L2 Lead Examiner Report 2001

January 2020

L2 Qualification in Construction

Unit 11 – Sustainability in Construction

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Grade Boundaries

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 and Pass.

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external 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 is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each external assessment 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 for each test, because then it would not take into account that a test might be slightly easier or more difficult than any other.

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

Unit 11 – Sustainability in Construction

Grade	Unclassified	Level 1	Level 2		
		Pass	P	M	D
Boundary Mark	**0**	9	19	29	40

Introduction

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. It may be helpful to read this report in conjunction with the mark scheme for the examination. We hope you will find this will help you to prepare your learners for future examination series.

General Comments on Exam

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

It is noticeable that some learners did not attempt all of 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 life cycle of a development within the built environment and the full range of topics covered in the unit specification. For example, learners appeared to have limited knowledge and understanding of the characteristics of heat pumps.

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.

Section A

Question 1

A multiple choice question that required the identification of two sustainable timber based products.

Targeted Specification Area: Learning Aim B.2

Q1: Many learners were able to identify both of the correct answers 'Structural insulated panels' and 'Engineered joists'.

Question 2

This question required learners to state one reason why construction materials should be stored correctly.

Targeted Specification Area: Learning Aim B.5

Q2: Many learners were able to give a correct response. A frequent correct response was to 'prevent damage'.

Question 3

A multiple choice question that required learners to identify two natural insulation products.

Targeted Specification Area: Learning Aim B.1

Q3: Many learners were able to identify both correct responses 'Sheep's wool' and 'Flax'.

Question 4

This question required learners to have an understanding of social sustainability.

Targeted Specification Area: Learning Aim A3.1

Q4: Learners were required to give two reasons why there may be a large number of vacant buildings. Some learners were able to provide one response. Frequent responses were 'overdevelopment' and 'run down areas'.

Question 5

This question required learners to have an understanding reducing the distance travelled in the delivery of materials.

Targeted Specification Area: Learning Aim A2.4

Q5: Learners were required to give two ways that the total distance travelled by suppliers delivering to a building site can be reduced. Many learners were able to provide at least one response. Correct responses included 'bulk deliveries' and 'locally sourced materials'.

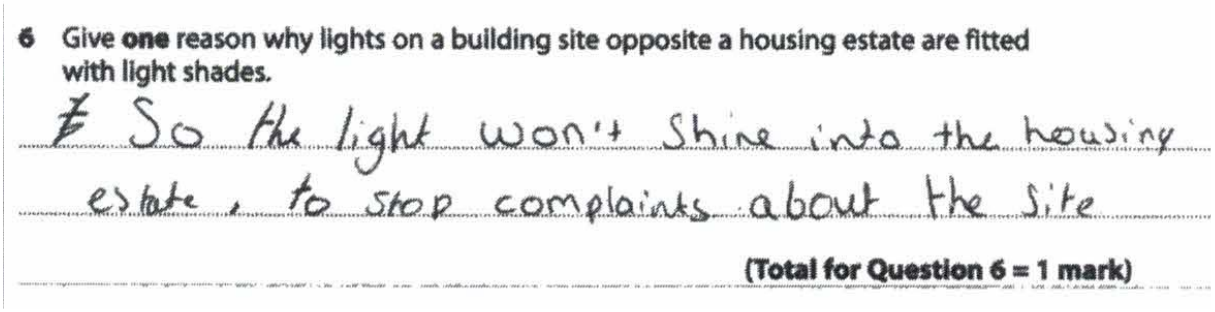
Question 6

This question required learners to have a knowledge and understanding of sustainable site practices.

Targeted Specification Area: Learning Aim A2.4

Q6: Learners were required to give one reason why lights on a building site opposite a housing estate are fitted with light shades. Correct responses included 'prevent light pollution' and 'prevent light shining into the houses'.

1 mark response:


6 Give **one** reason why lights on a building site opposite a housing estate are fitted with light shades.

So the light won't shine into the housing estate, to stop complaints about the site

(Total for Question 6 = 1 mark)

Question 7

A multiple choice question that required the identification of two features to reduce air leakage from a building.

