L2 Lead Examiner Report 1801

January 2018

Level 2 BTEC First in Construction & Built Environment

Unit 1: Construction Technology (21492E)

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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, at 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 is 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 assessment, because then it would not take accessibility into account.

Grade boundaries for this, and all other papers, are on the website via this link:
http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html

Unit 1: Construction Technology 21492E

Grade	Unclassified	Level 1 Pass	Level 2		
			Pass	Merit	Distinction
Boundary Mark	0	8	19	30	41

Introduction

This report has been written by the Lead Examiner for BTEC Construction and the Built Environment Unit 1 – Construction Technology. 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 example learner responses at Level 2 Pass, Merit and Distinction. We hope this will help you to prepare your learners for future examination series.

Introduction to the Overall Performance of the Unit

This was the seventh time that this paper has been sat and, overall, the paper produced a suitable range of responses. Lower ability learners often gave inaccurate or simplistic responses to questions and therefore gained limited marks. The more demanding questions provided learners with an opportunity to apply their knowledge in relation to construction scenarios and it was pleasing to see some extended answers that focused on the vocational context. In some cases, learners continued to provide responses which repeated information from the question stem or from previous question stems. In a number of other cases, candidates gave answers that appeared to reflect general knowledge rather than any detailed understanding of construction components or methods under consideration.

In preparation for future series, centres should focus on the analysis of the SAM (Sample Assessment Material) for this unit together with using this exam and its mark scheme as the basis for identifying and applying relevant more expansive solutions to the questions set. Learners should also be familiar with the full range of content from the unit specification and ought to be able to examine the application of these concepts in different scenarios. Learners should be able to sketch and label elements of construction as identified in the unit specification. The ability to recognise the demands of a question is also important. Candidates should understand the different responses required for different command words, for example, identify, explain or discuss.

Individual Questions

Question 1

This question was aimed at the understanding of the performance requirements required in buildings.

Targeted Specification Area: Learning Aim A.1

1a) Most learners correctly identified the correct answer of:

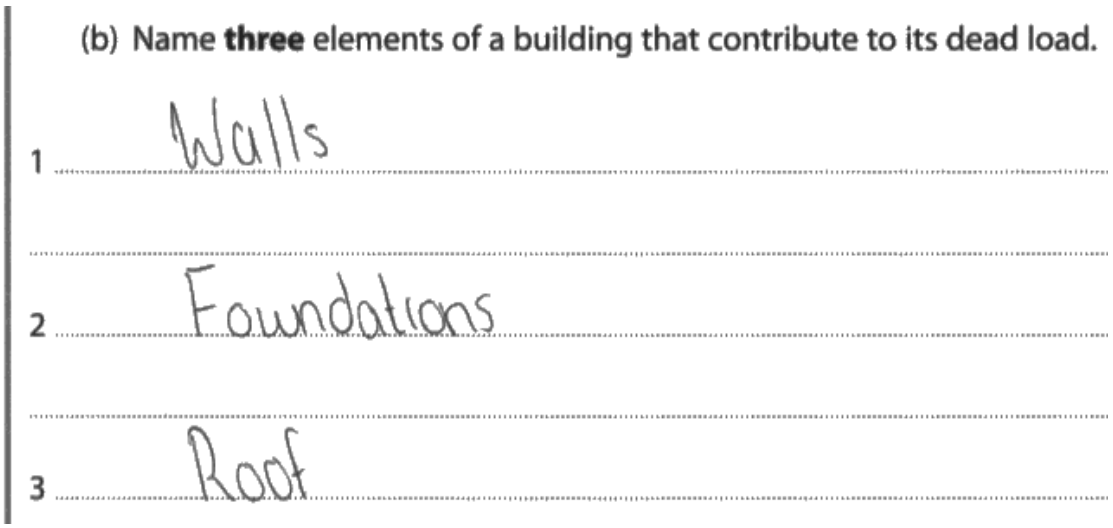
Strength-Compressive testing of concrete.

However, some learners were unable to link stability to measuring wall-tie spacing. Often learners incorrectly stated that stability was linked to locating underground services.

1b) Learners were required to name three elements of a building that contribute to its dead load. The marking scheme indicates a wide range of suitable responses. Most learners were able to identify at least one element that contributes to its dead load correctly with more able learners able to correctly identify three correct responses.

Some learners incorrectly identified types of live or dynamic loads such as snow, wind, people or furniture. In addition some learners were unable to interpret the term building 'element' and incorrectly stated materials used to construct a building.

3 marks response example:


(b) Name **three** elements of a building that contribute to its dead load.

