

Write your name here

Surname

Other names

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 22 May 2012 – 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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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 programs for construction work. The site manager has asked you to look at the pre-contract program for the service roadway to the retail units.

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

Contract		Service Road to Retail Units													
Week No		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	Excavation to road base				█	█									
5	Excavate drainage trenches					█									
6	Install main drain runs & backfill						█								
7	Install manholes							█							
8	Spread hardcore beds								█	█					
9	Excavate for kerbs									█					
10	Install gully grates									█	█				
11	Kerb foundations										█	█			
12												█	█		
13	Install manhole covers												█		
14	Lay road base													█	
15	Lay wearing course														█
16	Clean & handover														█



(a) On the chart row 12 is missing, what is the fixing activity?

(1)

A	Fencing	<input type="checkbox"/>
B	White lining	<input type="checkbox"/>
C	Road signs	<input type="checkbox"/>
D	Road kerbs	<input type="checkbox"/>
E	Traffic lights	<input type="checkbox"/>

(b) The main drainage pipes have been delayed from a supplier by two days.
What is the overall revised completion date?

(1)

A	Week 3 day 5	<input type="checkbox"/>
B	Week 4 day 1	<input type="checkbox"/>
C	Week 4 day 2	<input type="checkbox"/>
D	Week 4 day 3	<input type="checkbox"/>
E	Week 4 day 4	<input type="checkbox"/>

(c) The excavator breaks down and causes a half day delay.
When will the excavation to the road base be finished?

(1)

A	Noon day 3	<input type="checkbox"/>
B	Noon day 4	<input type="checkbox"/>
C	Noon day 5	<input type="checkbox"/>
D	Noon day 6	<input type="checkbox"/>
E	Noon day 7	<input type="checkbox"/>



(d) Why are manhole covers installed before the road base?

(1)

A	So kerbs can be installed	<input type="checkbox"/>
B	To allow drainage to flow	<input type="checkbox"/>
C	So tarmac can finish flush	<input type="checkbox"/>
D	So topsoil can be spread	<input type="checkbox"/>
E	To allow white line application	<input type="checkbox"/>

(e) Bad weather and other factors have caused a **total** delay of four days.
What is the revised completion period?

(1)

A	16 days	<input type="checkbox"/>
B	17 days	<input type="checkbox"/>
C	18 days	<input type="checkbox"/>
D	19 days	<input type="checkbox"/>
E	20 days	<input type="checkbox"/>

(Total for Question 1 = 5 marks)



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2 You are assisting the Site Engineer on the substructures for a housing development with the specification for the concrete to be used in the foundations.

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

(a) The ingredient that binds the concrete mix together is:

(1)

A	cement	<input checked="" type="checkbox"/>
B	fine aggregate	<input type="checkbox"/>
C	coarse aggregate	<input type="checkbox"/>
D	water	<input type="checkbox"/>

(b) Concrete mixed using a high water/cement ratio will be:

(1)

A	strong	<input type="checkbox"/>
B	flexible	<input type="checkbox"/>
C	weak	<input checked="" type="checkbox"/>
D	dry	<input type="checkbox"/>

(c) Steel reinforcement is added because concrete is weak in:

(1)

A	compression	<input checked="" type="checkbox"/>
B	torsion	<input type="checkbox"/>
C	loading	<input type="checkbox"/>
D	tension	<input type="checkbox"/>

(d) Formwork is normally used to provide support to unset:

(1)

A	render	<input type="checkbox"/>
B	concrete	<input checked="" type="checkbox"/>
C	mortar	<input type="checkbox"/>
D	glue	<input type="checkbox"/>



(e) Concrete can be compacted by:

(1)

A	tooling	<input type="checkbox"/>
B	brushing	<input type="checkbox"/>
C	ribbing	<input type="checkbox"/>
D	tamping	<input type="checkbox"/>

(Total for Question 2 = 5 marks)



3 Working with the site engineer you are now starting the substructure construction for the housing development.

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

(a) Prior to setting out you should always undertake a site:

(1)

A	meeting	<input type="checkbox"/>
B	excavation	<input type="checkbox"/>
C	survey	<input type="checkbox"/>
D	investigation	<input type="checkbox"/>

(b) Before commencing excavation work you must be aware of the location of:

(1)

A	neighbours	<input type="checkbox"/>
B	concrete suppliers	<input type="checkbox"/>
C	tips	<input type="checkbox"/>
D	existing services	<input type="checkbox"/>

(c) The removal of any existing site structures is known as:

(1)

A	demolition	<input type="checkbox"/>
B	site clearance	<input type="checkbox"/>
C	destruction	<input type="checkbox"/>
D	site stabilisation	<input type="checkbox"/>



