

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

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Learner Registration Number

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Monday 3 June 2019

Afternoon (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 sustainable materials.

- A Low cost
- B Low carbon content
- C Short life expectancy
- D Lightweight
- E Low embodied energy

(Total for Question 1 = 2 marks)

2 Give **two** forms of pollution that may make living near a large construction site unpleasant.

1

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2

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(Total for Question 2 = 2 marks)

3 Identify **two** sources of waste produced during the construction process.

- A Excavation spoil from foundations
- B Out-of-date food
- C Building material packaging
- D Heating being left on while residents are at work
- E Leaving the television on standby

(Total for Question 3 = 2 marks)

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P 6 1 5 5 0 A 0 2 1 2

4 State **two** forms of construction technology that will reduce noise transmission within buildings.

1

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2

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(Total for Question 4 = 2 marks)

5 State **two** uses of timber from a demolition site.

1

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2

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(Total for Question 5 = 2 marks)

6 State **two** benefits to a community of a new swimming pool.

1

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2

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(Total for Question 6 = 2 marks)

7 Give **one** reason why notices are placed around a development site when planning permission has been applied for.

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(Total for Question 7 = 1 mark)

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8 Identify **two** ways of reducing the waste of mains water.

- A Installing water meters
- B Regular maintenance of equipment
- C Reporting procedures
- D Training plumbers
- E Rainwater harvesting

(Total for Question 8 = 2 marks)

9 Explain **two** ways grey water recycling can contribute towards sustainability.

1

2

(Total for Question 9 = 4 marks)

10 Identify **two** advantages of locally-sourced materials that contribute to sustainability in the community.

- A Local pollution is reduced
- B Limited range of materials
- C Transport costs are reduced
- D Reduced number of suppliers
- E Reduced competition for local business

(Total for Question 10 = 2 marks)

11 Give **two** reasons for making construction sites secure.

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(Total for Question 11 = 2 marks)

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12 State **two** stages in the life of a material that contribute to embodied energy, other than transportation.

1

2

(Total for Question 12 = 2 marks)

13 The use of alternative fuels and filters is one way to reduce exhaust fumes from plant and equipment.

State **one** other way to reduce these exhaust fumes.

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(Total for Question 13 = 1 mark)

14 Explain **two** ways the built environment can promote a feeling of safety in a shopping street after the shops have closed.

1

2

(Total for Question 14 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS



SECTION B: Restaurants

Read the source material below and then answer the questions.



Building 1 - Nineteenth-century Public House and Restaurant

Building 1 was built at the end of the nineteenth century using local materials. The single-storey part of the building to the left of the photograph was built at a later date. It is used as a public house. The building is located on a main road in a rural location. The building has a small garden and car park for its customers.

The two-storey building is built with solid masonry walls that have been painted externally.

The internal faces of the walls are plastered. The windows are single glazed and the frames are timber. The hipped roof has been traditionally pitched in timber with a clay tile external finish. There has been 100mm of thermal insulation added to the loft space. The building has a small cellar under part of the building for the storage of beer and other drinks. The ground floor above the cellar is constructed using timber joists and floorboards. The rest of the building has a solid floor finished with stone slabs laid on the ground.

Mains water is used for food preparation, washing up and customer toilets. Heating to the main bar and eating area is provided by a log fire. The property has mains gas and electricity supplies.

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Building 2 – Fast Food Restaurant

Building 2 is a fast food restaurant belonging to a popular chain of fast food restaurants. The restaurant is located on a retail park on the edge of a town. The retail park has good access to a main road. Opposite the retail park is a large residential estate.

A drive-through service is offered by the restaurant as well as an in-house service with both inside and outside seating for diners. Car parking is available for those using the in-house service and the retail units. The restaurant is very busy and is open 24 hours a day.

Like many similar fast food outlets, the building was constructed using prefabricated building techniques. Typically a new restaurant takes about five weeks on site to complete.

The building is served with all mains services, gas, electricity, water and sewerage. Wi-Fi is available for customers. Internal services include sustainable features such as LED lighting and photovoltaic panels to provide energy for lighting. Air source heat pumps recover heat from fridges and freezers to heat water.



15 State **one** way that the heat loss through the windows of Building 1 can be improved, other than by heavy fabric curtains.

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(Total for Question 15 = 1 mark)

16 State **one** reason why heat will be lost through the stone floor of Building 1.

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(Total for Question 16 = 1 mark)

17 Explain **two** potential social disadvantages impacting on residents who live near the restaurant in Building 2.

1

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(Total for Question 17 = 4 marks)

18 Explain **one** disadvantage of adding thermal insulation to the inner face of the walls of Building 1.

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(Total for Question 18 = 2 marks)

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19 Explain **two** reasons why a log fire can be considered sustainable.

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(Total for Question 19 = 4 marks)

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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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