reason why companies are being offered grants to rent the vacant space.

So that the building does not become develict and it will give the people who were made redundant a chance for another job. Also companis could update the building.

(Total for Question 10 = 2 marks)

Question 11

The question requires learners to have an understanding of the use of modular dimensions.

Targeted Specification Area: Learning Aim B1

Q11: A multiple choice question that required the identification of two reasons for using modular dimensions. Many learners were able to identify the two correct responses 'needs less cutting' and 'reduced wastage'.

Question 12

This question assessed the learners' understanding of reducing heat loss in buildings.

Targeted Specification Area: Learning Aim B1

Q12(a): The question required learners to identify one way of preventing air leakage from doors. Many learners provided a correct response, with frequent responses being 'weather stripping' or 'auto door closers'.

1 mark example:

12 Sustainable buildings are designed to have minimal air leakage.

(a) Give **one** way of preventing air leakage from doors.

(1)

By using weather striping around them to keep heat in and the elements out.

Q12(b): This question required learners to give two reasons for reducing air leakage from buildings. A number of learners were able to give one response, but fewer were able to provide two responses. Frequent responses were 'reduce heat loss' and 'reduce heating bills'.

2 marks example:

(b) Give **two** reasons for reducing air leakage from buildings.

(2)

1 To reduce heat loss within buildings

2 To Improve energy ~~effie~~ efficiency for heating

Question 13

This question required learners to demonstrate knowledge and understanding of alternative energy technology.

Targeted Specification Area: Learning Aim B2/B3

Q13(a): Learners were required to explain a suitable form of alternative energy that could be used in a given situation. This required an understanding of different forms of alternative energy technology to be able to select a suitable form. A small number of learners were able to identify 'ground source heat recovery' with a smaller number being able to give a linked explanation 'because the house had a large garden to layout underground pipework'.

2 marks example.

(a) Explain the source of renewable energy that could be used for the bungalow.

(2)

The owner could consider having 'ground heating this is used by having pipes under ground and will be naturally heated by the ~~the~~ ground

Q13(b): This question followed on from question 13(a) and required learners to explain two forms of alternative energy that would not be suitable for the given situation. A larger number of learners were able to identify at least one unsuitable form of alternative energy with some learners also able to provide a linked explanation for one and in a few cases both unsuitable forms of alternative energy. Acceptable responses were 'photovoltaic panels' with a linked response 'panels would not be in direct sunlight for much of the day due to the trees' and 'wind turbine' with a linked response 'because the trees would prevent a steady flow of wind'.

2 marks example.

(b) Explain **two** sources of renewable energy that are unlikely to be suitable for the bungalow.

(4)

1 Firstly Solar pannels because they require being mounted on the outside of the roof and the trees will block the Sunlight.

2 Secondly wind turbines because they require being mounted on the outside of the building and the trees will mean that they stop any wind power coming towards the building.

SECTION B

Question 14

This question was scenario-based and required learners to have a knowledge and understanding of dealing with waste during construction site activities.

Targeted Specification Area: Learning Aim A2.3

Q14(a): Some learners provided a correct response. The most frequent correct response being 'wheel washing'. Many learners appeared to have difficulty in providing a response. Learners appeared unable to assimilate what the question was asking. Some learners provided a response of 'road sweeping'. This is an incorrect response as the question is about reducing mud being transferred to the road.

Q14(b): Many learners provided a correct response. The most frequent response being 'diesel storage'.

1 mark example:

(b) Give **one** use of Site 2 that may have contaminated the sub-soil so that it requires specialist treatment.

(1)

the ~~only~~ underground diesel stoge tanks may have contaminated the area.

Q14(c): Learners were required to explain two reasons for why waste disposal contractors are licensed. A number of learners were able to identify one reason and some were able to identify two reasons. Very few learners were able to give a linked response that explained one of the reasons. Correct responses could have included 'Ensure contractors have procedures for handling materials' with the linked response 'to prevent pollution' and 'authorities know who is transporting hazardous materials' with a linked response 'to enable monitoring to ensure compliance with regulations'.

2 marks example – the example shows one correct linked response:

(c) Explain **two** reasons why waste disposal contractors are licensed.

(4) 2

1 To ensure that all waste is disposed safely and in the correct way as it could otherwise lead to fly tipping and pollution of other areas.

Question 15

This question was scenario-based and required learners to explain a reason why a developer may hold a public meeting during the early stages of design.

