

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

Friday 15 January 2016 – Morning Time: 1 hour 15 minutes	Paper Reference 21635E
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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** ways in which damage caused by fuel and oil spillage can be minimised on a construction site.

- A Bunded tanks
- B Site drainage
- C Settlement tanks
- D Absorbent mats
- E Filters and scrubbers

(Total for Question 1 = 2 marks)

2 Identify **two** ways in which locally sourced materials may contribute to sustainable construction projects.

- A Reduced heat loss
- B Reduced water use
- C Reduced local pollution
- D Reduced sound transmission
- E Reduced transportation costs

(Total for Question 2 = 2 marks)

3 Identify **two** low embodied energy materials.

- A Steel
- B Stone
- C Cement
- D Timber
- E Plastic

(Total for Question 3 = 2 marks)

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4 (a) Give **one** social issue that can arise from the over-development of an area.

(1)

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(b) Give **two** regeneration strategies that may be used to improve a run-down area.

(2)

1

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2

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(Total for Question 4 = 3 marks)

5 Name **two** natural insulation products.

1

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2

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(Total for Question 5 = 2 marks)

6 Give **two** disadvantages of solar hot water panels.

1

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(Total for Question 6 = 2 marks)

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7 Give **one** way in which damage to materials on a construction site can be prevented.

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(Total for Question 7 = 1 mark)

8 Pre-fabricated components are frequently specified by architects in the design of buildings.

(a) Name **one** pre-fabricated structural building component that may be used in housing.

(1)

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(b) Explain **two** ways in which waste is reduced by the use of pre-fabricated components.

(4)

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(Total for Question 8 = 5 marks)

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9 Give **two** ways in which excavated soil from the substructure of a building could be used.

1

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2

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(Total for Question 9 = 2 marks)

10 Developers incur costs when providing the infrastructure required for their projects.

Name **two** types of infrastructure required for a large housing project.

1

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2

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(Total for Question 10 = 2 marks)

11 New buildings are designed to incorporate sustainable technologies.

(a) Name **two** materials from which sun-screens can be made.

(2)

1

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2

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(b) Give **one** benefit of constructing a building to face south.

(1)

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(Total for Question 11 = 3 marks)



12 An architect is designing a housing development on a site that has existing mature trees, hedgerows and other planting.

Explain **two** ways in which the architect can ensure the loss of trees, hedgerows and planting is minimised.

1

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2

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(Total for Question 12 = 4 marks)

TOTAL FOR SECTION A = 30 MARKS

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SECTION B BEGINS ON THE NEXT PAGE.



SECTION B: Designing Infrastructure for Sustainability

Read the source materials and then answer the questions.



Location 1

Mainline Railway Station

This mainline railway station is located in a residential area close to the town centre of a small, rural university town. A regular mainline service to a large city is provided with a journey time of less than one hour. Services are also provided to local towns and villages.

The station facilities have been upgraded recently to provide improved car parking with spaces marked for both season ticket and day ticket holders. The station has a ticket office staffed during busy times with ticket machines in the station. Passenger lifts provide access to the footbridge, allowing passengers with disabilities to cross to the platform on the other side of the railway lines.

There are no bus stops located close to the station.

Secure covered bicycle storage is available but is not often used due to busy and congested roads leading to the station.

At the front of the station there is parking for taxis and dropping off points.

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Location 2

Park and Ride Bus Facility

This park and ride bus facility is located on the outskirts of a medium-sized historic town. The parking area can be accessed via a major trunk road without the need to drive through the town.

The facility was built on land that was previously considered to be prime farmland and incorporates a sustainable urban drainage system (SUDS).

The parking area is well lit, has CCTV monitoring and provides spaces for cars and an area for motorhomes.

Parking charges can be paid daily or period tickets can be purchased at a reduced cost. The ticket price includes the fare for the driver and vehicle passengers to travel on the shuttle bus.

Regular shuttle buses run between the parking area and the town centre. Buses also run to the local hospital.



13 Identify **two** benefits of reducing pollution from transport.

- A Cleaner air
- B Improved education
- C Economic well-being
- D Fewer heat losses
- E Improved health

(Total for Question 13 = 2 marks)

14 Explain **two** environmental benefits of using a sustainable urban drainage system (SUDS) for the park and ride facility.

1

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2

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(Total for Question 14 = 4 marks)

15 Explain **one** way the local infrastructure could be developed to encourage rail users to cycle to the station.

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(Total for Question 15 = 2 marks)

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16 Explain **two** advantages of locating the park and ride facility on the greenfield site.

1

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2

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(Total for Question 16 = 4 marks)

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(Total for Question 17 = 8 marks)

TOTAL FOR SECTION B = 20 MARKS

TOTAL FOR PAPER = 50 MARKS





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