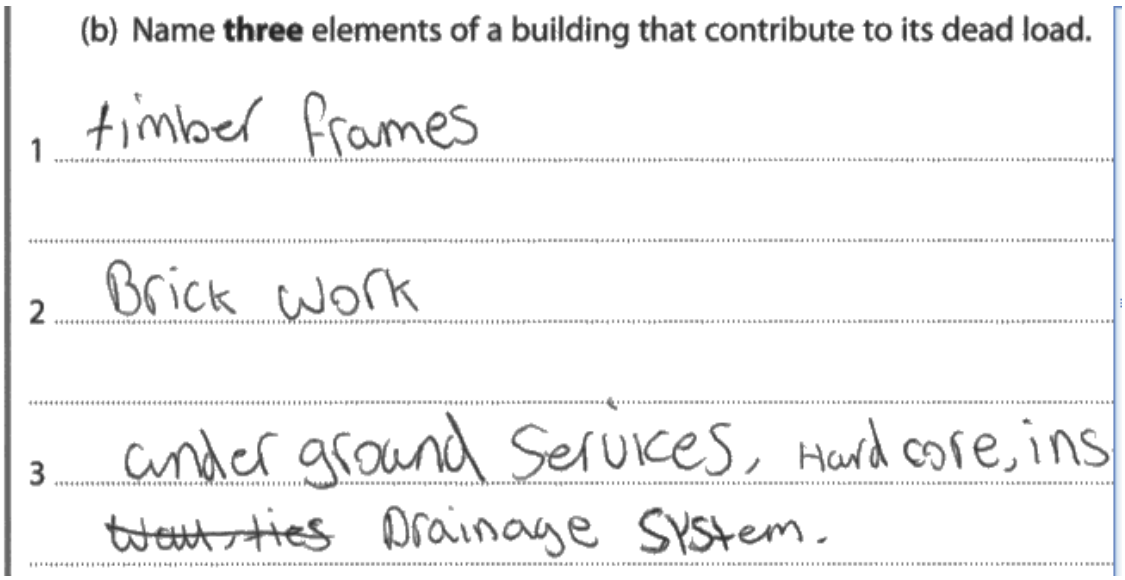
1 Walls

2 Foundations

3 Roof

Three correct elements of a building that contribute to its dead load have been named.

1 mark awarded:


(b) Name **three** elements of a building that contribute to its dead load.

1 timber frames

2 Brick work

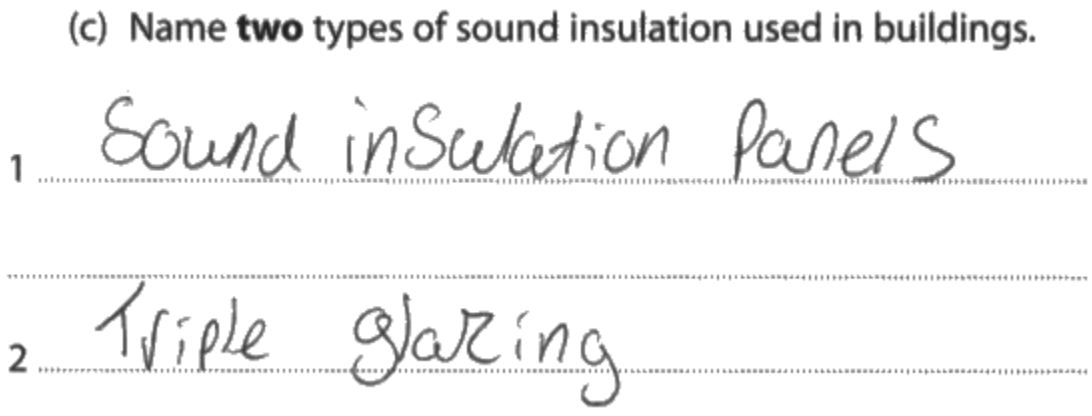
3 under ground services, Hard core, ins ~~Wall ties~~ Drainage System.

The first response is acceptable for 1 mark as the frame of a building structure is an appropriate response. The second and third responses are not building elements which contribute to a buildings dead load.

1c) Learners were required to name two types of sound insulation used in buildings.

The marking scheme indicates a range of suitable responses. Most learners were able to identify at least one type of sound insulation method with more able learners providing two acceptable responses.

2 marks response example:


(c) Name **two** types of sound insulation used in buildings.

1 Sound insulation Panels

2 Triple glazing

2 marks awarded for two acceptable responses.

1 mark response example:

(c) Name **two** types of sound insulation used in buildings.

1 Wall

2 carpet

The first response of wall on its own is not an acceptable response.

The second response of carpet is an acceptable response worth 1 mark.

1d) Most learners correctly identified the correct answer of:

A-External walls

D-Window openings

Some learners were unable to correctly identify that window openings was a location where weather resistance was required and incorrectly labelled skirting boards or partition walls as their respective answer.

1e) Learners were required to state one purpose of lead flashing on a chimney.

The marking scheme indicates that correct responses should be linked to the prevention of water penetration. Some learners incorrectly commented that the purpose of flashing was to allow water to run off a roof.

1 mark acceptable response:

(e) State **one** purpose of lead flashing used on a chimney.

So water can't get in.

Further 1 mark example response:

(e) State **one** purpose of lead flashing used on a chimney.

(1)

lead flashing is used to stop water give getting into the the roof throught the gap where they meet.

Question 2

This question was aimed at the sub-structure groundwork activity of foundations.

Targeted Specification Area: Learning Aim B.1

2a) Most learners correctly identified the correct answer of:

A-Trench fill

E-Strip

Some learners were unable to correctly identify that trench fill was a type of foundation and incorrectly labelled purlin as their answer.

2 b) Learners were required to explain why a raft foundation would be used for a low-rise building project. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of an advantage and 1 mark for a linked explanation of the stated advantage.

