

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 14 January 2020

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 ►

P63962A

©2020 Pearson Education Ltd.

1/1



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** sustainable timber-based products.

- A Plasterboard
- B Structural insulated panels
- C Engineered joists
- D Reconstituted slates
- E Rigid insulation board

(Total for Question 1 = 2 marks)

2 State **one** reason why construction materials should be stored correctly.

.....

.....

(Total for Question 2 = 1 mark)

3 Identify **two** natural insulation products.

- A Triple glazing
- B Steel
- C Clay bricks
- D Sheep's wool
- E Flax

(Total for Question 3 = 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



4 Give **two** reasons why there may be a large number of vacant buildings in an area.

1

.....

2

.....

(Total for Question 4 = 2 marks)

5 Give **two** ways that the total distance travelled by suppliers delivering to a building site can be reduced.

1

.....

2

.....

(Total for Question 5 = 2 marks)

6 Give **one** reason why lights on a building site opposite a housing estate are fitted with light shades.

.....

.....

(Total for Question 6 = 1 mark)

7 Identify **two** features used to reduce air leakage from a building.

- A Automatic external door closers
- B Mechanical extractors in kitchens
- C Double glazing
- D Draught sealing
- E Loft insulation

(Total for Question 7 = 2 marks)



8 Building on brownfield sites helps to preserve green space for the enjoyment of the local community.

Give **two** other advantages for a community of building on a brownfield site.

1
.....
.....

2
.....
.....

(Total for Question 8 = 2 marks)

9 Explain **two** ways that the use of prefabrication can reduce on-site waste.

1
.....
.....
.....

2
.....
.....
.....

(Total for Question 9 = 4 marks)

10 State **one** way waste material can be transported safely in skips without the risk of it falling out.

.....
.....

(Total for Question 10 = 1 mark)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



11 Identify **two** benefits of designing in a sustainable way.

- A Energy consumption is minimised
- B Natural habitats are retained
- C High embodied energy materials are used
- D All waste materials are sent to landfill
- E Green spaces are minimised

(Total for Question 11 = 2 marks)

12 State **one** way the use of biomass boilers contributes to sustainability.

.....

.....

(Total for Question 12 = 1 mark)

13 State **two** timber prefabricated structural building components used in housing.

1

.....

2

.....

(Total for Question 13 = 2 mark)

14 State **two** processes in the life of a material that add to its embodied energy.

1

.....

2

.....

(Total for Question 14 = 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



15 Explain **two** ways that green roof technology contributes to sustainability in an urban area.

1

.....

.....

.....

2

.....

.....

.....

(Total for Question 15 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

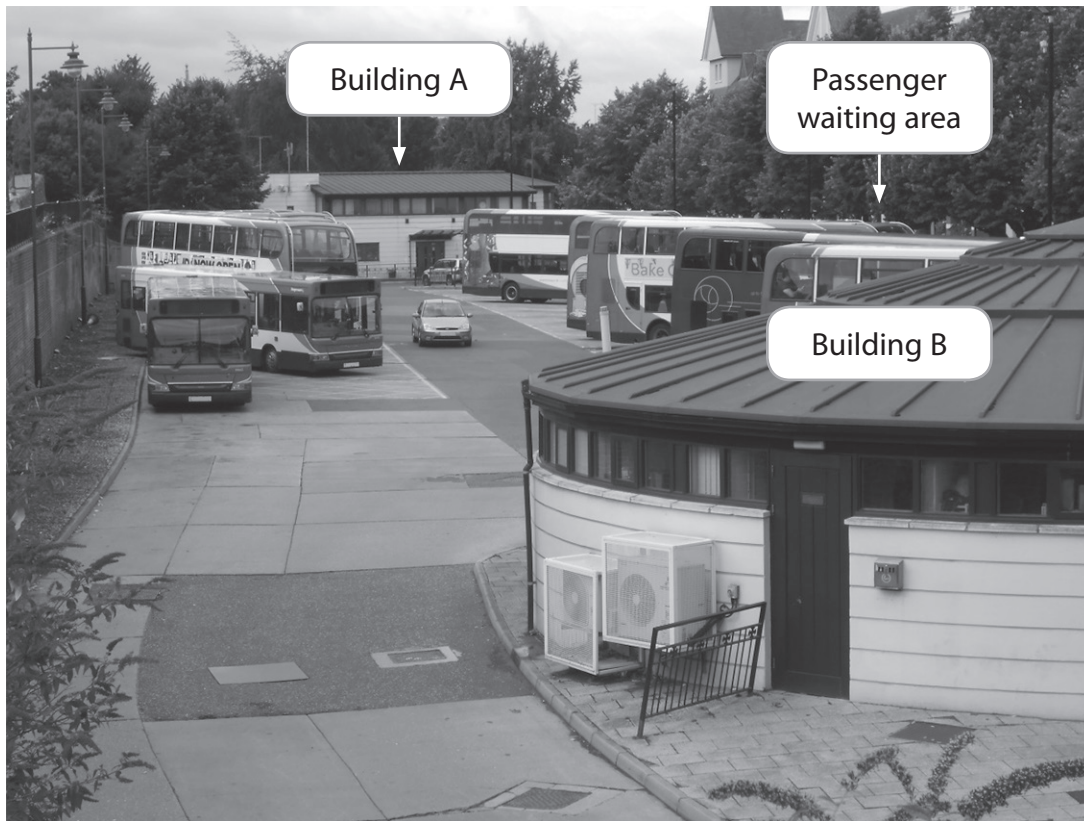
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