Targeted Specification Area: Learning Aim B.1

Q7: Many learners were able to identify one correct answer and some provided both of the correct answers which are 'Automatic external door closers' and

'Draught sealing'.

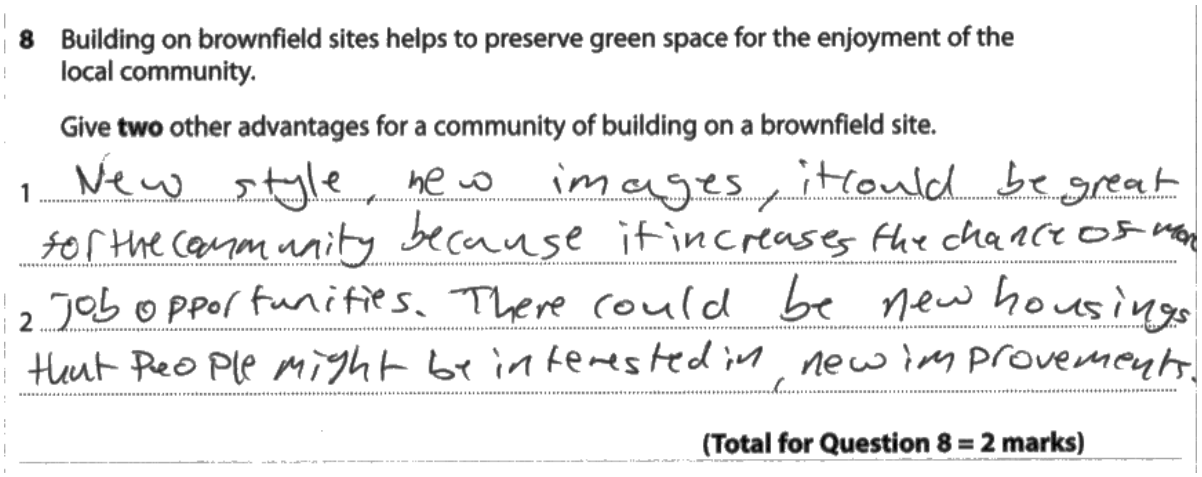
Question 8

This question required learners to have an understanding of the development of brownfield sites.

Targeted Specification Area: Learning Aim A3.1

Q8: Learners were required to give two advantages for a local community of building on a brownfield site other than the preservation of green space. Many learners gave responses that provided an advantage to a developer and not the community. These responses were incorrect and awarded no marks. Correct responses were those that provided an advantage to the community. Correct responses included 'regeneration', 'community facilities' and 'improving the visual amenity'.

2 mark response:



8 Building on brownfield sites helps to preserve green space for the enjoyment of the local community.

Give **two** other advantages for a community of building on a brownfield site.

1 New style, new images, it could be great for the community because it increases the chance of mo

2 Job opportunities. There could be new housings that people might be interested in, new improvements.

(Total for Question 8 = 2 marks)

Question 9

This question required learners to demonstrate an understanding of prefabrication.

Targeted Specification Area: Learning Aim A2.3

Q9: Learners had some understanding of how prefabrication can reduce on-site waste, but were not always able to provide one or two full explanations. Learners were able to identify that prefabrication was a 'factory process' or 'no on site cutting is required' and were not able to access all the marks available.

2 mark response:

9 Explain **two** ways that the use of prefabrication can reduce on-site waste.

1 Because there are no mistakes meaning none of the material is wasted

2 Because it isn't built on-site it means the energy from power tools hasn't been wasted so it has a low embodied energy.

(Total for Question 9 = 4 marks)

Question 10

This question assessed the learners' understanding of transporting waste materials.

Targeted Specification Area: Learning Aim A2.3

Q10: The question required learners to state one way waste material can be safely transported in skips without the risk of material falling out. Many learners provide a correct response of 'covering skips' or 'not overfilling'.

1 mark response:

10 State **one** way waste material can be transported safely in skips without the risk of it falling out.

use a cover over the top of the skip.

(Total for Question 10 = 1 mark)

Question 11

A multiple choice question that required the identification of two benefits of designing in a sustainable way.