Learners were able to achieve 1 mark for the identification of an advantage but then often failed to understand the need to develop a linked explanation from it. This question was generally poorly answered by many learners. More able learners were often able to achieve 2 or 3 marks. Suitable linked correct responses may be seen in the marking scheme.

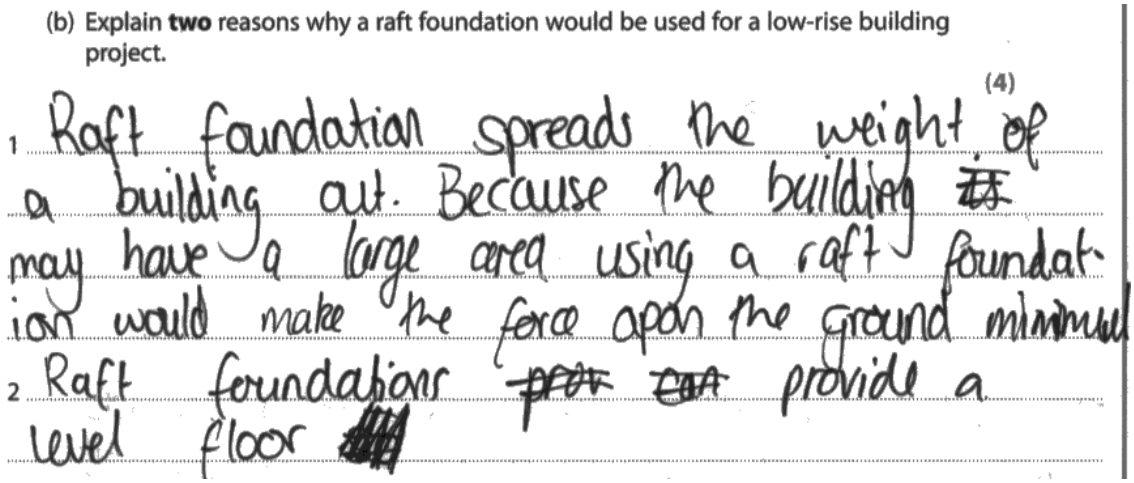
Acceptable 1 mark advantage responses included:

- due to settlement
- due to ground movement

Many incorrect responses included:

- cheaper, costs less
- stable, stability
- quick/quicker, easy/easier to construct
- it lasts longer

2 marks response example:


(b) Explain **two** reasons why a raft foundation would be used for a low-rise building project.

(4)

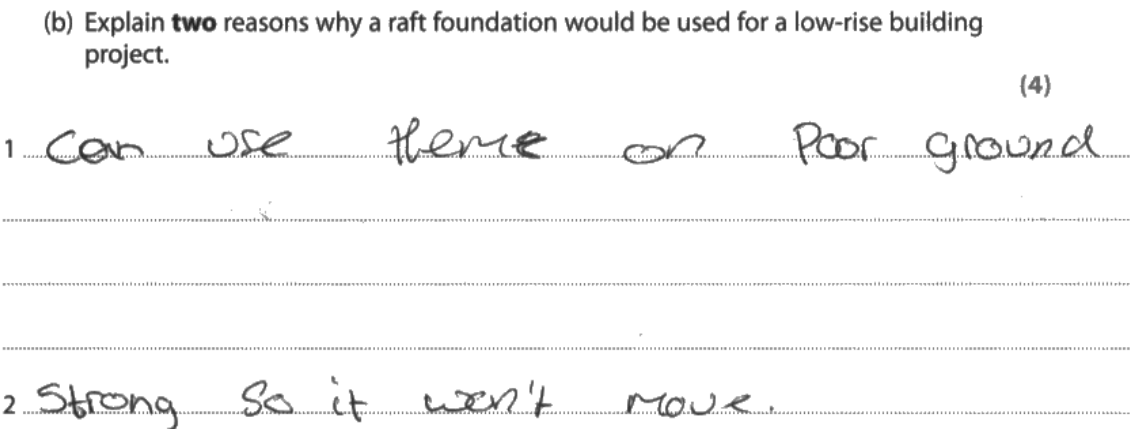
1 Raft foundation spreads the weight of a building out. Because the building ~~is~~ may have a large area using a raft foundation would make the force apon the ground minimal

2 Raft foundations ~~peer~~ ~~can~~ provide a level floor

The first response is an acceptable linked explanation, please refer to bullet point 1 of the marking scheme.

The second response is worth no marks.

1 mark response example:


(b) Explain **two** reasons why a raft foundation would be used for a low-rise building project.

(4)

1 Can use theme on Poor ground

2 Strong So it won't move.

The first response is worth 1 mark but does not included a linked response.

The second response is worth no marks.

Question 3

This question was aimed at the superstructure of walls.

