

Write your name here

Surname	Other names
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**Edexcel**  
**Principal Learning**

Centre Number

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Candidate Number

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# Construction and the Built Environment

**Level 2**

**Unit 4: Create the Built Environment: Structures**

Tuesday 21 May 2013 – Morning

**Time: 1 hour**

Paper Reference

**CB204/01**

**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 candidate 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 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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P 4 1 3 9 2 R A 0 1 2 8

**PEARSON**

**Answer ALL questions.**

**Some questions must be answered with a cross ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.**

- 1** Your work as a trainee site manager means that you are involved in creating programmes for construction work. The site manager has asked you to look at the precontract programme for the substructure works to a large office extension.

By interpreting the Gantt chart, put a cross ☒ next to the correct answer for each question.

Office Extension Programme															
Contract No 12345															
Week		1					2					3			
Day		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Activity															
1	Site set up	█													
2	Fencing		█	█											
3	Excavate topsoil			█	█	█									
4	Excavate foundations				█	█	█								
5	Concrete foundations					█	█	█	█	█					
6	Lay trench blocks						█	█	█	█	█				
7	Brickwork to dpc							█	█	█	█	█			
8	Hardcore floor slab									█	█	█			
9	Sand blinding											█			
10	Lay dpm												█		
11	Lay flooring insulation													█	
12	Concrete floor													█	█
13	Powerfloat finish														█
14	Curing period														█
15	Prepare for first lift external wall														█



(a) What is the duration of the laying of the trench blocks?

(1)

<b>A</b>	2 days	<input type="checkbox"/>
<b>B</b>	2.5 days	<input type="checkbox"/>
<b>C</b>	3 days	<input type="checkbox"/>
<b>D</b>	3.5 days	<input type="checkbox"/>
<b>E</b>	4 days	<input type="checkbox"/>

(b) When will the excavation work be completed?

(1)

<b>A</b>	End of day 3	<input type="checkbox"/>
<b>B</b>	Noon on day 4	<input type="checkbox"/>
<b>C</b>	End of day 4	<input type="checkbox"/>
<b>D</b>	Noon on day 5	<input type="checkbox"/>
<b>E</b>	End of day 5	<input type="checkbox"/>

(c) The concrete to foundations is delayed by one day.

What is the revised completion day for the foundations?

(1)

<b>A</b>	Day 4	<input type="checkbox"/>
<b>B</b>	Day 5	<input type="checkbox"/>
<b>C</b>	Day 6	<input type="checkbox"/>
<b>D</b>	Day 7	<input type="checkbox"/>
<b>E</b>	Day 8	<input type="checkbox"/>



(d) What is the length of the overlap between trench blocks and brickwork to dpc?

(1)

<b>A</b>	1 day	<input type="checkbox"/>
<b>B</b>	1.5 days	<input type="checkbox"/>
<b>C</b>	2 days	<input type="checkbox"/>
<b>D</b>	2.5 days	<input type="checkbox"/>
<b>E</b>	3 days	<input type="checkbox"/>

(e) In addition to the delays to the concreting works, severe weather delays trench block work by four days.

When will the trench blocks be complete?

(1)

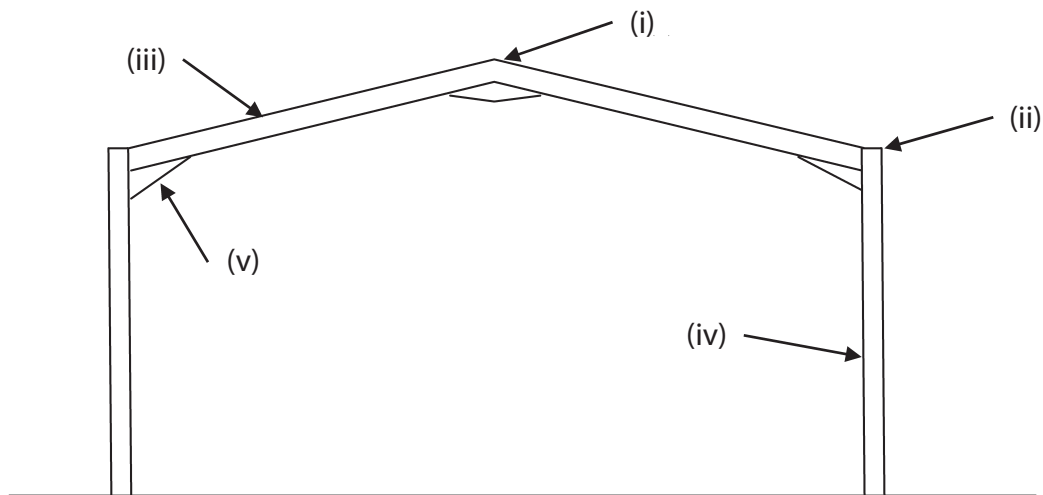
<b>A</b>	Noon on day 12	<input type="checkbox"/>
<b>B</b>	End of day 13	<input type="checkbox"/>
<b>C</b>	End of day 14	<input type="checkbox"/>
<b>D</b>	Noon on day 14	<input type="checkbox"/>
<b>E</b>	End of day 15	<input type="checkbox"/>

