

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**

Thursday 10 January 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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**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 pre-contract programme for the substructure works to a large office extension.

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

Roof Conversion Programme																		
Contract No 6789																		
Week	1					2					3							
Day	1	2	3	4	5	6	7	8	9	10	11	12						
Activity																		
1	Site set up	☒																
2	Erect fencing		☒															
3	Erect scaffold			☒	☒	☒												
4	Strip roof				☒													
5	Fix wall plates					☒												
6	Erect roof trusses						☒											
7	Fix membrane and tile battens							☒										
8	Fix roof tiles								☒	☒								
9	Form loft access										☒							
10	Lay roof insulation											☒						
11	Fix fascias												☒					
12	Fix soffits													☒				
13	Fit loft hatch														☒			
14	Dismantle scaffold															☒		
15	Prepare for first lift external wall																☒	
16	Clean and handover																	☒



(a) An activity on a programme is a(n):

(1)

<b>A</b>	bar	<input type="checkbox"/>
<b>B</b>	item	<input type="checkbox"/>
<b>C</b>	task	<input type="checkbox"/>
<b>D</b>	feature	<input type="checkbox"/>
<b>E</b>	service	<input type="checkbox"/>

(b) Each of the shaded areas on the chart is called a(n):

(1)

<b>A</b>	item	<input type="checkbox"/>
<b>B</b>	plot	<input type="checkbox"/>
<b>C</b>	pathway	<input type="checkbox"/>
<b>D</b>	activity	<input type="checkbox"/>
<b>E</b>	bar	<input type="checkbox"/>

(c) The length of the shaded areas is the:

(1)

<b>A</b>	distance	<input type="checkbox"/>
<b>B</b>	duration	<input type="checkbox"/>
<b>C</b>	interval	<input type="checkbox"/>
<b>D</b>	operation	<input type="checkbox"/>
<b>E</b>	pathway	<input type="checkbox"/>

(d) The order in which activities are set out is termed:

(1)

<b>A</b>	sequencing	<input type="checkbox"/>
<b>B</b>	selection	<input type="checkbox"/>
<b>C</b>	slots	<input type="checkbox"/>
<b>D</b>	series	<input type="checkbox"/>
<b>E</b>	string	<input type="checkbox"/>



(e) The name for this type of chart is a:

(1)

<b>A</b>	gantt chart	<input type="checkbox"/>
<b>B</b>	pie chart	<input type="checkbox"/>
<b>C</b>	histogram	<input type="checkbox"/>
<b>D</b>	flow chart	<input type="checkbox"/>
<b>E</b>	schedule	<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.

For each of the following, put a cross ☒ in the box next to the correct answer for each statement.

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



(1)

<b>A</b>	mini hoe	<input type="checkbox"/>
<b>B</b>	mini dumper	<input type="checkbox"/>
<b>C</b>	mini excavator	<input type="checkbox"/>
<b>D</b>	mini shovel	<input type="checkbox"/>

(b) The item of plant below is typically used for delivering:



(1)

<b>A</b>	aggregates	<input type="checkbox"/>
<b>B</b>	cement	<input type="checkbox"/>
<b>C</b>	water	<input type="checkbox"/>
<b>D</b>	concrete	<input type="checkbox"/>



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



(1)

<b>A</b>	petrol saw	<input type="checkbox"/>
<b>B</b>	hammer	<input type="checkbox"/>
<b>C</b>	compactor	<input type="checkbox"/>
<b>D</b>	poker vibrator	<input type="checkbox"/>

(d) The item of plant below is known as a plate:



(1)

<b>A</b>	displacer	<input type="checkbox"/>
<b>B</b>	compactor	<input type="checkbox"/>
<b>C</b>	leveller	<input type="checkbox"/>
<b>D</b>	roller	<input type="checkbox"/>



(e) The item of plant below is known as a piling:



(1)

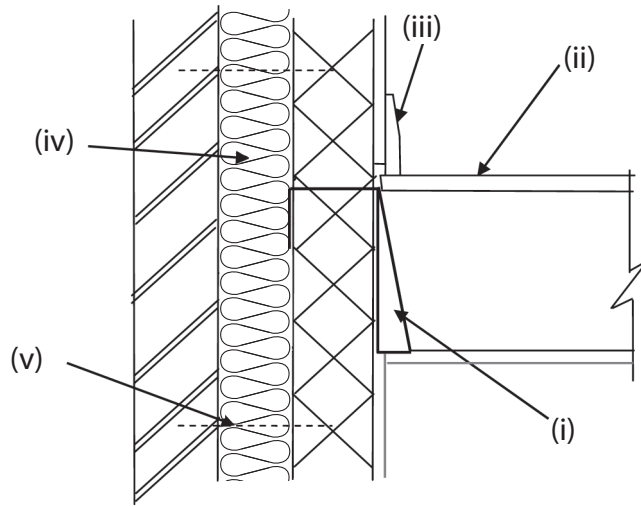
<b>A</b>	hammer	<input type="checkbox"/>
<b>B</b>	arm	<input type="checkbox"/>
<b>C</b>	rig	<input type="checkbox"/>
<b>D</b>	crane	<input type="checkbox"/>