(d) The improvement of poor load bearing soils is known as soil:

(1)

A	solidification	<input type="checkbox"/>
B	support	<input type="checkbox"/>
C	stabilisation	<input type="checkbox"/>
D	strengthening	<input type="checkbox"/>

(e) Raising areas below the level of excavation up to level is known as:

(1)

A	cutting	<input type="checkbox"/>
B	filling	<input type="checkbox"/>
C	backfilling	<input type="checkbox"/>
D	layering	<input type="checkbox"/>

(Total for Question 3 = 5 marks)



4 The architect has asked you to consider the method used to transfer loads.

Put a cross ☒ in the correct box that identifies the normal method of transferring the load; lintels, wall plate, inside skin of wall or hardcore.

	Lintels	Wall plate	Inside skin of wall	Hardcore
Pitched roof	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Timber first floor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Openings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Solid ground floor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Flat roof	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Total for Question 4 = 5 marks)



5 Working as an assistant on site you have been asked to carry out the construction plant weekly checks by the Site Manager.

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

(a) The photograph below shows a pump used to move:



(1)

A	water	<input type="checkbox"/>
B	mortar	<input type="checkbox"/>
C	cement	<input type="checkbox"/>
D	concrete	<input type="checkbox"/>
E	aggregate	<input type="checkbox"/>



(b) The item of plant shown below is known as a:



(1)

A	goods lift	<input type="checkbox"/>
B	passenger lift	<input type="checkbox"/>
C	hoist	<input type="checkbox"/>
D	platform	<input type="checkbox"/>
E	chute	<input type="checkbox"/>

(c) An item of small plant used to cut concrete blocks is known as a:

(1)

A	mobile saw	<input type="checkbox"/>
B	masonry saw	<input type="checkbox"/>
C	mitre saw	<input type="checkbox"/>
D	mechanical saw	<input type="checkbox"/>
E	motor saw	<input type="checkbox"/>



(d) On a construction site, 110 volts is the normal power requirement and is achieved by using a(n):

(1)

A	power socket	<input type="checkbox"/>
B	invertor	<input type="checkbox"/>
C	battery	<input type="checkbox"/>
D	transformer	<input type="checkbox"/>
E	phased supply	<input type="checkbox"/>

(e) The process used to measure concrete workability is known as a:

(1)

A	tension test	<input type="checkbox"/>
B	hardening test	<input type="checkbox"/>
C	compression test	<input type="checkbox"/>
D	compaction test	<input type="checkbox"/>
E	slump test	<input type="checkbox"/>

(Total for Question 5 = 5 marks)



6 Internal walls are used to provide the division of the internal space within a structural form.

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

(a) Solid internal walls are used to provide support that is:

(1)

A	flexible	<input checked="" type="checkbox"/>
B	structural	<input checked="" type="checkbox"/>
C	diagonal	<input checked="" type="checkbox"/>
D	compressible	<input checked="" type="checkbox"/>
E	horizontal	<input checked="" type="checkbox"/>

(b) Compartmentalisation of internal spaces provides protection against the spread of:

(1)

A	vermin	<input checked="" type="checkbox"/>
B	vibration	<input checked="" type="checkbox"/>
C	damp	<input checked="" type="checkbox"/>
D	water	<input checked="" type="checkbox"/>
E	fire	<input checked="" type="checkbox"/>

(c) Lightweight hollow partitions do **not** prevent the transfer of:

(1)

A	moisture	<input checked="" type="checkbox"/>
B	sound	<input checked="" type="checkbox"/>
C	fire	<input checked="" type="checkbox"/>
D	draughts	<input checked="" type="checkbox"/>
E	loading	<input checked="" type="checkbox"/>



(d) Hollow partitions allow for the provision and distribution of:

(1)

A	sound	<input type="checkbox"/>
B	aesthetics	<input type="checkbox"/>
C	space	<input type="checkbox"/>
D	services	<input type="checkbox"/>
E	air	<input type="checkbox"/>

(e) Dry lining of internal partitions normally involves the use of:

(1)

A	plasterboard	<input type="checkbox"/>
B	cement board	<input type="checkbox"/>
C	fibreboard	<input type="checkbox"/>
D	acoustic board	<input type="checkbox"/>
E	particleboard	<input type="checkbox"/>

(Total for Question 6 = 5 marks)



7 The designer is considering several different options for prefabrication for a housing development.

In the left hand column is a list of types of prefabrication.

Put a cross ☒ in the box that indicates whether each type of prefabrication can be linked to brickwork, framed, both brickwork and framed or to neither.

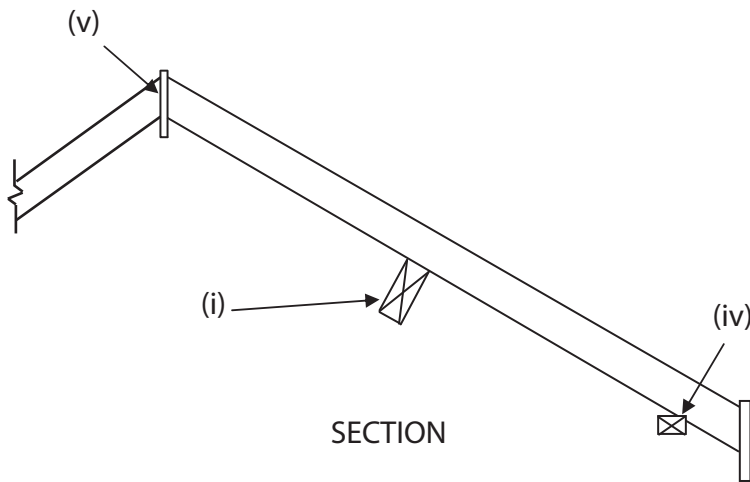
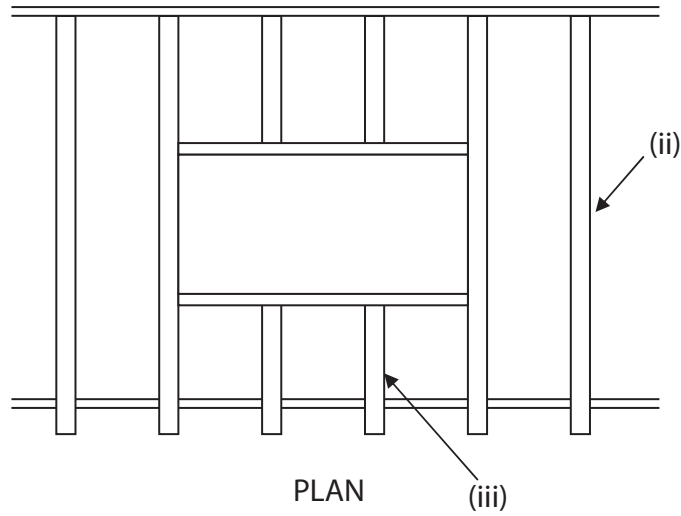
Types of prefabrication	Brickwork	Framed	Both	Neither
Bonded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel channel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Module	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timber	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Total for Question 7 = 5 marks)



8 You are assisting the quantity surveyor in working out the quantities of timber for a roof and have to identify each of the separate components on a drawing.

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



(a) Label (i) shows a(n):

(1)

A	I-beam	<input checked="" type="checkbox"/>
B	purlin	<input checked="" type="checkbox"/>
C	wall plate	<input checked="" type="checkbox"/>
D	batten	<input checked="" type="checkbox"/>
E	fillet	<input checked="" type="checkbox"/>
F	joist	<input checked="" type="checkbox"/>



(b) Label (ii) shows what type of rafter?

(1)

A	Common	<input type="checkbox"/>
B	Jack	<input type="checkbox"/>
C	Valley	<input type="checkbox"/>
D	Hip	<input type="checkbox"/>
E	Dormer	<input type="checkbox"/>
F	Gable	<input type="checkbox"/>

(c) Label (iii) shows what type of rafter?

(1)

A	Short	<input type="checkbox"/>
B	Ceiling	<input type="checkbox"/>
C	Coupled	<input type="checkbox"/>
D	Cripple	<input type="checkbox"/>
E	Collar	<input type="checkbox"/>
F	Chiselled	<input type="checkbox"/>

(d) Label (iv) shows a:

(1)

A	sole plate	<input type="checkbox"/>
B	purlin	<input type="checkbox"/>
C	fascia	<input type="checkbox"/>
D	bearer	<input type="checkbox"/>
E	wall plate	<input type="checkbox"/>
F	batten	<input type="checkbox"/>



(e) Label (v) shows a:

(1)

A	soffit	<input type="checkbox"/>
B	ridge board	<input type="checkbox"/>
C	valley board	<input type="checkbox"/>
D	fascia board	<input type="checkbox"/>
E	hip	<input type="checkbox"/>
F	verge	<input type="checkbox"/>

(Total for Question 8 = 5 marks)



- 9 The housing site you are working on is using a large number of prefabricated units in its construction.