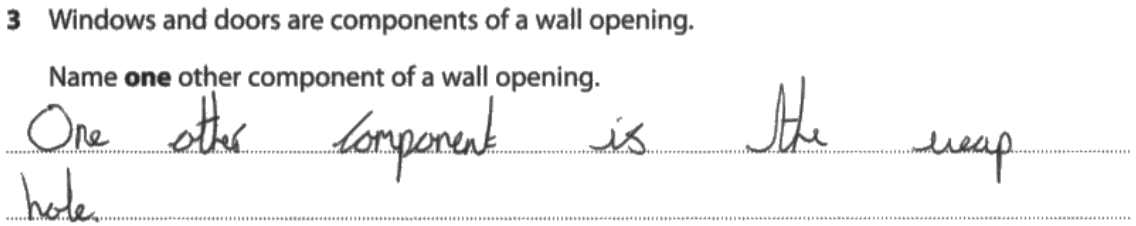
Targeted Specification Area: Learning Aim C.1

3 Learners were required to name one component of a wall opening, other than windows or doors.

Many learners were able to identify one component correctly.

Acceptable 1 mark responses may be seen in the marking scheme.

1 mark response example:



Question 4

This question was aimed at the sub-structure groundwork activity of foundations.

Targeted Specification Area: Learning Aim C.1

Learners were required to identify five parts of a solid ground floor.

This was satisfactorily attempted by most learners with many achieving at least 2 marks for parts (ii) insulation and (iv) concrete.

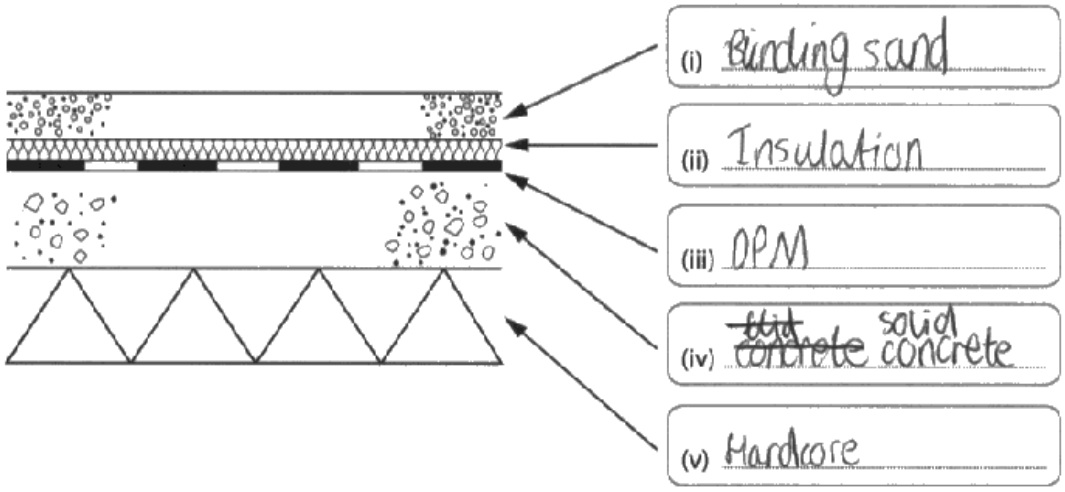
More able learners were often able to name 3 or 4 parts correctly.

The part of the cross-section which most learners struggled to identify correctly was part (i) screed, with many incorrectly stating was concrete.

4 marks response example:

4 Diagram 1 shows a section through a solid ground floor.

Label the **five** parts of the solid ground floor shown in the diagram.

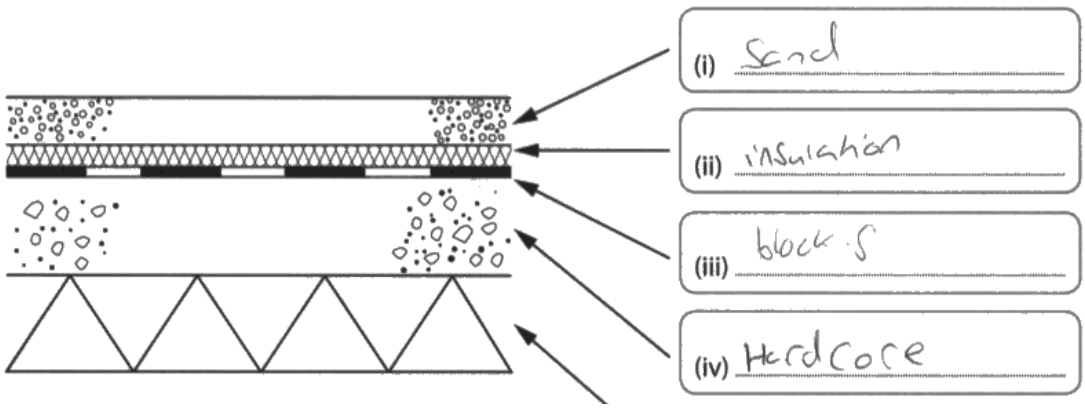


Four marks awarded for the correct responses of insulation, DPM, concrete and hardcore. No mark is awarded for part (iv) blinding sand.

2 marks response example:

4 Diagram 1 shows a section through a solid ground floor.

Label the **five** parts of the solid ground floor shown in the diagram.



Two marks are awarded for insulation and hardcore.

Question 5

This question was aimed at aspects of common structural forms for low-rise construction.