Targeted Specification Area: Learning Aim A1.2

Q11: Many learners were able to identify one correct answer and some provided both of the correct answers which are 'Energy consumption is minimised' and 'Natural habitats are retained'.

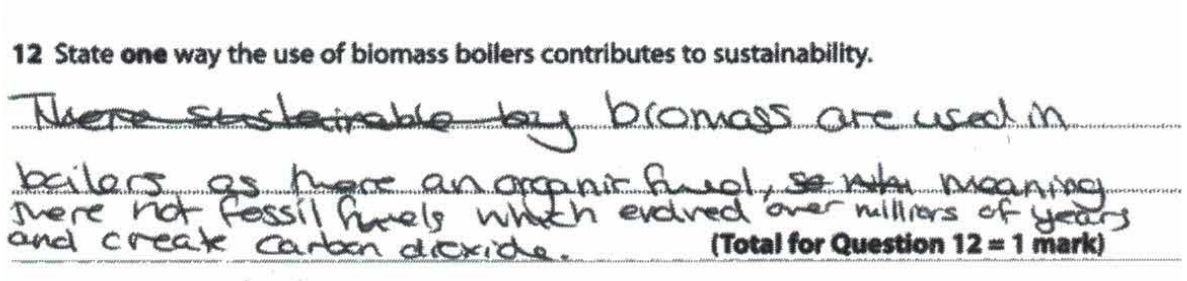
Question 12

This question assessed the learners' understanding of alternative energy.

Targeted Specification Area: Learning Aim B3.1

Q12: The question required learners to state one way the use of biomass boilers contribute to sustainability. Learners appeared to show a lack of understanding of the characteristics of biomass boilers and the fuel they use. Some learners did provide a correct response of 'use of non-fossil fuels' or 'use of renewable fuels'.

1 mark response:


12 State **one** way the use of biomass boilers contributes to sustainability.

There sustainable by biomass are used in boilers as there an organic fuel, so non meaning were not fossil fuels which evolved over millions of years and create carbon dioxide.

(Total for Question 12 = 1 mark)

Question 13

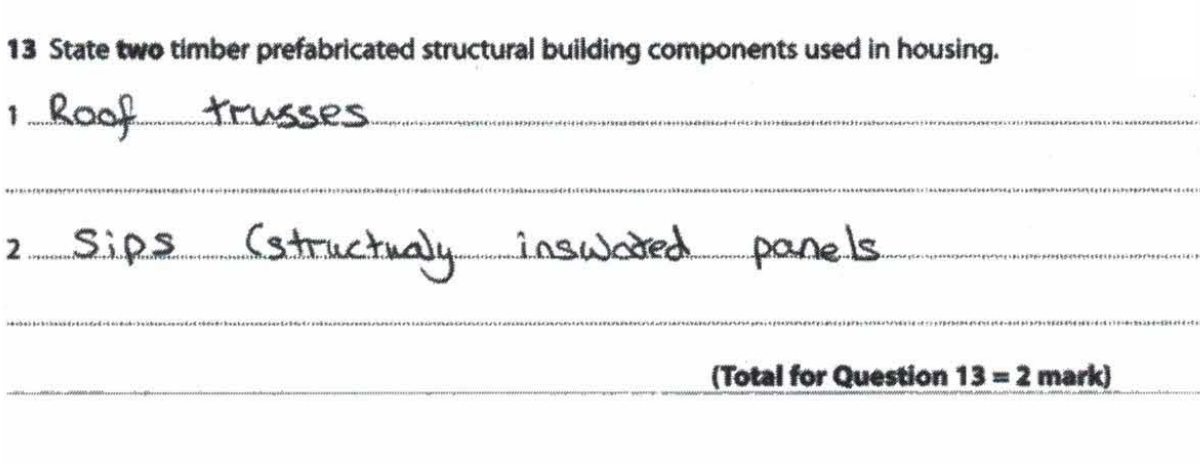
This question required learners to have an understanding of prefabricated structural components.

