

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson BTEC
Level 1/Level 2
First Award**

Centre Number

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Learner Registration Number

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Thursday 7 January 2021

Morning (Time: 1 hour 15 minutes)

Paper Reference **21492E**

**Construction and the Built
Environment**

Unit 1: Construction Technology

You must have:

ruler, HB or 2B pencil to sketch, eraser

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.*
- You are allowed to use a non-programmable scientific calculator.

Information

- The total mark for this paper is 60.
- 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 ☒.

1 (a) Low-rise buildings have performance requirements.

Draw a line to match each material/component to its associated performance requirement.

Each material/component has only **one** performance requirement.

(2)

Material/Component	Performance requirement
	Ventilation
Sheep's wool	Thermal insulation
	Security
Wall ties	Weather resistance
	Stability

(b) Identify **two** low embodied energy materials.

(2)

- A** Timber
- B** Glass
- C** Concrete
- D** Straw
- E** Steel

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(c) State **two** locations in a building where insulation material can be placed to reduce heat loss.

(2)

1

2

(d) Identify **two** purposes of weather resistant elements.

(2)

- A To provide thermal comfort
- B To provide ventilation
- C To improve artificial lighting
- D To support excavations
- E To prevent dampness

(Total for Question 1 = 8 marks)

2 State **two** things that are removed from a site during site-based clearance activities.

1

2

(Total for Question 2 = 2 marks)

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3 Name **two** types of internal floor finish.

1

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2

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(Total for Question 3 = 2 marks)

4 Identify **two** methods used in sustainable construction that minimise the impact on the natural environment.

- A Recycling
- B Use of local suppliers
- C Use of high embodied energy materials
- D Building on an area of natural beauty
- E Security

(Total for Question 4 = 2 marks)

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5 (a) State **one** type of timber rafter used in roof construction.

(1)

(b) Diagram 1 shows an eaves detail.

Label the **five** materials/components shown in Diagram 1.

(5)