Targeted Specification Area: Learning Aim A.2

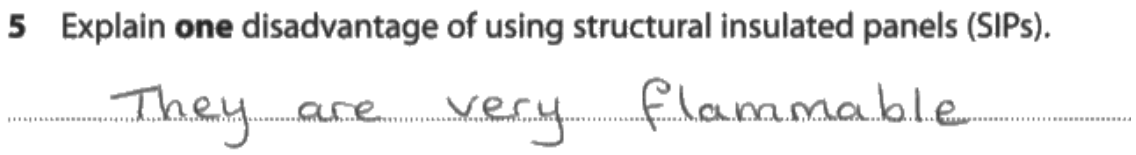
Learners were required to explain one disadvantage of using structural insulated panels (SIPs). The command verb used for this question is explain, therefore 1 mark was allocated to the identification of an advantage and 1 mark for a linked explanation of the stated advantage.

Learners were able to achieve 1 mark for the identification of an advantage but then often failed to understand the need to develop a linked explanation from it. More able learners were often able to achieve 2 or 3 marks. Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark advantage responses included:

- less fire resistant
- need a crane to place them
- lack of industry trust in the method
- lack of public trust in the method

1 mark response example:



This was an accepted 1 mark response as structural insulated panels (SIPs) are potentially less fire resistant than other methods of construction. No linked explanation was included.

Further 1 mark response example:

5 Explain **one** disadvantage of using structural insulated panels (SIPs).

You have to use a Crane to place them together.

This was also acceptable 1 mark response as structural insulated panels (SIPs), due to their size and weight, may require specialist plant and equipment to place the panels. No linked explanation was included.

Question 6

This question was aimed at superstructure of walls.

Targeted Specification Area: Learning Aim C.1

Learners were required to complete the four diagrams to show each type of brickwork pointing.

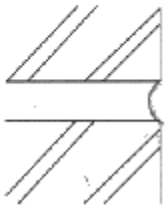
In recent exam series, learner responses to sketch type questions had improved, however, in this examination responses were often weak.

Centres should consult with the mark scheme to consider the sketch detail required for each diagram. Centres also need to understand that this type of question will continue to be included in future examinations.

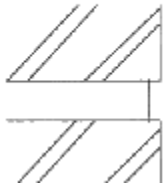
4 marks response example:

Complete the **four** diagrams to show each type of brickwork pointing.

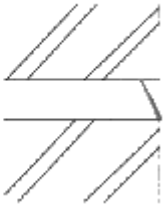
(i) Bucket handle/tooled



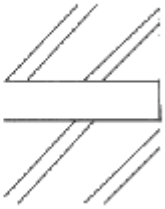
(ii) Recessed



(iii) Weathered



(iv) Flush



4 marks awarded as four types of brickwork pointing are correctly shown.

Question 7

This question was aimed at the sub-structure groundwork activity of floors.

Targeted Specification Area: Learning Aim B.2

Learners were required to explain two economic advantages of using a concrete beam and block floor for a low-rise building.

The command verb used for this question is explain, therefore 1 mark was allocated to the identification of an advantage and 1 mark for a linked explanation of the stated advantage.

Learners were again often able to achieve 1 mark for the identification of an advantage but then often failed to understand the need to develop a linked explanation from it. Many learners did not link their responses to the contextualised aspect of the economic advantages of this method. More able learners were often able to achieve 2 or 3 marks.

Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark advantage responses included:

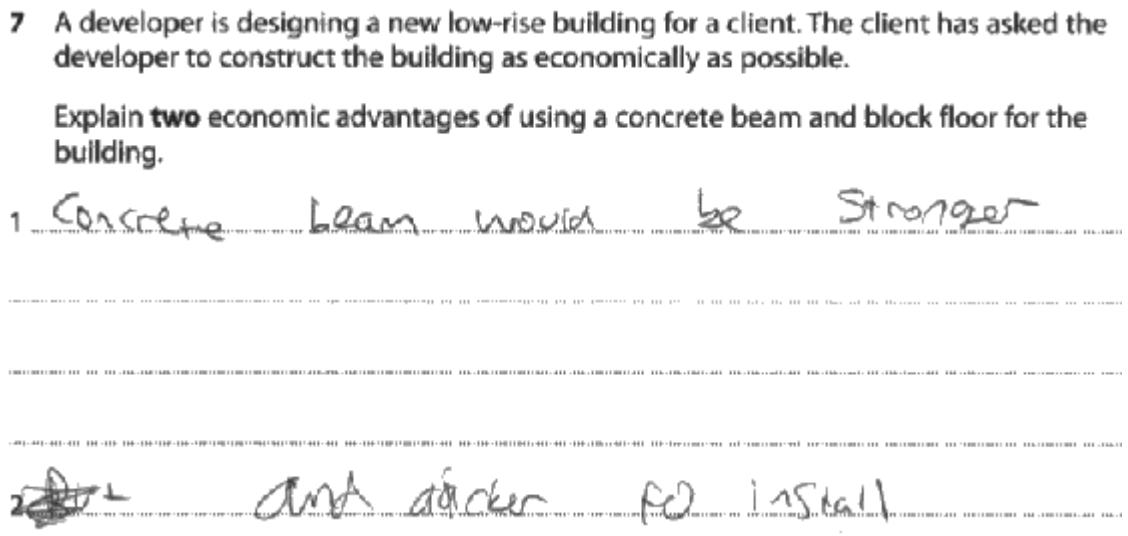
- reduced installation costs

- less labour costs
- less time to build/quicker to install

Responses which were not awarded marks included:

- cheaper/costs less
- quicker/quick/fast
- recyclable components
- its stronger
- its more sustainable

1 mark response example:


7 A developer is designing a new low-rise building for a client. The client has asked the developer to construct the building as economically as possible.

Explain **two** economic advantages of using a concrete beam and block floor for the building.

1 Concrete beam would be stronger

2 and cheaper to install

The first response is not an acceptable answer.

The second response is worth 1 mark as it is related to reduced installation time, please refer to bullet point 2 in the marking scheme. No suitable linked response was included.

Further 1 mark response example:

7 A developer is designing a new low-rise building for a client. The client has asked the developer to construct the building as economically as possible.

Explain **two** economic advantages of using a concrete beam and block floor for the building.

1 One advantage would be that it will last for a long period of time, so it won't take down.

2 Also it is easy to assemble you dont need to be trained to do it.

The first response is not an acceptable answer.

The second response is worth 1 mark as it is related to reduced installation time, please refer to bullet point 2 in the marking scheme. No suitable linked response was included.

Question 8

This question was aimed at the superstructure of walls.

Targeted Specification Area: Learning Aim C.1

Learners were required to explain two disadvantages, other than cost, of using solid brickwork partitions. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a disadvantage and 1 mark for a linked explanation.

This question was satisfactorily attempted by more able learners. Some learners were able to achieve 1 mark for the identification of a disadvantage but then often failed to understand the need to develop a linked explanation from it.

The most common identification mark achieved by learners was to identify that the blockwork was heavier to place or as a result of the additional loading, may require more support to the foundation.

Suitable linked correct responses may be seen in the marking scheme.

2 marks response example:

8 An architect is designing a new office building with internal partitions constructed of solid blockwork.

Explain **two** disadvantages, other than cost, of using solid blockwork partitions.

1 There would be a heavier dead load meaning stronger foundations will be needed.

2 Would be less environmentally friendly as more products are being used up to make the internal partitions.

The first response is worth 2 marks as it is related to bullet point 5 in the marking scheme.

A suitable linked response was included.

The second response is not an acceptable answer.

Further 2 marks response example:

8 An architect is designing a new office building with internal partitions constructed of solid blockwork.

Explain **two** disadvantages, other than cost, of using solid blockwork partitions.

1 They are harder to insall than other methods.

2 They weigh alot more than other methods making them less manuvarble.

The first response is worth 1 mark as it is related to bullet point 3 in the marking scheme. No suitable linked response has been included.

The second response is also worth 1 mark as it is related to bullet point 1 in the marking scheme. No suitable linked response has been included.

Question 9

This question was aimed at desk-based preconstruction work.

Targeted Specification Area: Learning Aim B.1

Learners were required to identify two desk-based activities that are a legal requirement of a construction project. The two correct answers were:

B- Writing method statements

D-Preparing risk assessments

Most learners were able to identify one type of legal requirement correctly with more able learners able to correctly identify both types.

Question 10

This question was aimed at the superstructure of a roof.

Targeted Specification Area: Learning Aim C.3

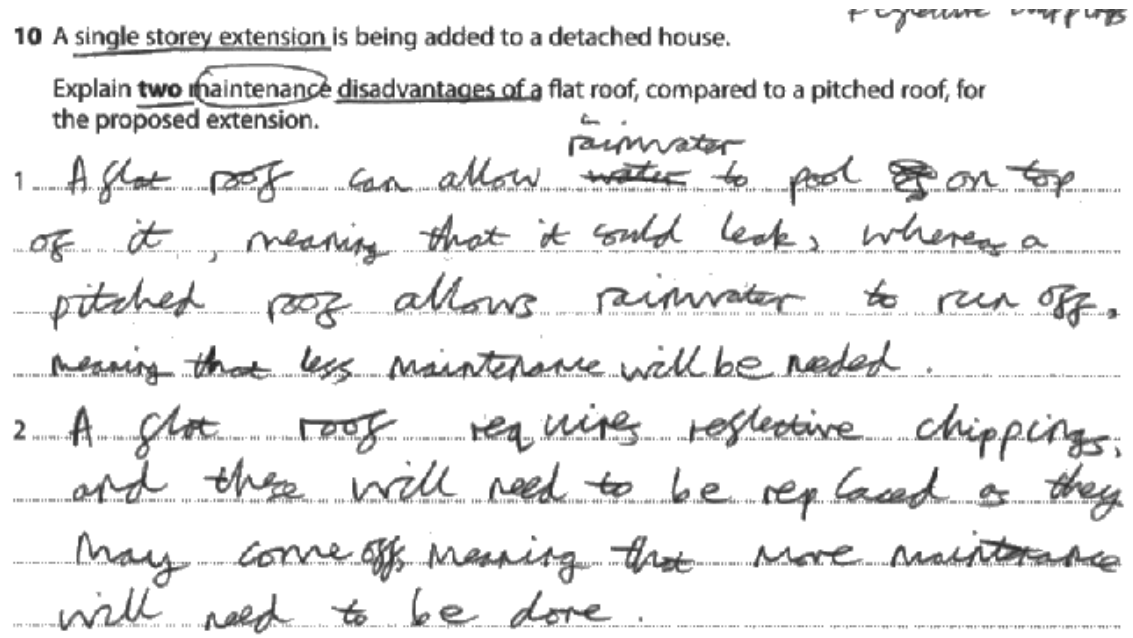
Learners were required to explain two maintenance disadvantages of a flat roof compared to a pitched roof for an extension to a detached house. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a reason and 1 mark for a linked explanation of the stated reason.

This question was satisfactorily attempted by learners. Some learners were able to achieve 1 mark for the identification of a reason but then often failed to understand the need to develop a linked explanation from it.

Most learners who achieved marks commented that a flat roof had poor water run-off and would puddle. More able learners then commented that this could lead to water leaks or structural damage to the roof.

Suitable linked correct responses may be seen in the marking scheme.

4 marks response example:



10 A single storey extension is being added to a detached house.

Explain **two** maintenance disadvantages of a flat roof, compared to a pitched roof, for the proposed extension.

1 A flat roof can allow rainwater to pool on top of it, meaning that it could leak, whereas a pitched roof allows rainwater to run off, meaning that less maintenance will be needed.

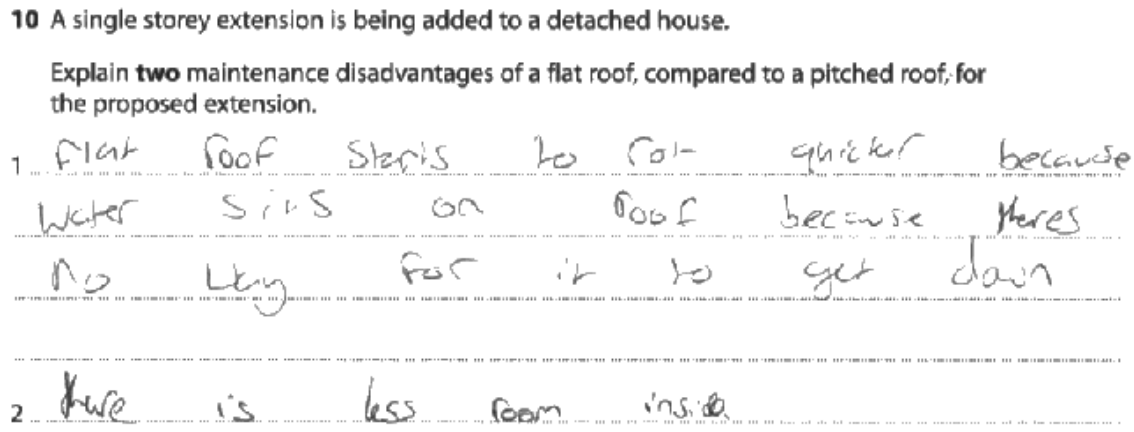
2 A flat roof requires reflective chippings, and these will need to be replaced as they may come off, meaning that more maintenance will need to be done.

The first response is worth 2 marks as it is related to bullet point 1 in the marking scheme.

A suitable linked response has been given.

The second response is also worth 2 marks as it is related to bullet point 6 in the marking scheme. A suitable linked response has been given.

2 mark response example:



10 A single storey extension is being added to a detached house.

Explain **two** maintenance disadvantages of a flat roof, compared to a pitched roof, for the proposed extension.

1 flat roof starts to rot quicker because water sits on roof because theres no way for it to get down

2 there is less room inside

The first response is worth 2 marks as it is related to bullet point 1 in the marking scheme. A suitable linked response has been given.

The second response is worth no marks as it does not relate to a maintenance disadvantage of a flat roof compared to a pitched roof.

Question 11

This question was aimed at sustainable methods of construction.

Targeted Specification Area: Learning Aim A.1

Learners were required to discuss the economic benefits of using sustainable methods for a new apartment block.

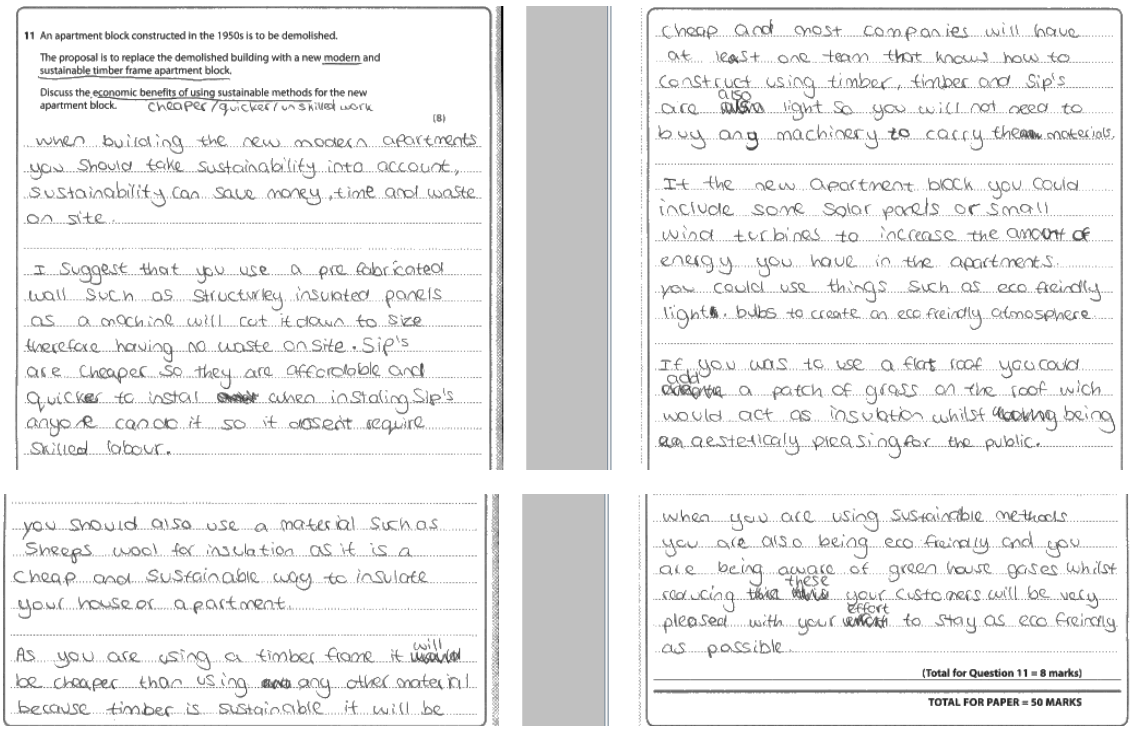
Marks were awarded dependent on the detail of points identified and described and as to whether the learner had made a balanced discussion of the economic benefits of a range of sustainable methods of construction.