Targeted Specification Area: Learning Aim B.1

Q13: Learners were required to state two timber prefabricated structural building components used in housing. Many learners were able to state at least one and in some cases two correct responses were given. Appropriate responses are 'stairs',

'roof truss' or 'wall frame'.

2 mark response:


13 State **two** timber prefabricated structural building components used in housing.

1 Roof trusses

2 Sips (structualy insulated panels

(Total for Question 13 = 2 mark)

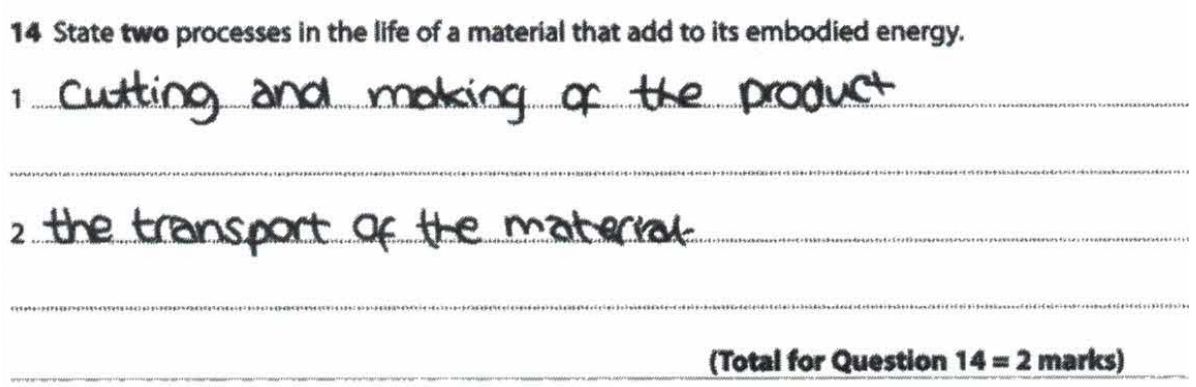
Question 14

This question required learners to have an understanding of the embodied energy within materials.

Targeted Specification Area: Learning Aim A2.5

Q14: Learners were required to state two processes in the life of a material that add to its embodied energy. Many learners were able to state at least one and in some cases two correct responses were given. Correct responses include 'mining the material', 'manufacture' or 'transporting'.

2 mark response:


14 State **two** processes in the life of a material that add to its embodied energy.

1 Cutting and making of the product

2 the transport of the material

(Total for Question 14 = 2 marks)

