

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 16 January 2015 – Morning Time: 1 hour 15 minutes	Paper Reference 21635E
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You do not need any other materials.	Total Marks
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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 Which **two** of these would reduce construction site-related light pollution?

- A Use of filters
- B Fixing of lighting batten
- C Light shading
- D Absorbent mats
- E Lower wattage lighting

(Total for Question 1 = 2 marks)

2 When land is used for construction purposes, this may result in the loss of natural woodlands and planting.

Identify **two** other aspects of the environment that may be damaged through the use of land for construction purposes.

- 1
-
- 2
-

(Total for Question 2 = 2 marks)

3 Identify **two** facilities that need to be considered to meet the social needs of the community when planning a development.

- A Retail
- B Temporary works
- C Site accommodation
- D Frame construction
- E Health

(Total for Question 3 = 2 marks)



4 Site practices can be used to minimise the effect of projects on the local community.

Name the scheme that a contractor can be a part of in order to minimise the effect of a project on the local community.

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(Total for Question 4 = 1 mark)

5 Describe **one** way in which deliveries to a construction site can be organised to reduce the impact on the local community.

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(Total for Question 5 = 2 marks)

6 Identify **two** natural insulation products.

- A Flax
- B Hemp
- C Concrete
- D Polystyrene
- E Plasterboard

(Total for Question 6 = 2 marks)



7 One advantage to a community of development on a brownfield site is the regeneration of an area.

Identify **two** other advantages to a community of development on a brownfield site.

1

2

(Total for Question 7 = 2 marks)

8 Explain **one** disadvantage of using passive stack ventilation in a building.

.....

(Total for Question 8 = 2 marks)



9 Photovoltaic panels are often used on domestic buildings and are an example of an alternative energy source.

(a) Identify **two** characteristics of photovoltaic panels.

(2)

1

.....

2

.....

One disadvantage of photovoltaic panels is the initial cost.

(b) Explain **one** other disadvantage of using photovoltaic panels on an existing building.

(2)

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(Total for Question 9 = 4 marks)

10 Identify **two** characteristics of a grey water recycling system.

1

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2

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(Total for Question 10 = 2 marks)

11 Identify **one** way of protecting trees during the construction phase of a project.

.....

.....

(Total for Question 11 = 1 mark)



12 A developer is looking to build in an area where there is a history of flooding.

Explain **one** reason why a sustainable urban drainage system (SUDS) is an appropriate way for the developer to limit the adverse effects of flooding.

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(Total for Question 12 = 2 marks)

13 Explain how **two** features of a building allow for the use of ground source heat recovery.

1

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2

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(Total for Question 13 = 4 marks)

14 Identify **two** ways to reduce plant and equipment exhaust emissions on a construction site.

1

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2

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(Total for Question 14 = 2 marks)

TOTAL FOR SECTION A = 30 MARKS



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SECTION B STARTS ON PAGE 8



SECTION B: Residential Development

Read the source materials and then answer the questions.



Building 1: 1900 5 bedroom terraced house

Building 1 is a 5 bedroom terraced house built in 1900. The house has a small front garden with no provision made for off-street parking.

The house has solid brick walls and a traditional timber roof with a slate covering. The ground floor is constructed of suspended timber. The windows are timber vertical sliding sash and single glazed. Heating is provided through open fires in the living rooms and bedrooms. The house has a small cellar for the storage of solid fuel.

The internal room finishes include Victorian features such as ornate ceiling roses and cornices, timber fire surrounds with patterned inset tiles, stained glass windows to the front door, deep moulded skirting boards, picture rails and dado rails.

The building is located in a built-up area and there is a park nearby.





Building 2: 2012 3 bedroom terraced house

Building 2 is a 3 bedroom terraced house in a new housing development of 300 houses. The housing development was built on a brownfield site. The site had been cleared of buildings and all materials were removed before the construction of the housing development. The site is in a residential area on the outskirts of a small town. There are no open spaces adjacent to the site.

The property has been built to current Building Regulations, and incorporates many sustainable building techniques and materials.

The walls are a cavity brick and block construction with cavity insulation. The wall below the bay window is rendered and painted. Ground floors are of solid concrete construction and incorporate insulation. The roof space is insulated. The windows are double glazed. All windows and doors have weather-stripping. Space heating and the heating of hot water is by an energy efficient condensing gas boiler.

During the construction phase the contractor won an award for putting in place a recycling system for waste materials.



15 New housing developments can bring economic benefits to local communities when they are being built and during use.

Identify **two** economic benefits to the local community of the development in Building 2.

1

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2

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(Total for Question 15 = 2 marks)

16 Give **one** reason why weather-stripping is used to seal the doors and windows in Building 2.

.....

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(Total for Question 16 = 1 mark)

17 (a) Identify **two** low embodied energy materials used in the construction of Building 1.

(2)

1

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2

.....

(b) State what is meant by embodied energy.

(1)

.....

.....

(Total for Question 17 = 3 marks)



18 Describe **one** sustainable site practice that the contractor for Building 2 could have used to recycle waste construction materials.

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(Total for Question 18 = 2 marks)

19 The local community appreciate the park near Building 1 as it adds aesthetic value.

Explain **two** other benefits to the local community of having green space in the area.

1

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2

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(Total for Question 19 = 4 marks)