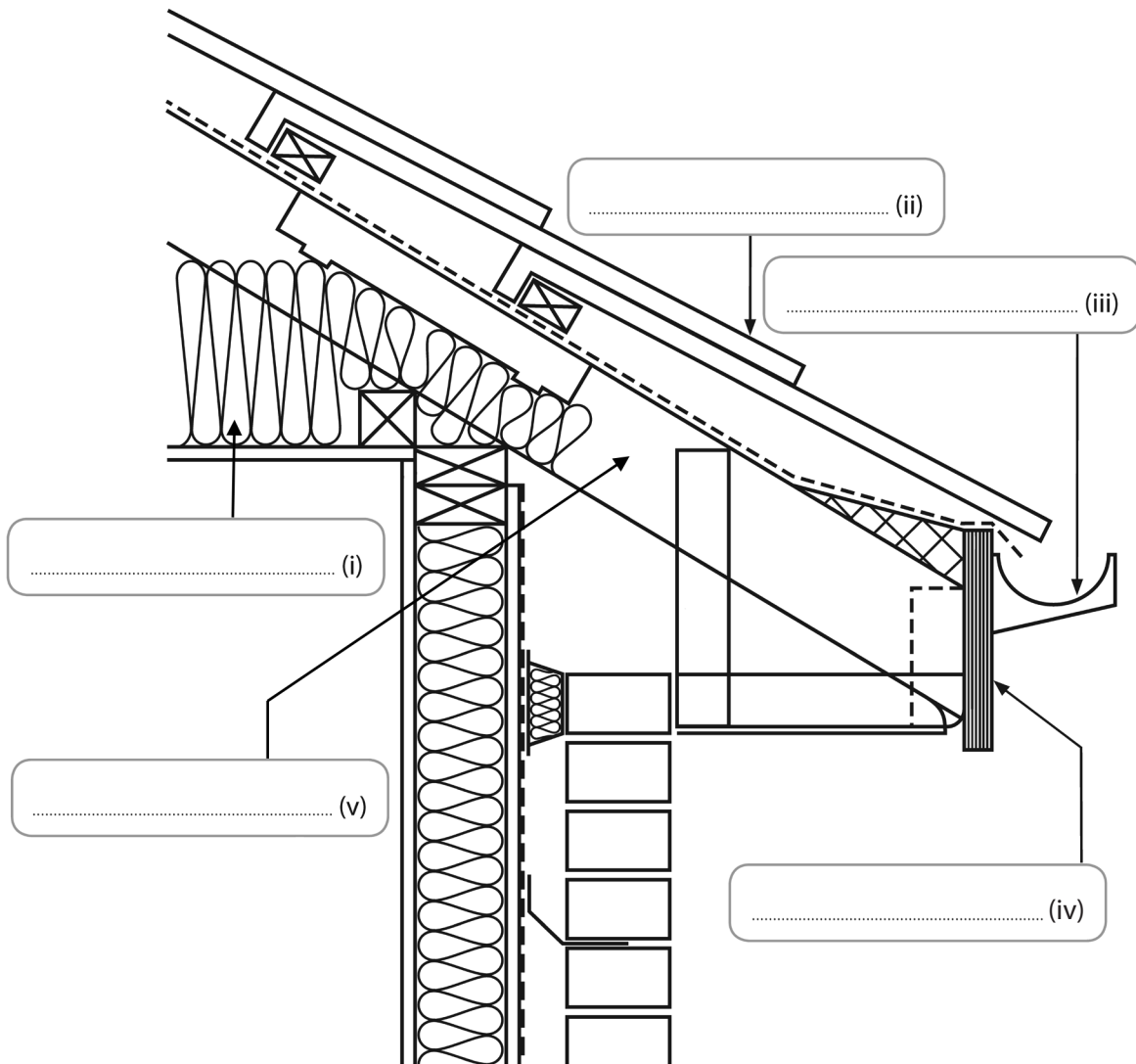


Diagram 1

(Total for Question 5 = 6 marks)



P 6 7 5 5 7 A 0 5 1 6

6 Diagram 2 shows a type of brickwork pointing.

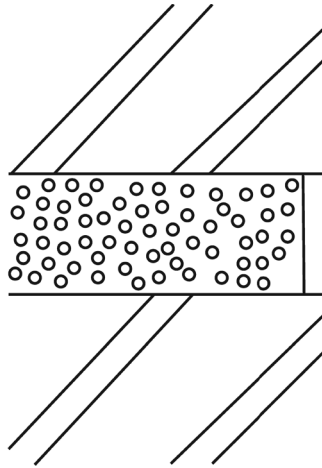


Diagram 2

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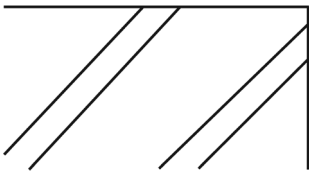
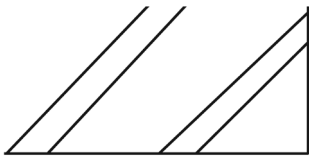
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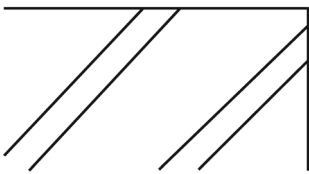
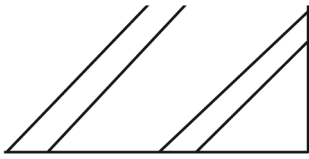


Complete the **three** diagrams to show each type of brickwork pointing.

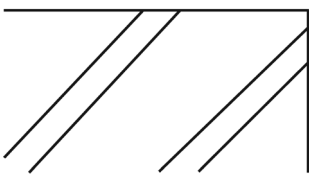
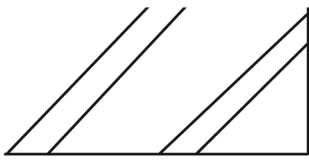
(i) Flush



(ii) Bucket handle



(iii) Weathered



(Total for Question 6 = 3 marks)



7 Engineered timber joists are often used in the upper floors of new low-rise buildings. Explain **two** reasons why engineered joists are used instead of solid timber joists.

1

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2

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(Total for Question 7 = 4 marks)

8 An architect has been commissioned to design a low-rise office building. Explain **two** reasons why the architect would need to take into consideration the loading applied to the building.

1

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2

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(Total for Question 8 = 4 marks)

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9 Diagram 3 shows a building plot with the following dimensions.

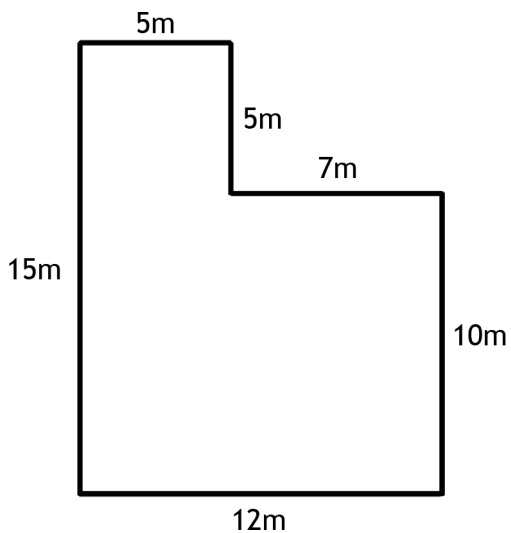


Diagram 3 (not to scale)

(a) Determine the perimeter of the building plot.

(2)

.....m

(b) Show that the area of the building plot is 145 m^2 .

(2)

(Total for Question 9 = 4 marks)



10 A new office building is to be built on a raft foundation and will include a damp-proof membrane.

Explain **two** reasons why a damp-proof membrane is used in the construction of buildings.

1

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(Total for Question 10 = 4 marks)

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