Targeted Specification Area: Learning Aim A3.2

Q15: A number of learners were able to identify a reason for holding the meeting, but fewer were able to provide a linked response. A suitable response would be 'to seek ideas of what the community wants' with a linked response 'to enable some or all to be incorporated in the design'. Some learners repeated part of the question 'to inform them of what is proposed', the question asks for one 'other' reason.

2 marks example:

Explain **one** other reason why the developer of Site 2 may hold a public meeting during the early stages of design.

So that the developer has Multiple of opinions on the stages of the design, so the developers will know what to do with the site.

(Total for Question 15 = 2 marks)

Question 16

This question was scenario-based and required learners to explain two reasons for using timber frame construction, other than timber being a renewable, recyclable and a low embodied energy material.

Targeted Specification Area: Learning Aim B2

Q16: A number of learners were able to identify one reason with some being able to identify two. A small number of learners were able to give linked responses. Acceptable responses were 'quick form of construction reducing time on-site' with a linked response 'which minimises the impact on the natural environment' and 'prefabricated form of construction' with a linked response 'which will reduce the amount of on-site waste'. Some learners repeated the information in the question that timber is renewable and recyclable.

4 marks example:

16 The first houses to be built on Site 1 will be a small estate of 40 detached properties constructed using structural timber frames. Timber is renewable, recyclable and a low embodied energy material. 4

Explain **two** other reasons why using timber frame construction can help sustainability.

1 Using timber frame means that it can be pre-fabricated which will reduce the amount of waste from cuttings as they can be done more accurately.

2 Timber framed houses are also much quicker to build and reduces the time that tools and machinery will need to be used for

Question 17

This question was scenario-based and required learners to demonstrate an understanding of building on brownfield and greenfield sites and how this may affect local communities.

Targeted Specification Area: Learning Aim A3/B1

Learners were required to discuss the benefits and drawbacks to the community of developing on a brownfield site and a greenfield site.

Most learners provided a response to this question and were able to draw out some relevant points from the scenario and identify if this was a benefit or drawback.

The mark scheme provides a range of points that could have been considered in the discussion of the benefits and drawbacks of each site.

The mark scheme also provides three descriptor mark bands by which the responses are assessed and awarded marks. The learner's application of understanding of sustainability in relation to the scenario is taken into consideration.

Learners should only use material that can be gained from the scenario and should not make assumptions where the scenario provides no basis for these.

Lower mark band learners are expected to identify a few benefits and drawbacks, with superficial/generic explanation, and show basic understanding of social and economic sustainability. The learner in the example below has identified some benefits and drawbacks, but has not discussed how these will affect the community.

For the mid mark band learners will provide some further discussion of the benefits and drawbacks relating them to the sites in the scenario. The response will show a good understanding of sustainability. The learner in the example below has identified some benefits and drawbacks, and provided some discussion on how these will affect the community.

For the higher mark band learners would be expected to provide a detailed discussion of the benefits and drawbacks relating to the sites in the scenario. The response will show a developed understanding of social economic sustainability. Learner responses should also be well balanced and cover a wide range of benefits and drawbacks.

The descriptors for the mark bands can be found at the end of the mark scheme.

Middle of Band 1 Descriptor Example (2 Marks)

17 Discuss the benefits and drawbacks to the community of the development of these two sites.

(8)

Benefits of site 1

It ~~being~~ is being build on a greenfeild site so it would be less business and nosie. The project would provided jobs for the local community.

drawbacks of site 1

It is being build on a greenfeild site what is bad because there will be less fields, woodland and country land lefted. Be less fields to farm on. Gets rid of noutrol trails and the great out doors.

Benefits of site 2

Is good because brownfield site are relycycling the land and build ~~...~~ new building where old building once ~~...~~ lied. The ~~...~~ Construction work will provide work for the local Community.

drawbacks of Site 2

It will be bussiness from the neigning buildings and roads what would make the area noise. The Sub-Soil is contaminated by Diesl fuel that would cost Money

Bottom of Band 2 Descriptor Example (4 Marks)

17 Discuss the benefits and drawbacks to the community of the development of these two sites.

(8)

For Site 1, the greenfield site, a beneft is that it is not going to have major disruption to residents or business as there isn't any on the site. whereas this is a drawback of site 2 as there is businesses and homes on it which would have to be moved.

Also for site 1 a there is a drawback of that the community would lose green land from it which is the farm land which may lead to a lack of local produce from the farms.

Site 2 does have a benefit of it being a re development of an area which will make it look nicer and also increase house prices in the surrounding areas.

Along with that site 2 would also be an active site ~~for~~ longer due to having to demolish what is already standing first which may cause disruption to the community for a ~~more~~ pro-longed period of time.

Band 3 Descriptor - There is no example.

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE