

Write your name here

Surname

Other names

Centre Number

Learner Registration Number

**Pearson BTEC
Level 1/Level 2
First Certificate**

Construction and the Built Environment

Unit 11: Sustainability in Construction

Tuesday 19 May 2015 – Morning

Time: 1 hour 15 minutes

Paper Reference

21635E

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and learner registration number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 50.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

SECTION A

1 Identify **two** sources of waste produced during the operation of a building.

- A Energy
- B Tree removal
- C Demolition
- D Groundworks
- E Leakage of water

(Total for Question 1 = 2 marks)

2 Localised flooding and depletion of finite resources need to be considered when planning sustainable developments.

Identify **two** other environmental issues that need to be considered when planning sustainable developments.

1

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2

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(Total for Question 2 = 2 marks)

3 Identify **two** ways to reduce exhaust emissions from construction traffic, plant and machinery.

1

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2

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(Total for Question 3 = 2 marks)



4 Waste materials from construction operations need to be transported off site safely.
Identify **one** reason for covering full waste disposal skips during transportation.

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(Total for Question 4 = 1 mark)

5 Identify **two** ways to reduce high carbon emissions created during the manufacture of high energy materials.

1

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2

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(Total for Question 5 = 2 marks)

6 Identify **two** site practices that can be used to minimise the effect of a construction project on the local community.

- A** Building in a conservation area
- B** Safe manual handling
- C** Developing on a greenfield site
- D** Maintaining a clean and tidy site
- E** Providing on-site parking facilities

(Total for Question 6 = 2 marks)

7 Explain how **one** form of site security could reduce the impact of a construction project on the local community.

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(Total for Question 7 = 2 marks)



8 Identify **one** reason why a developer needs a financial return on a development.

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(Total for Question 8 = 1 mark)

9 Identify **two** costs that need to be considered in the life cycle costing of a building.

1
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2
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(Total for Question 9 = 2 marks)

10 A school is considering replacing its current oil-fired boilers with biomass boilers.

(a) Identify **one** reason why biomass boilers contribute towards sustainable development.

(1)

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.....

(b) Explain **two** disadvantages of biomass boilers.

(4)

1
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2
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(Total for Question 10 = 5 marks)



11 Government regulation and voluntary codes set out requirements for comfort, health and conservation of fuel and power.

Identify **two** of these documents.

1

2

(Total for Question 11 = 2 marks)

12 Identify **one** way thermal mass within buildings can reduce energy requirements.

.....

(Total for Question 12 = 1 mark)

13 Thatch used for roofing is considered to be a sustainable material.

Identify **one** other sustainable natural roofing material.

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(Total for Question 13 = 1 mark)

14 Give **one** reason why specifying modular dimensions in the design of buildings reduces waste.

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(Total for Question 14 = 1 mark)



15 Explain **two** advantages of disposing of waste material by incineration.

1

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2

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(Total for Question 15 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS



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SECTION B: Apartment block developments

Read the source materials below and then answer the questions.



Building 1: 2014 Block of Apartments

This apartment block is part of a new development being built on a greenfield site and will provide social housing. The front of the building is south facing and faces on to a busy road with a pelican crossing providing safety for pedestrians.

The building's structure is being constructed using a timber frame with a brick outer skin. The roof is tiled. The building will conform to current Building Regulations and will incorporate sustainable technologies. The architect is specifying advanced window systems and an air source heat recovery system. The building is not going to be served with a mains gas supply.





Building 2: 1960s Apartment Block

The apartment block was constructed in the 1960s and faces an open green space with mature trees. The building was constructed using cavity block and brick walls with an open cavity. The roof is pitched and tiled with interlocking concrete tiles. Rainwater is disposed of using cast iron gutters and downpipes.

The building has suspended timber floors with little or no insulation.

The original windows were metal frames with single glazing and the entrance doors were timber with single glazing. Both the windows and the entrance doors have been replaced with uPVC double glazed units. Heating and hot water is supplied to each flat via gas-fired central heating utilising radiators and a hot water tank. The building has an unmetered direct cold water system installed using copper pipe.



16 Identify **two** site practices that will minimise the effect of the construction work on traffic in front of Building 1.

- A Road sweeping
- B Wheel cleaning
- C Recycling materials
- D Relocation of animal habitats
- E Protective fencing around trees

(Total for Question 16 = 2 marks)

17 Explain **one** way the green space in front of Building 2 can benefit its residents.

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(Total for Question 17 = 2 marks)

18 Air source heat recovery is being used to provide space heating to Building 1.

Explain **two** advantages of using an air source heat recovery system.

1

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2

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(Total for Question 18 = 4 marks)



19 Flow restrictors can reduce the use of mains water.

Describe how **two** other water efficient fittings can reduce the use of mains water.

1

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2

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(Total for Question 19 = 4 marks)





20 Compare the sustainability of Building 1 and Building 2 in their current state.

A large rectangular area with rounded corners, containing 25 horizontal dotted lines for writing.



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(Total for Question 20 = 8 marks)

TOTAL FOR SECTION B = 20 MARKS
TOTAL FOR PAPER = 50 MARKS





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