Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson BTEC Level 1/Level 2 First Certificate

Centre Number | | | | | | |

Learner Registration Number | | | | | | | | |

Tuesday 15 January 2019

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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Pearson

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** high embodied energy materials.

- ☒ **A** Straw
- ☒ **B** Steel
- ☒ **C** Sheep's wool
- ☒ **D** PVCu
- ☒ **E** Slate

(Total for Question 1 = 2 marks)

2 Give **two** benefits of building houses with their rear elevation facing south.

1 .....

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2 .....

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(Total for Question 2 = 2 marks)

3 Identify **two** components with low embodied energy.

- ☒ **A** Stone window sill
- ☒ **B** Glass window pane
- ☒ **C** Copper water tank
- ☒ **D** Wire wall tie
- ☒ **E** Timber door frame

(Total for Question 3 = 2 marks)

4 State **one** place where waste plasterboard can be sent for disposal to minimise the impact on the environment.

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(Total for Question 4 = 1 mark)

5 Give **two** ways that the use of modular dimensions can contribute to sustainability.

1 .....

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2 .....

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(Total for Question 5 = 2 marks)

6 State **one** way that people living in low-lying coastal areas may be affected by global warming.

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(Total for Question 6 = 1 mark)

7 State the type of pollution that will be reduced by the use of silencers on a construction plant.

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(Total for Question 7 = 1 mark)

8 Give **two** ways in which dedicated cycle routes (paths) encourage people to cycle.

1 .....

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2 .....

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(Total for Question 8 = 2 marks)

9 Give **two** ways that environmental damage may be caused following the loss of woodland.

1 .....

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2 .....

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(Total for Question 9 = 2 marks)

10 Describe **one** way that an area used for landfill waste can be regenerated.

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(Total for Question 10 = 2 marks)

11 Identify **two** physical forms of pollution caused by the construction process.

- ☒ **A** Hoardings
- ☒ **B** Carbon emissions
- ☒ **C** Dust particles
- ☒ **D** Road sweeping
- ☒ **E** Damping down

(Total for Question 11 = 2 marks)

12 Give **one** use, in new construction, for crushed brick and concrete from the demolition of an existing building.

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(Total for Question 12 = 1 mark)

13 State **two** pieces of information that a contractor may include in a project newsletter sent to residents when construction work starts.

1 .....

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2 .....

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(Total for Question 13 = 2 marks)

14 Give **two** economic reasons for spending money on flood defences.

1 .....

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2 .....

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(Total for Question 14 = 2 marks)

15 Explain **one** reason why sheep's wool is a renewably sourced material.

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(Total for Question 15 = 2 marks)

16 Explain **two** environmental advantages of building on brownfield sites.

1 .....

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2 .....

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(Total for Question 16 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS

SECTION B: Renovation

Read the source material below and then answer the questions.

Building 1 – Renovated Detached House

Building 1 is a 1950s detached house that has been renovated and remodelled to give it a more modern appearance. Before the work was done it was similar to the houses next to it. The existing house has been extended and its roof line has also been changed. The house is located in a quiet residential area.

The external walls have been insulated and are finished in a self-coloured render and timber cladding. The roof is covered with artificial slates and the windows have aluminium frames fitted with weather stripping and double glazing. The loft space has been insulated beyond the requirements of the Building Regulations.

The internal services and fittings have also been replaced and updated to meet current standards. Water saving fittings, energy efficient lighting and computer- controlled gas fired central heating have been installed.

The building has no sources of alternative energy and relies on mains electricity and gas. Rainwater from the roof is disposed of via soakaways.

The house does not have a garage, but several cars can be parked off the road on the driveway.

Building 2 – Unoccupied Flats

Building 2 is two blocks of one bedroom flats built in the 1950s. The flats are located close to the centre of a town where there is a shortage of housing. They are within walking distance of most amenities, including shops, doctors' surgery, leisure facilities and schools. The flats are currently unoccupied.

The flats are built using traditional masonry walls with facing brick and a block inner leaf with a cavity. The ground floors are solid concrete and the first floors are constructed of reinforced concrete. The windows have galvanised steel frames and are single glazed. The roofs are traditional pitched roofs with timber rafters and concrete interlocking tiles. The gutters and downpipes are cast iron and painted black. No improvements have been made to the external elements of the flats since they were built.

Improvements have been made to the inside of the flats. Bathrooms and kitchens were refitted 20 years ago. Water is heated by gas fired water heaters and the internal spaces are heated by gas fires and electric heating.

In front of the flats is a green area. A single street lamp provides lighting to the pathways at night. Anyone can access the common hallway. There is no off- street parking provided for the residents or their visitors.

17 Dual flush toilet cisterns save water.

State **one** other water saving fitting that could be in use in Building 1.

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(Total for Question 17 = 1 mark)

18 Explain the way dual flush toilet cisterns save water.

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(Total for Question 18 = 2 marks)

19 State **one** type of energy efficient gas boiler that could be in use in Building 1.

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(Total for Question 19 = 1 mark)

20 Explain **one** purpose of the weather stripping to the window frames of Building 1.

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(Total for Question 20 = 2 marks)

21 Explain **two** social issues that could result due to the flats in Building 2 being unoccupied.

1 .....

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2 .....

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(Total for Question 21 = 4 marks)

22 Explain **one** reason why the disposal of surface water to soakaways from Building 1 is sustainable.

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(Total for Question 22 = 2 marks)

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QUESTION 23 BEGINS ON THE NEXT PAGE

23 Discuss improvements that could be made to the Building 2 flats to make them sustainable homes.

(8)

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(Total for Question 23 = 8 marks)

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

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