**(Total for Question 1 = 5 marks)**



2 You are now working as an assistant site manager. The steel frame shown is at the erection stage of construction.

Identify the parts labelled (i) to (v) by putting a cross ☒ in the box next to the correct answer.



(a) Label (i) shows:

(1)

<b>A</b>	eaves	<input type="checkbox"/>
<b>B</b>	pad	<input type="checkbox"/>
<b>C</b>	apex	<input type="checkbox"/>
<b>D</b>	foundation	<input type="checkbox"/>

(b) Label (ii) shows:

(1)

<b>A</b>	eaves	<input type="checkbox"/>
<b>B</b>	guttering	<input type="checkbox"/>
<b>C</b>	ridge	<input type="checkbox"/>
<b>D</b>	soffit	<input type="checkbox"/>



(c) Label (iii) shows:

(1)

<b>A</b>	beam	<input type="checkbox"/>
<b>B</b>	joist	<input type="checkbox"/>
<b>C</b>	rafter	<input type="checkbox"/>
<b>D</b>	purlin	<input type="checkbox"/>

(d) Label (iv) shows:

(1)

<b>A</b>	upright	<input type="checkbox"/>
<b>B</b>	column	<input type="checkbox"/>
<b>C</b>	post	<input type="checkbox"/>
<b>D</b>	beam	<input type="checkbox"/>

(e) Label (v) shows:

(1)

<b>A</b>	soffit	<input type="checkbox"/>
<b>B</b>	sheeting rail	<input type="checkbox"/>
<b>C</b>	purlin	<input type="checkbox"/>
<b>D</b>	haunch	<input type="checkbox"/>

**(Total for Question 2 = 5 marks)**



**3** Working as an assistant to the site manager, you have been asked some questions about constructing foundations.

Put a cross ☒ in the box next to the correct word(s) to complete the following sentences.

(a) In the picture below the operative is using a vibrating:



(1)

<b>A</b>	cylinder	<input type="checkbox"/>
<b>B</b>	drum	<input type="checkbox"/>
<b>C</b>	roller	<input type="checkbox"/>
<b>D</b>	plate	<input type="checkbox"/>

(b) In the picture below the operative is loading a:



(1)

<b>A</b>	barrel mixer	<input type="checkbox"/>
<b>B</b>	cement mixer	<input type="checkbox"/>
<b>C</b>	drum mixer	<input type="checkbox"/>
<b>D</b>	cylinder mixer	<input type="checkbox"/>



(c) The process shown in the picture below is known as power:



(1)

<b>A</b>	floating	<input type="checkbox"/>
<b>B</b>	towelling	<input type="checkbox"/>
<b>C</b>	blading	<input type="checkbox"/>
<b>D</b>	screeding	<input type="checkbox"/>

(d) In the picture below the operative is compacting:



(1)

<b>A</b>	reinforcement	<input type="checkbox"/>
<b>B</b>	hardcore	<input type="checkbox"/>
<b>C</b>	concrete	<input type="checkbox"/>
<b>D</b>	drainage	<input type="checkbox"/>





(e) In the picture below the next stage would be to lay:



(1)

<b>A</b>	bricks to superstructure	<input type="checkbox"/>
<b>B</b>	beam and block floor	<input type="checkbox"/>
<b>C</b>	trench blocks	<input type="checkbox"/>
<b>D</b>	brickwork to dpc	<input type="checkbox"/>

**(Total for Question 3 = 5 marks)**



- 4 In the planning department you have learned about what is included in the first and second fix key stages involved in the construction of buildings.

Consider the list of different construction operations. Put a cross ☒ in the box that indicates whether the operation forms part of first fix only, second fix only, both or neither.

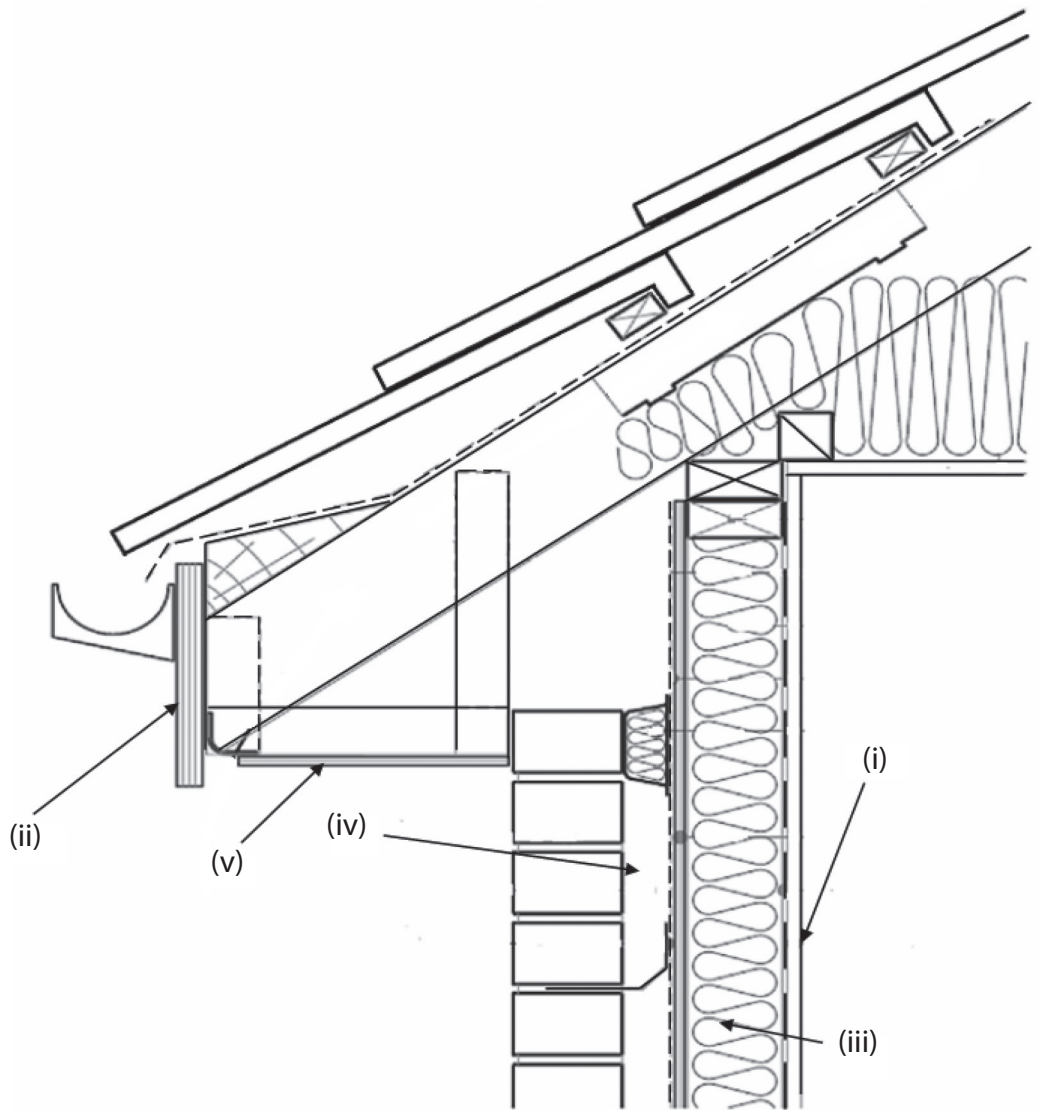
Trade	First fix	Second fix	Both	Neither
Electrical work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Studwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Painting and decorating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plumbing work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fixing architraves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**(Total for Question 4 = 5 marks)**



5 The site manager has asked you to examine the construction details used on the site for timber framed housing.

Identify the parts labelled (i) to (v) by putting a cross ☒ in the box next to the correct answer.



