

Please check the examination details below before entering your candidate information

Candidate surname

Other names

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

Centre Number

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Learner Registration Number

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Tuesday 12 January 2021

Morning (Time: 1 hour 15 minutes)

Paper Reference **21635E**

**Construction and the Built
Environment**

Unit 11: Sustainability in Construction

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** characteristics of materials with high embodied energy.

- A Sustainable
- B High carbon content
- C Environmentally friendly
- D Local
- E Manufactured

(Total for Question 1 = 2 marks)

2 Name **two** natural insulation materials.

1

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2

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(Total for Question 2 = 2 marks)

3 Identify **two** reasons for categorisation of waste materials on a construction site.

- A To ensure a tidy site
- B To allow for correct disposal
- C To encourage fly tipping
- D To promote recycling
- E To allow onsite burning of waste

(Total for Question 3 = 2 marks)

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4 Give **two** ways that push type taps can help to reduce water use.

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2

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(Total for Question 4 = 2 marks)

5 Identify **two** ways that communities living in low-lying coastal areas may be affected by global warming.

- A Better weather
- B Increased property prices
- C Fewer high tides
- D Rising sea levels
- E Greater risk of flooding

(Total for Question 5 = 2 marks)

6 Give **two** ways that undeveloped land can be negatively affected by construction activity.

1

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2

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(Total for Question 6 = 2 marks)



7 Explain **one** way that disposing of waste construction materials to landfill can harm the environment.

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(Total for Question 7 = 2 marks)

8 Identify **two** benefits of sustainable design.

- A Waste will be sent to landfill
- B Green open spaces will be provided
- C Small cramped homes will be built
- D Animal habitats will be kept
- E High embodied energy materials will be used

(Total for Question 8 = 2 marks)

9 Give **two** ways that heating controls can improve the efficiency of a hot water and central heating system.

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(Total for Question 9 = 2 marks)

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10 Give **two** drawbacks of passive stack ventilation.

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(Total for Question 10 = 2 marks)

11 Timber is a sustainable material.

Give **two other** reasons why timber engineered joists contribute to sustainability.

1

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2

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(Total for Question 11 = 2 marks)

12 Give **two** reasons why small-scale wind turbines are not used in urban areas.

1

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(Total for Question 12 = 2 marks)

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13 Explain **one** way that spraying water on a demolition site will reduce pollution.

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(Total for Question 13 = 2 marks)

14 Explain **two** ways that construction work can help to regenerate a run-down seaside town.

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(Total for Question 14 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS

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SECTION B: Residential development

Read the source material and then answer the questions.



Building 1: 1900 Terraced house

Building 1 is a small end of terrace house built in 1900. The house faces directly on to the street with no front garden. At the rear of the property there is a small yard. There is no provision for off-street parking.

The house is built with solid brick walls and a traditional timber roof with a slate covering. The ground floor is constructed of suspended timber. The windows are vertical sliding sash and single glazing. The house was originally built with heating provided by open fires. When built in 1900 the house had no internal bathroom or toilet. A toilet was provided in the rear yard.

Some years ago an indoor bathroom and toilet were added and electric storage heaters installed. Little maintenance or upgrades have been carried out in recent years.

The house is located close to the town centre and is a short walk from a local park and a mainline railway station.





Building 2: 2020 Terraced house

Building 2 is a recently built end of terrace house. The house is on a housing estate being built on a brownfield site that was formerly a residential institutional facility. The site was not intensely developed and included areas of open space.

The developer seeks to build sustainable developments and considers sustainability through all stages of a development. Contributions are also being made by the developer to support local infrastructure and services. This development will take several years to complete.

The properties are being built using timber framed construction with a brick outer skin to the external walls. High thermal values are being achieved and energy requirements minimised.

The site will include landscaped areas and a pond as part of a Sustainable Urban Drainage System (SUDS).

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15 Segregation of waste materials and recycling are sustainable site practices.

Identify **two other** sustainable site practices that the developer of **Building 2** may use.

1

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2

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(Total for Question 15 = 2 marks)

16 Explain **one** reason why the use of local labour for **Building 2** may contribute to sustainability locally.

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(Total for Question 16 = 2 marks)

17 Explain **two** ways that the pond on the site of **Building 2** will contribute towards sustainability.

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(Total for Question 17 = 4 marks)



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18 Explain **two** reasons why timber frame construction used for **Building 2** will contribute to sustainability.

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(Total for Question 18 = 4 marks)

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19 Discuss how **Building 1** could be refurbished to improve its sustainability.

Dotted lines for writing the answer to Question 19.

(Total for Question 19 = 8 marks)

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

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