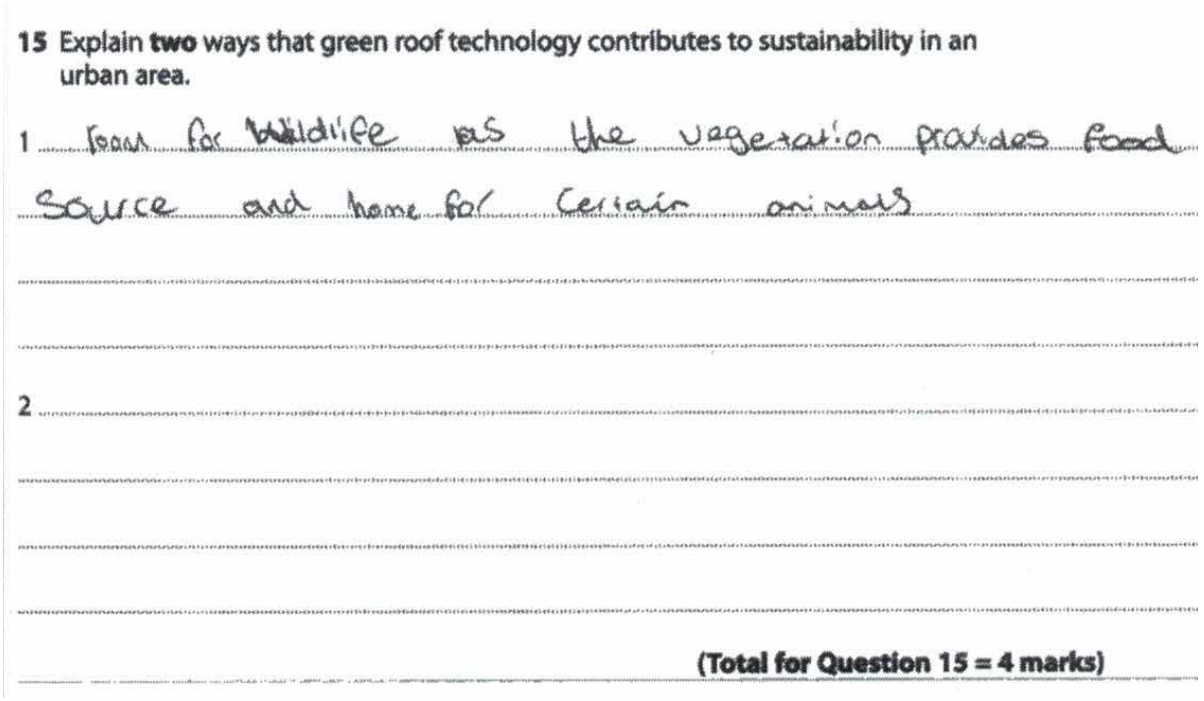
Question 15

This question required learners to have an understanding of sustainable technology.

Targeted Specification Area: Learning Aim B.4

Q15: Learners were required to explain two ways green roof technology contributes to sustainability in an urban area. Many learners did not appear to have an understanding of green roof technology and their understanding of a green roof appeared to be a roof with photovoltaic panels. The few learners that did show some understanding were able to identify a way, but were not able to provide a linked response to give an explanation. A correct explanation would be 'provides a habitat for wildlife as vegetation provides a food source'.

2 mark response:


15 Explain **two** ways that green roof technology contributes to sustainability in an urban area.

1 room for wildlife as the vegetation provides food source and home for certain animals

2

(Total for Question 15 = 4 marks)

SECTION B

Question 16

This question was scenario-based and required learners to demonstrate knowledge and understanding of mass transport.

Targeted Specification Area: Learning Aim B.1

Q16: Learners were required to state one form of mass transport other than buses. Many learners were able to provide a correct response. Frequent correct responses were 'trains' or 'trams'.

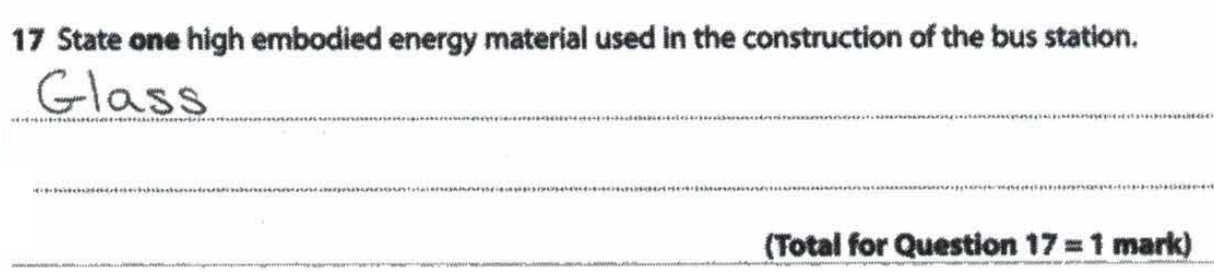
Question 17

This question was scenario-based and required learners to demonstrate an understanding of embodied energy within materials.

Targeted Specification Area: Learning Aim A2.5

Q17: Learners were required to state one high embodied energy material used in the construction of the bus station. Many learners gave a correct response of 'metal sheeting', 'glass' or 'PVCu'.

1 mark response:


17 State **one** high embodied energy material used in the construction of the bus station.

Glass

(Total for Question 17 = 1 mark)

Question 18

This question was scenario-based and required learners to demonstrate an understanding of alternative heat sources.

Targeted Specification Area: Learning Aim B.3

Q18: Learners were required to explain two reasons why a heat pump air conditioning unit can contribute to sustainability when being used to heat Building B of the bus station. Learners appeared to show a poor understanding of the topic and did not have knowledge of the characteristics of heat pumps. Therefore, learners were unable to provide correct responses. The mark scheme provides a range of suitable responses.