Most learners attempted this question. Many achieved some marks. Learner marks were mostly in mark band 1 or at the lower end of mark band 2. Some high mark band 2 and occasional mark band 3 learner work was also seen.

The marking scheme gives a detailed list of the economic benefits of using different forms of sustainable methods. Few learners provided a balanced discussion of different methods, with sufficient detail, to achieve marks beyond those in mark band 2. Some learners focussed on the advantages and disadvantages of timber frame construction rather than the economic benefits of sustainable methods of construction.

The mark bands and level descriptors are included in the mark scheme for question 11.

5 mark example response:



11 An apartment block constructed in the 1950s is to be demolished.

The proposal is to replace the demolished building with a new modern and sustainable timber frame apartment block.

Discuss the economic benefits of using sustainable methods for the new apartment block. cheaper/quicker/unskilled work

(8)

when building the new modern apartments you should take sustainability into account, sustainability can save money, time and waste on site.

I suggest that you use a pre fabricated wall such as structurley insulated panels as a machine will cut it down to size therefore having no waste on site. Sip's are cheaper so they are affordable and quicker to instal when instaling Sip's anyone can do it so it doesnt require skilled labour.

you should also use a material such as sheeps wool for insulation as it is a cheap and sustainable way to insulate your house or apartment.

As you are using a timber frame it will be cheaper than using any other material because timber is sustainable it will be cheap and most companies will have at least one team that knows how to construct using timber, timber and Sip's are also light so you will not need to buy any machinery to carry them materials.

If the new apartment block you could include some solar panels or small wind turbines to increase the amount of energy you have in the apartments. you could use things such as eco freindly light bulbs to create an eco freindly atmosphere.

If you was to use a flat roof you could add a patch of grass on the roof wich would act as insulation whilst looking being aesthetically pleasing for the public.

when you are using sustainable methods you are also being eco freindly and you are being aware of green house gases whilst reducing these your customers will be very pleased with your effort to stay as eco freindly as possible.

(Total for Question 11 = 8 marks)

TOTAL FOR PAPER = 50 MARKS

Some points have been described concerning the use of a prefabricated frame and reduced wastage; quicker to install frames linked to reduced labour costs; a lighter structural form linked to less machinery being required; and the inclusion of solar panels linked to energy savings. Most points are relevant to the situation in the question, but the link to economic benefits was not always clear. The learner has demonstrated some good understanding of the economic benefits of using sustainable methods.

3 marks example response:

11 An apartment block constructed in the 1950s is to be demolished.

The proposal is to replace the demolished building with a new modern and sustainable timber frame apartment block.

Discuss the economic benefits of using sustainable methods for the new apartment block.

(8)

Firstly timber frame is aesthetically pleasing so the prices for sales may rise. it is cheaper to construct as it is a faster method of construction as it uses prefabrecated parts. using Sustainable methods for new buildings are often more expensive to buy but don't cost as much money to keep so a lot of people buy them. Sustainable recources like timber are also renewable sources so are cheaper and easier to get. Sustainable methods such as SIPS also reduce waste on site which also saves time and money. SIPS are also using scraps of wood which also makes it cheaper. A lot more buildings are required to have be built around Sustainability so so prices will go up. it has better heat insulation so that will save a lot of money due to less heat bills

A few points have been identified with respect to the timber frame being cheaper to construct as it is prefabricated; improved potential aesthetics linked to increased price sales; some reference is included to reduce wastage and better insulation opportunities. Points made are superficial/generic and not applied clearly to the situation in the question. The learner has demonstrated a basic understanding of the economic benefits of sustainable methods.

Summary

Based on their performance on this paper, learners should:

- Prepare for exams using all available material, including past papers and Sample Assessment Materials.
- Carefully read the questions before answering.
- Ensure that they have covered all aspects of the specification.

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