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

- (a) The drying time involved with prefabrication is reduced because it uses less:

(1)

A	plasterboard	<input type="checkbox"/>
B	plaster	<input type="checkbox"/>
C	plywood	<input type="checkbox"/>
D	timber	<input type="checkbox"/>
E	DPM	<input type="checkbox"/>
F	insulation	<input type="checkbox"/>

- (b) Prefabrication uses less skilled labour therefore reducing on-site:

(1)

A	quality	<input type="checkbox"/>
B	accidents	<input type="checkbox"/>
C	time	<input type="checkbox"/>
D	waste	<input type="checkbox"/>
E	mistakes	<input type="checkbox"/>
F	costs	<input type="checkbox"/>

- (c) A prefabricated internal partition is usually:

(1)

A	variable	<input type="checkbox"/>
B	demountable	<input type="checkbox"/>
C	flexible	<input type="checkbox"/>
D	modular	<input type="checkbox"/>
E	movable	<input type="checkbox"/>
F	glazed	<input type="checkbox"/>



(d) The definition of prefabrication is work which is produced:

(1)

A	by hand	<input type="checkbox"/>
B	off-site	<input type="checkbox"/>
C	on-site	<input type="checkbox"/>
D	outside	<input type="checkbox"/>
E	by machine	<input type="checkbox"/>
F	by computer	<input type="checkbox"/>

(Total for Question 9 = 4 marks)



10 The following are taken from a set of drawings for a project you are working on. To test your knowledge, the site manager has asked you to identify what they are called.

Put a cross ☒ in the box to identify the correct answer.

(a) The type of drawing below is a(n):

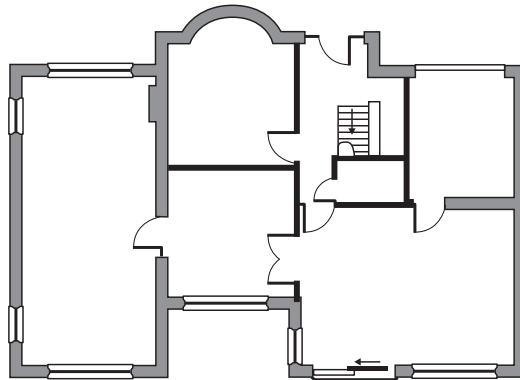


(1)

A	plan	<input type="checkbox"/>
B	portrait	<input type="checkbox"/>
C	picture	<input type="checkbox"/>
D	elevation	<input type="checkbox"/>
E	outline	<input type="checkbox"/>
F	cross section	<input type="checkbox"/>



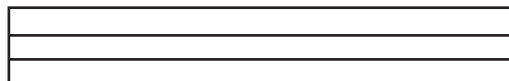
(b) The type of drawing below is known as a(n):



(1)

A	ground floor	<input type="checkbox"/>
B	elevation	<input type="checkbox"/>
C	section	<input type="checkbox"/>
D	outline	<input type="checkbox"/>
E	detail	<input type="checkbox"/>
F	plan	<input type="checkbox"/>

(c) The fill pattern below shows:

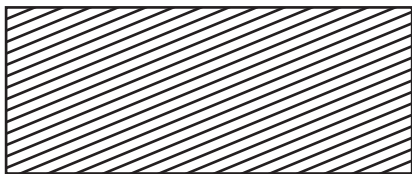


(1)

A	plywood	<input type="checkbox"/>
B	blockboard	<input type="checkbox"/>
C	fibreboard	<input type="checkbox"/>
D	hardboard	<input type="checkbox"/>
E	chipboard	<input type="checkbox"/>
F	stramitboard	<input type="checkbox"/>



(d) The fill pattern below shows:



(1)

A	glass	<input type="checkbox"/>
B	plaster	<input type="checkbox"/>
C	mdf	<input type="checkbox"/>
D	timber	<input type="checkbox"/>
E	metal	<input type="checkbox"/>
F	concrete	<input type="checkbox"/>

(Total for Question 10 = 4 marks)



11 You have been asked to compare two different forms of contract documentation for use in assisting the project manager.

Put a cross ☒ in the box to indicate whether the associated statement would be found in document A only, document B only, both or neither.

Document A
Specification

Document B
Bill of Quantities

	Specification	Bill of Quantities	Both	Neither
Measured work	☒	☒	☒	☒
Preliminaries	☒	☒	☒	☒
Type of materials	☒	☒	☒	☒
Nominated designers	☒	☒	☒	☒

(Total for Question 11 = 4 marks)



12 As the assistant planning technician you have been asked to examine the use of construction site planning documentation.

Describe **two** activities that would be included within the joinery first fix.

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(Total for Question 12 = 4 marks)



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