(a) Label (i) shows:

(1)

<b>A</b>	plasterboard	<input type="checkbox"/>
<b>B</b>	roofing board	<input type="checkbox"/>
<b>C</b>	soffit board	<input type="checkbox"/>
<b>D</b>	fascia board	<input type="checkbox"/>
<b>E</b>	barge board	<input type="checkbox"/>



(b) Label (ii) shows:

(1)

<b>A</b>	soffit	<input type="checkbox"/>
<b>B</b>	gutter	<input type="checkbox"/>
<b>C</b>	tile batten	<input type="checkbox"/>
<b>D</b>	fascia	<input type="checkbox"/>
<b>E</b>	rafter	<input type="checkbox"/>

(c) Label (iii) shows:

(1)

<b>A</b>	cavity	<input type="checkbox"/>
<b>B</b>	hardboard	<input type="checkbox"/>
<b>C</b>	plywood	<input type="checkbox"/>
<b>D</b>	blockboard	<input type="checkbox"/>
<b>E</b>	insulation	<input type="checkbox"/>

(d) Label (iv) shows:

(1)

<b>A</b>	insulation	<input type="checkbox"/>
<b>B</b>	cavity	<input type="checkbox"/>
<b>C</b>	structural timber	<input type="checkbox"/>
<b>D</b>	wall tie	<input type="checkbox"/>
<b>E</b>	damp proof membrane	<input type="checkbox"/>



(e) Label (v) shows:

(1)

<b>A</b>	fascia	<input type="checkbox"/>
<b>B</b>	cavity closer	<input type="checkbox"/>
<b>C</b>	plasterboard	<input type="checkbox"/>
<b>D</b>	guttering	<input type="checkbox"/>
<b>E</b>	soffit	<input type="checkbox"/>

**(Total for Question 5 = 5 marks)**



6 You are now employed as a site engineer working on a steel framed building.

In the left hand column is a list of items that may connect to a steel frame.

Put a cross ☒ in the box to indicate whether each item connects to columns, beams, both or neither.

Item	Columns	Beams	Both	Neither
Eaves beams	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Holding down bolts	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Floor decking	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sole plates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Precast planks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Total for Question 6 = 5 marks)



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7 You are watching a trussed rafter roof being installed on-site.

Put a cross ☒ in the box next to the correct word to complete the following sentences.

(a) Trussed rafters require wind braces to be installed:

(1)

<b>A</b>	horizontally	<input type="checkbox"/>
<b>B</b>	vertically	<input type="checkbox"/>
<b>C</b>	diagonally	<input type="checkbox"/>
<b>D</b>	curved	<input type="checkbox"/>
<b>E</b>	upright	<input type="checkbox"/>

(b) A trussed rafter roof requires longitudinal:

(1)

<b>A</b>	binders	<input type="checkbox"/>
<b>B</b>	fascias	<input type="checkbox"/>
<b>C</b>	ties	<input type="checkbox"/>
<b>D</b>	collars	<input type="checkbox"/>
<b>E</b>	braces	<input type="checkbox"/>

(c) During site fixing trussed rafters may require temporary:

(1)

<b>A</b>	binders	<input type="checkbox"/>
<b>B</b>	ties	<input type="checkbox"/>
<b>C</b>	straps	<input type="checkbox"/>
<b>D</b>	support	<input type="checkbox"/>
<b>E</b>	fencing	<input type="checkbox"/>





(d) Trussed rafters are secured to the wall plate using truss:

(1)

<b>A</b>	plates	<input type="checkbox"/>
<b>B</b>	clasps	<input type="checkbox"/>
<b>C</b>	glue	<input type="checkbox"/>
<b>D</b>	clips	<input type="checkbox"/>
<b>E</b>	screws	<input type="checkbox"/>

(e) During installation trussed rafters must be kept:

(1)

<b>A</b>	strapped	<input type="checkbox"/>
<b>B</b>	bent	<input type="checkbox"/>
<b>C</b>	clean	<input type="checkbox"/>
<b>D</b>	upright	<input type="checkbox"/>
<b>E</b>	moist	<input type="checkbox"/>

**(Total for Question 7 = 5 marks)**



8 You are planning the erection of a single storey timber framed building using prefabricated components.

Put a cross ☒ in the box next to the correct words to complete the following sentences.

(a) The first stage in putting up the timber frame is to lay and level the:

(1)

A	timber batten	<input type="checkbox"/>
B	fascia board	<input type="checkbox"/>
C	frame clip	<input type="checkbox"/>
D	sole plate	<input type="checkbox"/>
E	tile batten	<input type="checkbox"/>
F	timber stud	<input type="checkbox"/>

(b) The second stage is the erection of the:

(1)

A	internal walls	<input type="checkbox"/>
B	multi frames	<input type="checkbox"/>
C	timber panels	<input type="checkbox"/>
D	trussed rafters	<input type="checkbox"/>
E	timber frames	<input type="checkbox"/>
F	plywood panels	<input type="checkbox"/>

(c) The third stage is the fixing of the:

(1)

A	timber binder	<input type="checkbox"/>
B	head binder	<input type="checkbox"/>
C	sole binder	<input type="checkbox"/>
D	stud binder	<input type="checkbox"/>
E	frame binder	<input type="checkbox"/>
F	plate binder	<input type="checkbox"/>



(d) The fourth stage is the erection of the:

(1)

<b>A</b>	ridge board	<input type="checkbox"/>
<b>B</b>	glulam beams	<input type="checkbox"/>
<b>C</b>	tank platform	<input type="checkbox"/>
<b>D</b>	floor beams	<input type="checkbox"/>
<b>E</b>	sanitary ware	<input type="checkbox"/>
<b>F</b>	trussed rafters	<input type="checkbox"/>

(e) The fifth stage is the fixing of the:

(1)

<b>A</b>	lead flashing	<input type="checkbox"/>
<b>B</b>	vapour control layer	<input type="checkbox"/>
<b>C</b>	ceiling insulation	<input type="checkbox"/>
<b>D</b>	roofing felt and battens	<input type="checkbox"/>
<b>E</b>	roof thatch	<input type="checkbox"/>
<b>F</b>	roofing tiles	<input type="checkbox"/>

**(Total for Question 8 = 5 marks)**



- 9 You have been asked by the contracts manager to update the main contract programme on your site. Part of this process is understanding the content of programme activities.

Put a cross ☒ in the box next to the correct word(s) to complete the following sentences.

- (a) The second fixing of joinery would include:

(1)

<b>A</b>	studwork	<input type="checkbox"/>
<b>B</b>	skirtings	<input type="checkbox"/>
<b>C</b>	sole plates	<input type="checkbox"/>
<b>D</b>	wall plates	<input type="checkbox"/>
<b>E</b>	roof trusses	<input type="checkbox"/>
<b>F</b>	stairs	<input type="checkbox"/>

- (b) The first fixing of electrical installations would include the:

(1)

<b>A</b>	switches	<input type="checkbox"/>
<b>B</b>	consumer unit	<input type="checkbox"/>
<b>C</b>	fire alarm sounders	<input type="checkbox"/>
<b>D</b>	light fittings	<input type="checkbox"/>
<b>E</b>	clocks	<input type="checkbox"/>
<b>F</b>	cabling	<input type="checkbox"/>

- (c) The second fixing of plumbing would contain:

(1)

<b>A</b>	stop cock valve	<input type="checkbox"/>
<b>B</b>	cold water pipes	<input type="checkbox"/>
<b>C</b>	water supply pipe	<input type="checkbox"/>
<b>D</b>	sanitary ware	<input type="checkbox"/>
<b>E</b>	hot water pipes	<input type="checkbox"/>
<b>F</b>	heating pipework	<input type="checkbox"/>



(d) The first fix of joinery would include:

(1)

<b>A</b>	skirting boards	<input type="checkbox"/>
<b>B</b>	glazing	<input type="checkbox"/>
<b>C</b>	doors	<input type="checkbox"/>
<b>D</b>	floorboards	<input type="checkbox"/>
<b>E</b>	architraves	<input type="checkbox"/>
<b>F</b>	ironmongery	<input type="checkbox"/>

**(Total for Question 9 = 4 marks)**

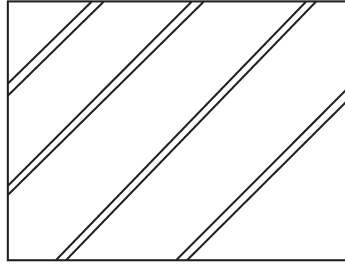


10 The following are fill patterns and symbols taken from a drawing on the project you are working on.

The site manager has asked you to identify what they mean.

Put a cross ☒ in the box against the correct answer.

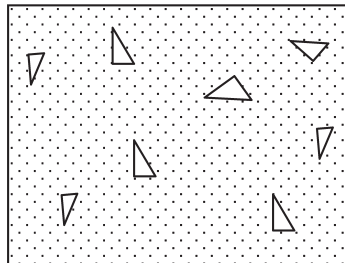
(a)



(1)

<b>A</b>	Blockwork	<input type="checkbox"/>
<b>B</b>	Brickwork	<input type="checkbox"/>
<b>C</b>	Cement	<input type="checkbox"/>
<b>D</b>	Mortar	<input type="checkbox"/>
<b>E</b>	Concrete	<input type="checkbox"/>
<b>F</b>	Plywood	<input type="checkbox"/>

(b)

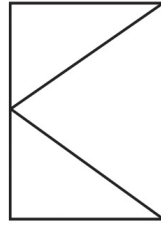


(1)

<b>A</b>	Screed	<input type="checkbox"/>
<b>B</b>	Concrete	<input type="checkbox"/>
<b>C</b>	Hardcore	<input type="checkbox"/>
<b>D</b>	Glass	<input type="checkbox"/>
<b>E</b>	Plywood	<input type="checkbox"/>
<b>F</b>	Masonry	<input type="checkbox"/>



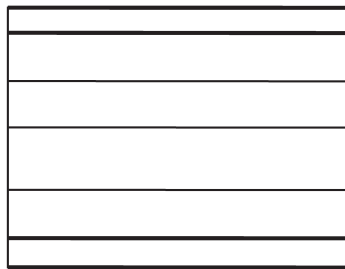
(c)



(1)

<b>A</b>	Sliding sash window	<input type="checkbox"/>
<b>B</b>	Casement window	<input type="checkbox"/>
<b>C</b>	Sliding window	<input type="checkbox"/>
<b>D</b>	Cottage window	<input type="checkbox"/>
<b>E</b>	Softwood window	<input type="checkbox"/>
<b>F</b>	Hardwood window	<input type="checkbox"/>

(d)



(1)

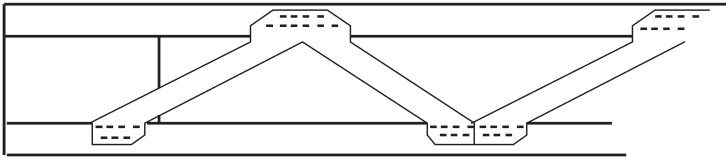
<b>A</b>	Hardboard	<input type="checkbox"/>
<b>B</b>	Plasterboard	<input type="checkbox"/>
<b>C</b>	Plywood	<input type="checkbox"/>
<b>D</b>	Particle board	<input type="checkbox"/>
<b>E</b>	Chipboard	<input type="checkbox"/>
<b>F</b>	Floorboard	<input type="checkbox"/>

(Total for Question 10 = 4 marks)

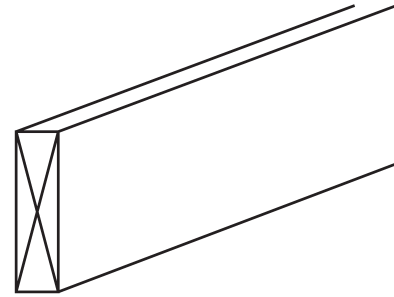


11 You have been asked to compare two different methods of transferring floor loading to the external walls.

Put a cross ☒ in the box to indicate whether the associated statement applies to Detail A only, Detail B only, to both or to neither.



Detail A  
Eco joists



Detail B  
Traditional joist

	Detail A	Detail B	Both	Neither
Requires strutting between joists	☒	☒	☒	☒
Should not be cut on-site	☒	☒	☒	☒
Is heavier	☒	☒	☒	☒
Does not distort	☒	☒	☒	☒

(Total for Question 11 = 4 marks)





**12** As an assistant quantity surveyor you realise that contract documentation is a valuable communication tool.

The contract drawings contain plans, sections, elevations and schedules.

Describe the contents of **two** types of schedules.

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**(Total for Question 12 = 4 marks)**



**13** You are looking into the design of substructures and have been asked to investigate two proposed types of foundation, strip foundations and piled foundations.

Describe in detail **two** advantages that a piled foundation has over a strip foundation.

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**(Total for Question 13 = 4 marks)**

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**TOTAL FOR PAPER = 60 MARKS**



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