2 mark response:

The first explanation explains that energy is saved due to the heat gained from the outside air. No second explanation is given.

18 Explain **two** reasons why a heat pump air conditioning unit can contribute to sustainability when being used to heat **Building B** of the bus station.

1 Air can be used from outside by the air conditioning unit to be converted as a form of heating, which saves electricity having to generate heating.

2

(Total for Question 18 = 4 marks)

Question 19

This question was scenario-based and required learners to demonstrate an understanding of social sustainability.

Targeted Specification Area: Learning Aim B.3

Q19: Learners were required to explain one reason why CCTV at a train station cycle facility can promote an increased feeling of safety. Learners showed an understanding of the topic and many were able to identify a reason and a number of learners were also able to provide a linked response to provide an explanation. A frequent response was 'users feel safer because the area is being monitored by CCTV'.

2 mark response:

19 Explain **one** reason why CCTV at train station cycle facilities can promote an increased feeling of security.

People will feel safer if they know that it is being filmed.

(Total for Question 19 = 2 marks)

Question 20

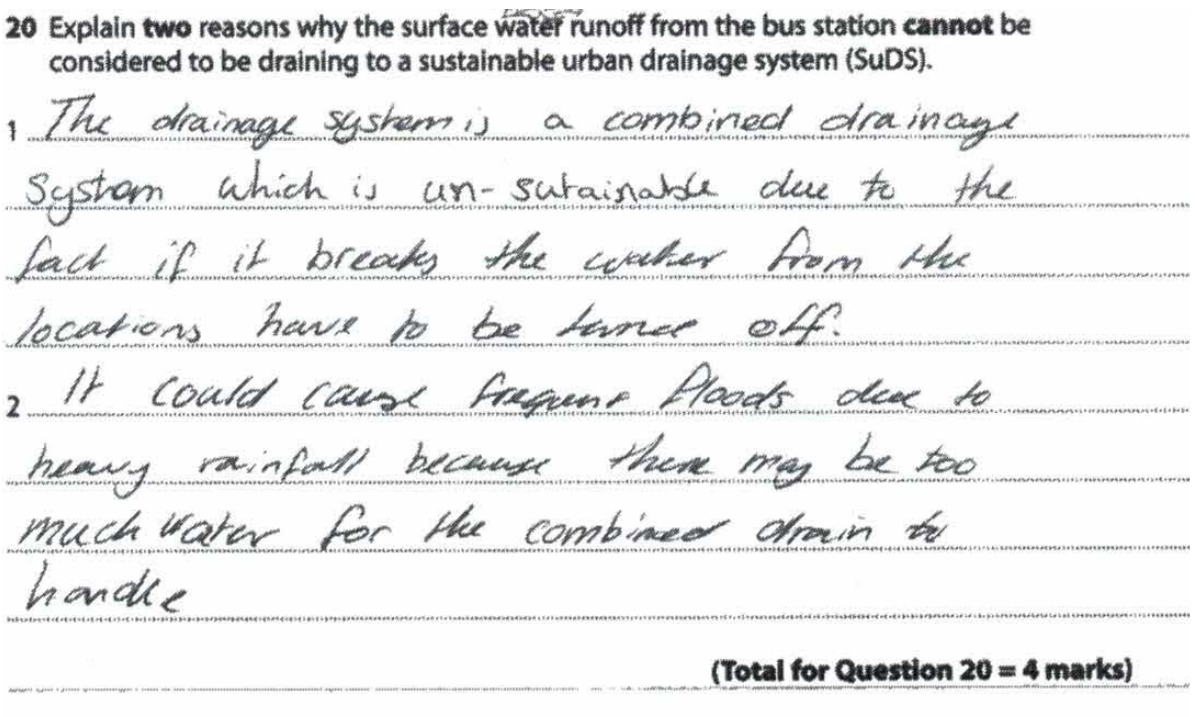
This question was scenario-based and required learners to demonstrate an understanding sustainable drainage.

