

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

Wednesday 11 January 2012 – Afternoon
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 conversion of a flat roof into a pitched roof.

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

Roof Conversion Program													
Contract No 6789													
Week		1					2					3	
Day		1	2	3	4	5	6	7	8	9	10	11	12
Activity													
1	Site setup	<input checked="" type="checkbox"/>											
2	Fencing		<input checked="" type="checkbox"/>										
3	Erect scaffold			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
4	Strip roof				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
5	Fix wall plates					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
6	Erect roof trusses						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
7	Membrane and tile battens							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
8	Fix roof tiles								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
9	Form loft access									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
10	Lay roof insulation										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
11	Fascias											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	Soffits												<input checked="" type="checkbox"/>
13	Fit loft hatch											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
14	Rain water goods											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15	Dismantle scaffold												<input checked="" type="checkbox"/>
16	Clean and handover												<input checked="" type="checkbox"/>

- (a) The fencing of the site is a critical activity in protecting whom?

(1)

A	Employees	<input checked="" type="checkbox"/>
B	Employer	<input checked="" type="checkbox"/>
C	General public	<input checked="" type="checkbox"/>
D	Visitors	<input checked="" type="checkbox"/>
E	Self employed	<input checked="" type="checkbox"/>



(b) The inside of the building is watertight at the end of which day?

(1)

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

(c) The roof insulation supplier has informed you of a one day delay. How many days will the overall contract duration be delayed by?

(1)

A	0	<input type="checkbox"/>
B	1	<input type="checkbox"/>
C	2	<input type="checkbox"/>
D	3	<input type="checkbox"/>
E	4	<input type="checkbox"/>

(d) The roof truss installation has over-run by two days. What is the revised contract completion date?

(1)

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

(e) High wind has delayed the original program by four days. What is the new completion period?

(1)

A	14 days	<input type="checkbox"/>
B	15 days	<input type="checkbox"/>
C	16 days	<input type="checkbox"/>
D	17 days	<input type="checkbox"/>
E	18 days	<input type="checkbox"/>

(Total for Question 1 = 5 marks)



2 You are assisting the Site Engineer during the substructure phase of the housing development with the ordering of construction plant.

Place a cross ☒ in the box next to the correct word(s) to complete each of the sentences below.

(a) The type of excavator in the photograph is known as a:



(1)

A	back bucket	<input type="checkbox"/>
B	backhoe	<input type="checkbox"/>
C	backactor	<input type="checkbox"/>
D	back shovel	<input type="checkbox"/>

(b) In the photograph the operative is:



(1)

A	power cleaning	<input type="checkbox"/>
B	power washing	<input type="checkbox"/>
C	power compacting	<input type="checkbox"/>
D	power floating	<input type="checkbox"/>



(c) The machine in the photograph is a:



(1)

A	loadall	<input type="checkbox"/>
B	skip	<input type="checkbox"/>
C	dumper	<input type="checkbox"/>
D	breaker	<input type="checkbox"/>

(d) A raft foundation has to be strengthened to prevent cracking by the use of:

(1)

A	steel reinforcement	<input type="checkbox"/>
B	compression reinforcement	<input type="checkbox"/>
C	aluminium reinforcement	<input type="checkbox"/>
D	shear reinforcement	<input type="checkbox"/>

(e) Weak load-bearing ground can be improved by the use of vibro:

(1)

A	grouting	<input type="checkbox"/>
B	rollers	<input type="checkbox"/>
C	compaction	<input type="checkbox"/>
D	plates	<input type="checkbox"/>

(Total for Question 2 = 5 marks)



3 You are now working as a design technician on superstructures. Identify the following different forms of structure in common use within modern construction.

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

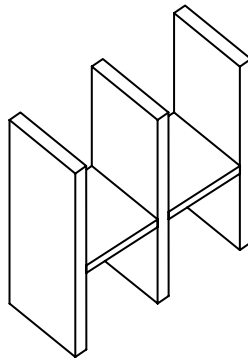
(a) The type of structure shown below at the British Museum is:



(1)

A	a skeleton	<input type="checkbox"/>
B	curved	<input type="checkbox"/>
C	a shell	<input type="checkbox"/>
D	framed	<input type="checkbox"/>

(b) The diagram below illustrates a structure known as:

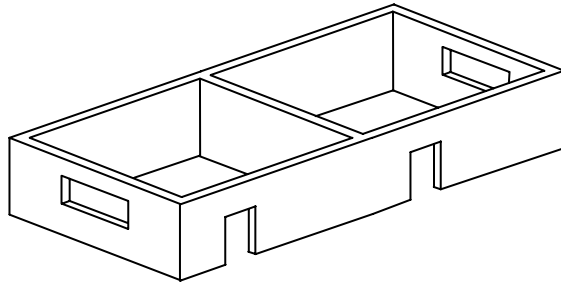


(1)

A	cross floor	<input type="checkbox"/>
B	cross wall	<input type="checkbox"/>
C	cross framed	<input type="checkbox"/>
D	cross braced	<input type="checkbox"/>



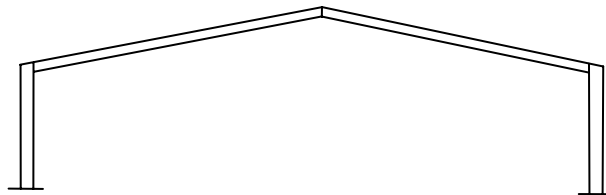
(c) The diagram below illustrates a structure known as:



(1)

A	boxed	<input type="checkbox"/>
B	rectangular	<input type="checkbox"/>
C	strong wall	<input type="checkbox"/>
D	cellular	<input type="checkbox"/>

(d) The diagram below illustrates a structure known as a portal:



(1)

A	arch	<input type="checkbox"/>
B	frame	<input type="checkbox"/>
C	beam	<input type="checkbox"/>
D	bracing	<input type="checkbox"/>

(e) The type of frame where a series of structural steel beams and columns are connected in a grid pattern is a:

(1)

A	lattice	<input type="checkbox"/>
B	grid	<input type="checkbox"/>
C	skeleton	<input type="checkbox"/>
D	column and beam	<input type="checkbox"/>

(Total for Question 3 = 5 marks)



- 4 The Architect has asked you to consider the method of detailing associated with different forms of structure.

Consider the list of alternative forms and put a cross ☒ in the box to indicate what is the usual method of enclosing the external envelope; brickwork, steel cladding, both or neither.

Form	Brickwork	Steel cladding	Both	Neither
Domestic timber framed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Portal frame	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Insitu concrete	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cavity wall construction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cross wall construction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Total for Question 4 = 5 marks)



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5 Working within the buying department, you have been asked to examine the sustainable benefits of the off-site prefabrication of timber framed construction.

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

(a) Prefabrication reduces:

(1)

A	site noise	<input type="checkbox"/>
B	efficiency	<input type="checkbox"/>
C	quality	<input type="checkbox"/>
D	dry trades	<input type="checkbox"/>
E	unskilled labour	<input type="checkbox"/>

(b) Prefabrication lowers the impact to the local community by reducing the contract:

(1)

A	pathway	<input type="checkbox"/>
B	start	<input type="checkbox"/>
C	period	<input type="checkbox"/>
D	completion	<input type="checkbox"/>
E	hand over	<input type="checkbox"/>

(c) Prefabrication allows units at the end of their life to be:

(1)

A	dehumidified	<input type="checkbox"/>
B	demountable	<input type="checkbox"/>
C	degraded	<input type="checkbox"/>
D	decommissioned	<input type="checkbox"/>
E	dilapidated	<input type="checkbox"/>



(d) Prefabricated units can be:

(1)

A	noisy	<input type="checkbox"/>
B	expensive	<input type="checkbox"/>
C	energy inefficient	<input type="checkbox"/>
D	recycled	<input type="checkbox"/>
E	reinforced	<input type="checkbox"/>

(e) Prefabricated units often improve the level of:

(1)