SECTION B: Sustainable Transport

Read the source material below and then answer the questions.



Transport 1: City centre bus station

The photograph above shows a city centre bus station.

There are glass bus shelters and seating for passengers to wait for their buses. These are not visible in the picture but are located between the row of buses and trees to the right of the picture.

There are two buildings at the bus station. Building A contains the bus company offices and staff restrooms. Building B houses an information desk and toilets for passengers.

The buildings were built 25 years ago. The walls are of masonry construction with a rendered external finish. The doors and window frames are timber with a stain finish. The windows are double glazed. The roofs are covered in metal sheeting to provide weather protection. The gutters and down pipes are PVCu. Building A is heated and cooled using air conditioning units.

The remaining areas of the bus station are paved and provide parking for the buses. During times of rainfall, a large quantity of water is drained from this area to a combined drainage system.

Some city centre roads that are bus routes have dedicated bus lanes and traffic signals triggered by approaching buses. Buses from park and ride sites on the outskirts of the city stop at the bus station.





Transport 2: Cycling

Cycling in town and city centres is being encouraged by local councils and environmental lobby groups. Town planners and designers are seeking to develop the built environment for the benefit of the cyclist and other initiatives are making bicycles more available to people.

The photograph above shows bicycles that are part of a cycle hire scheme. People sign up to the scheme. They are then able to take a bicycle from a cycle parking area, use the bicycle, and return it to the same or another cycle parking area.

Dedicated cycle paths are being created in many towns and cities. These may be part of an existing footpath or road. In some cases new dedicated cycle paths are built.

Some people have longer journeys, mainly by car or train. To help these people, secure storage is often provided so they can keep a bicycle at park and ride car parks and train stations. This enables people to complete the final part of their journey to work by bicycle. These facilities often have CCTV installed.

Leisure and sporting facilities are also being developed around the country that encourage cycling. These facilities may have a dedicated cycle track or off-road trails. Often at these facilities there is the option to hire a bicycle and larger facilities may incorporate a cycle shop and a repair workshop.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



16 State **one** form of mass transport other than buses.

.....

.....

(Total for Question 16 = 1 mark)

17 State **one** high embodied energy material used in the construction of the bus station.

.....

.....

(Total for Question 17 = 1 mark)

18 Explain **two** reasons why a heat pump air conditioning unit can contribute to sustainability when being used to heat **Building B** of the bus station.

1

.....

.....

.....

2

.....

.....

.....

(Total for Question 18 = 4 marks)

19 Explain **one** reason why CCTV at train station cycle facilities can promote an increased feeling of security.

.....

.....

.....

.....

(Total for Question 19 = 2 marks)



20 Explain **two** reasons why the surface water runoff from the bus station **cannot** be considered to be draining to a sustainable urban drainage system (SuDS).

1

.....

.....

.....

2

.....

.....

.....

(Total for Question 20 = 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



21 Discuss how buses and cycling can contribute to sustainability in communities.

Handwriting practice area with 20 horizontal dotted lines.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 21 = 8 marks)

TOTAL FOR SECTION B = 20 MARKS

TOTAL FOR PAPER = 50 MARKS