Targeted Specification Area: Learning Aim B.4

Q21: Learners were required to explain two reasons why surface water run-off from the bus station cannot be considered to be draining to a sustainable urban drainage system. From the responses given learners appeared to have little understanding of combined drainage systems and were unable to explain why this cannot be considered sustainable. A range of explanations is given in the Mark Scheme.

2 mark example

The first explanation has no rewardable material. The second explanation identifies that there could be flooding and provides a linked explanation that this may be due to lack of capacity in the combined drainage system.



20 Explain **two** reasons why the surface water runoff from the bus station **cannot** be considered to be draining to a sustainable urban drainage system (SuDS).

1 The drainage system is a combined drainage system which is un-sutainable due to the fact if it breaks the water from the locations have to be turned off.

2 It could cause frequent floods due to heavy rainfall because there may be too much water for the combined drain to handle

(Total for Question 20 = 4 marks)

Question 21

This question was scenario-based and required learners to demonstrate an understanding of sustainable transport.

Q20: Learners were required to discuss how buses and cycling can contribute to sustainably in communities.

Most learners provided a response to this question although a number of learners provided no response to this question. Those learners that did provide a response were able to draw out some relevant points from the scenario that relate to sustainability.

The mark scheme provides a range of points that could have been considered in the discussion as to how buses and cycling can contribute to sustainability within communities.

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.

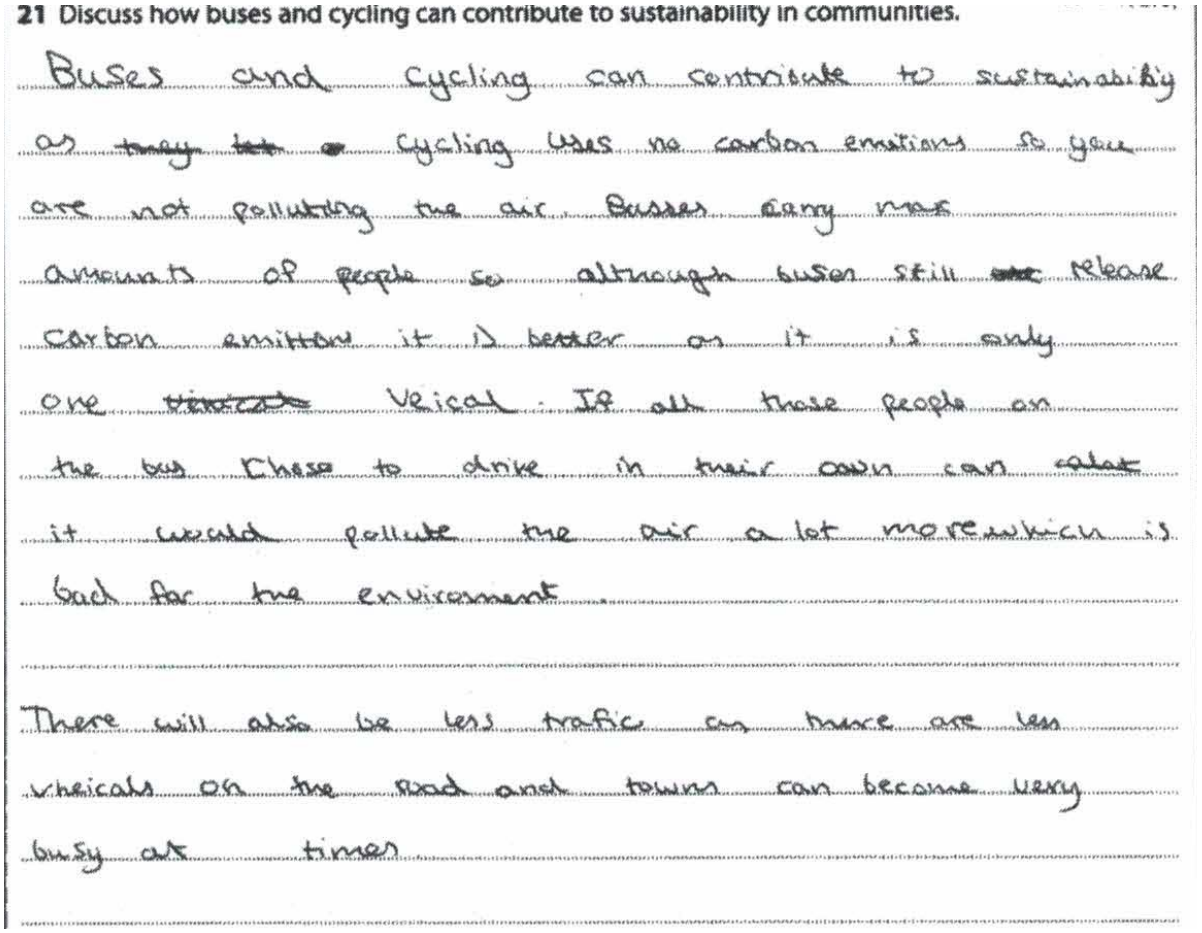
Learners should only use material that can be gained from the scenario and should not make assumptions where the scenario provides no basis for these.