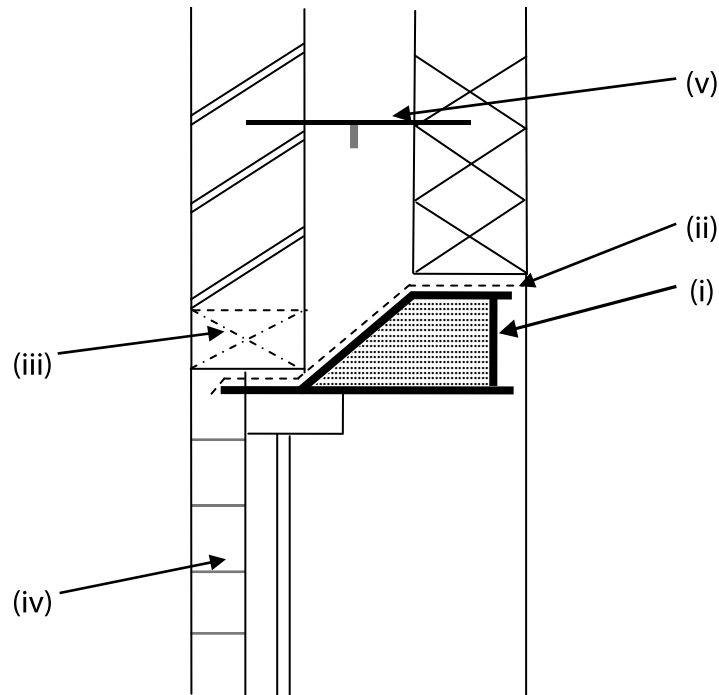
A	construction	<input type="checkbox"/>
B	erection	<input type="checkbox"/>
C	design	<input type="checkbox"/>
D	cladding	<input type="checkbox"/>
E	insulation	<input type="checkbox"/>

(Total for Question 5 = 5 marks)



6 Detailing the external envelope is an important part of a design technician's work.

Identify the correct details labelled (i) to (v) for the external cavity wall by putting a cross ☒ next to the correct answer.



(a) Label (i) shows:

(1)

A	uPVC lintel	<input type="checkbox"/>
B	timber lintel	<input type="checkbox"/>
C	concrete lintel	<input type="checkbox"/>
D	galvanised steel lintel	<input type="checkbox"/>
E	plastic lintel	<input type="checkbox"/>

(b) Label (ii) shows:

(1)

A	insulation	<input type="checkbox"/>
B	filling	<input type="checkbox"/>
C	concrete	<input type="checkbox"/>
D	steel	<input type="checkbox"/>
E	cavity tray	<input type="checkbox"/>



(c) Label (iii) shows:

(1)

A	drainage gap	<input type="checkbox"/>
B	outlet	<input type="checkbox"/>
C	cavity drain	<input type="checkbox"/>
D	weep hole	<input type="checkbox"/>
E	putlog hole	<input type="checkbox"/>

(d) Label (iv) shows:

(1)

A	rendering	<input type="checkbox"/>
B	reveal	<input type="checkbox"/>
C	ridge	<input type="checkbox"/>
D	riser	<input type="checkbox"/>
E	rafter	<input type="checkbox"/>

(e) Label (v) shows:

(1)

A	brick tie	<input type="checkbox"/>
B	wall tie	<input type="checkbox"/>
C	butterfly twist	<input type="checkbox"/>
D	anchor	<input type="checkbox"/>
E	fixing	<input type="checkbox"/>

(Total for Question 6 = 5 marks)



7 The Quantity Surveyor produces the bill of quantities for tendering purposes.

In the left hand column is a list of items within a bill of quantities.

Put a cross ☒ in the box to indicate whether each item will be found in: preliminaries, measured works, dayworks, provisional sums or prime cost sums.

	Preliminaries	Measured works	Dayworks	Provisional sums	Prime cost sums
Supervision	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Unidentified work	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Nominated subcontractor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
External walls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Contingencies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Total for Question 7 = 5 marks)



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8 With the rising cost of land and the drive to make houses affordable, prefabrication is steadily becoming the most economical method of construction.

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

(a) Prefabrication reduces the need for:

(1)

A	fixings	<input type="checkbox"/>
B	lifting	<input type="checkbox"/>
C	plasterboard	<input type="checkbox"/>
D	cavity ties	<input type="checkbox"/>
E	plastering	<input type="checkbox"/>
F	plywood	<input type="checkbox"/>

(b) The erection of timber framed housing requires the use of:

(1)

A	cherry pickers	<input type="checkbox"/>
B	cranes	<input type="checkbox"/>
C	scissor lifts	<input type="checkbox"/>
D	forktrucks	<input type="checkbox"/>
E	dumpers	<input type="checkbox"/>
F	tower scaffold	<input type="checkbox"/>

(c) Prefabrication reduces:

(1)

A	accidents	<input type="checkbox"/>
B	heat gain	<input type="checkbox"/>
C	recycling	<input type="checkbox"/>
D	height	<input type="checkbox"/>
E	on-site labour costs	<input type="checkbox"/>
F	quality	<input type="checkbox"/>



(d) Prefabrication improves the level of:

(1)

A	load capacity	<input type="checkbox"/>
B	quality control	<input type="checkbox"/>
C	inaccuracy	<input type="checkbox"/>
D	handling	<input type="checkbox"/>
E	inspections	<input type="checkbox"/>
F	cladding	<input type="checkbox"/>

(e) Prefabrication reduces the:

(1)

A	wet time	<input type="checkbox"/>
B	cutting time	<input type="checkbox"/>
C	cleaning time	<input type="checkbox"/>
D	delay time	<input type="checkbox"/>
E	down time	<input type="checkbox"/>
F	drying time	<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 each of the sentences below.

(a) The prefabricated unit for a roof would be known as a trussed:

(1)

A	joist	<input type="checkbox"/>
B	brace	<input type="checkbox"/>
C	beam	<input type="checkbox"/>
D	tie	<input type="checkbox"/>
E	purlin	<input type="checkbox"/>
F	rafter	<input type="checkbox"/>

(b) Prefabrication involving the use of formed steel is known as steel channel:

(1)

A	formwork	<input type="checkbox"/>
B	fixing	<input type="checkbox"/>
C	framing	<input type="checkbox"/>
D	fabrication	<input type="checkbox"/>
E	flooring	<input type="checkbox"/>
F	firrings	<input type="checkbox"/>

(c) The prefabrication of brickwork is known as:

(1)

A	benched	<input type="checkbox"/>
B	bonded	<input type="checkbox"/>
C	broken	<input type="checkbox"/>
D	buttered	<input type="checkbox"/>
E	banded	<input type="checkbox"/>
F	blinded	<input type="checkbox"/>



(d) Door prefabrication units are known as pre-hung door:

(1)

A	units	<input type="checkbox"/>
B	modules	<input type="checkbox"/>
C	components	<input type="checkbox"/>
D	frames	<input type="checkbox"/>
E	sets	<input type="checkbox"/>
F	fittings	<input type="checkbox"/>

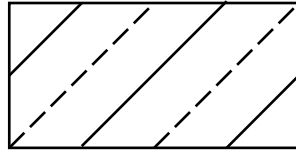
(Total for Question 9 = 4 marks)



10 The following are fill patterns or symbols taken from a drawing on the project you are working on. The site manager has asked you to identify what they are.

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

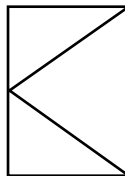
(a) The material below is known as:



(1)

A	block	<input type="checkbox"/>
B	stone	<input type="checkbox"/>
C	screed	<input type="checkbox"/>
D	asphalt	<input type="checkbox"/>
E	insulation	<input type="checkbox"/>
F	timber	<input type="checkbox"/>

(b) The type of window below is known as:



(1)

A	sash	<input type="checkbox"/>
B	side hung	<input type="checkbox"/>
C	top hung	<input type="checkbox"/>
D	pivot	<input type="checkbox"/>
E	loft	<input type="checkbox"/>
F	bottom hung	<input type="checkbox"/>



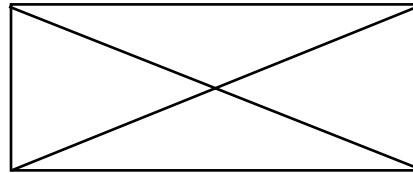
(c) The material below is known as:



(1)

A	particle board	<input type="checkbox"/>
B	cement board	<input type="checkbox"/>
C	fibreboard	<input type="checkbox"/>
D	plywood	<input type="checkbox"/>
E	DPC	<input type="checkbox"/>
F	insulation	<input type="checkbox"/>

(d) The material below is known as:



(1)

A	wood treated	<input type="checkbox"/>
B	softwood	<input type="checkbox"/>
C	wood planed	<input type="checkbox"/>
D	wood slabs	<input type="checkbox"/>
E	wood sawn	<input type="checkbox"/>
F	hardwood	<input type="checkbox"/>

(Total for Question 10 = 4 marks)



11 You have been asked to compare two different ICT systems for use in assisting the project manager.

Put a cross ☒ in the box to indicate whether each task can be completed using software package A only, B only, both, or neither.

Package A
AutoCAD

Package B
Microsoft Project

	Package A only	Package B only	Both	Neither
Production of Gantt charts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production of walk throughs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production of video images	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production of critical path analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Total for Question 11 = 4 marks)



12 You are now working within the construction office and have been asked to look at ways in which the company can reduce its impact on the natural environment.

Describe **two** methods that can be used to reduce the impact of site practices upon the natural environment.

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(Total for Question 12 = 4 marks)