Lower mark band learners are expected to identify a few ways that buses and cycling can contribute to sustainability, with some superficial/generic explanation, and show basic understanding of sustainability. The example response below identifies a limited range of points and very little discussion is provided.

For the mid mark band learners will provide some further discussion on how buses and cycling can contribute to sustainability. The response will show a good understanding of sustainability. The example response below has identified a range of points and provides some discussion.

For the higher mark band learners would be expected to provide a detailed discussion of how buses and cycling can contribute to sustainability. The response will show a developed understanding of sustainability. Learner responses should also be well balanced and cover a wide range of reasons. No examples within this mark band are available.

Mark band 1 response:



21 Discuss how buses and cycling can contribute to sustainability in communities.

Buses and cycling can contribute to sustainabiliy as ~~they~~ ~~be~~ a cycling uses no carbon emsions so you are not polluting the air. Busses carry mas amounts of people so although buses still ~~are~~ release carbon emitton it is better as it is only one ~~vehicle~~ veical. If all those people on the bus chose to drive in their own car ~~what~~ it would pollute the air a lot more which is bad for the enviroment.

There will also be less trafic as there are less vheicals on the road and towns can become very busy at times.

Mark band 2 response:

21 Discuss how buses and cycling can contribute to sustainability in communities.

~~Buses and contribute~~ As the population is increasing, so is our need to travel from A to B. This means more people are using cars (other vehicles). By introducing cycle paths or the ~~th~~ opportunity to hire bicycles, more people are willing to use bicycles/ cycle paths to get to A to B.
By making more bicycles readily available to hire more people are using public transport for a portion of their journey and ~~bik~~ bicycles for the rest, thus reducing the impact of pollution on our environment.
By signing up to the scheme, you are then able to go to a cycle area, hire a bicycle, go about your daily business then return the bicycle to either the same cycle point or ~~and~~ a different cycle point. This allows for ~~easy~~ convenience wherever you go.
In most cases, cycle paths are incorporated into existing footpaths or roads, this means hardly any work is required, ~~re~~ so there is barely any

environmental impacts. Not everyone can use these paths for their entire journey as they ~~cant~~ may need to travel a fair distance, so secure storage is provided for vehicles or belongings, thus encouraging more people to use bicycles

Buses also contribute towards sustainability. ~~as~~ They help sustainability because with more buses becoming available every day, less people are using their cars meaning, if a standard bus (carries 40 passengers) is full, thats a potential 40 cars/ other vehicles that are off the road. This means less pollution is being pumped into our already, over polluted atmosphere.

More people should start thinking about using ~~cycle~~ cycle paths or buses as it will ~~so~~ help sustain this beautful planet we call home.

(Total for Question 21 = 8 marks)

Summary

Following the review of learner responses to the examination paper the following recommendations are made:

- Learners should be taught the whole of the unit specification
- Learners should understand sustainability in relation to construction technology and practice
- Learners should carefully read each question to understand what is required before attempting their response
- Learners should be taught the form that a response should take when answering questions that ask for a 'description', 'discussion' or an 'explanation'.
- In responding to scenario-based questions that require a discussion or explanation learners are required to provide more than repeating parts of the scenario.

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