(Total for Question 2 = 5 marks)



3 An important part of a design technician's role is to read drawings.

Identify the materials and components labelled (i) to (v) in the wall and timber floor section shown, by putting a cross ☒ in the box next to the correct answer.



(a) Label (i) shows a:

(1)

<b>A</b>	joist truss	<input type="checkbox"/>
<b>B</b>	floor hanger	<input type="checkbox"/>
<b>C</b>	joist hanger	<input type="checkbox"/>
<b>D</b>	floor angle	<input type="checkbox"/>

(b) Label (ii) shows:

(1)

<b>A</b>	insulation	<input type="checkbox"/>
<b>B</b>	chipboard	<input type="checkbox"/>
<b>C</b>	plasterboard	<input type="checkbox"/>
<b>D</b>	screed	<input type="checkbox"/>





(c) Label (iii) shows the:

(1)

<b>A</b>	architrave	<input type="checkbox"/>
<b>B</b>	floorboard	<input type="checkbox"/>
<b>C</b>	skirting board	<input type="checkbox"/>
<b>D</b>	dado rail	<input type="checkbox"/>

(d) Label (iv) shows:

(1)

<b>A</b>	insulation	<input type="checkbox"/>
<b>B</b>	foamboard	<input type="checkbox"/>
<b>C</b>	blockwork	<input type="checkbox"/>
<b>D</b>	wire	<input type="checkbox"/>

(e) Label (v) shows a:

(1)

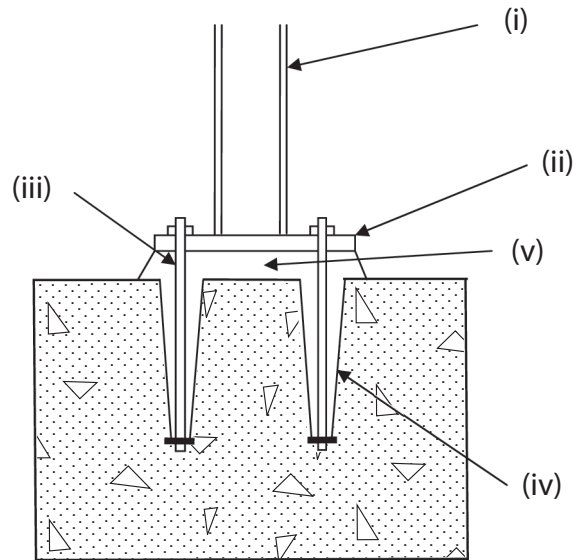
<b>A</b>	wall tie	<input type="checkbox"/>
<b>B</b>	joist tie	<input type="checkbox"/>
<b>C</b>	frame tie	<input type="checkbox"/>
<b>D</b>	brick tie	<input type="checkbox"/>

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



4 You are helping the site engineer to set out the foundations for a steel framed building and have been handed the section detail.

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



(a) Label (i) shows the:

(1)

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

(b) Label (ii) shows the:

(1)

<b>A</b>	base	<input type="checkbox"/>
<b>B</b>	base plate	<input type="checkbox"/>
<b>C</b>	web	<input type="checkbox"/>
<b>D</b>	flange	<input type="checkbox"/>



(c) Label (iii) shows a holding down:

(1)

<b>A</b>	bolt	<input type="checkbox"/>
<b>B</b>	screw	<input type="checkbox"/>
<b>C</b>	strap	<input type="checkbox"/>
<b>D</b>	tie	<input type="checkbox"/>

(d) Label (iv) shows a:

(1)

<b>A</b>	duct	<input type="checkbox"/>
<b>B</b>	cone	<input type="checkbox"/>
<b>C</b>	void	<input type="checkbox"/>
<b>D</b>	washer	<input type="checkbox"/>

(e) Label (v) shows:

(1)

<b>A</b>	cement	<input type="checkbox"/>
<b>B</b>	screed	<input type="checkbox"/>
<b>C</b>	filling	<input type="checkbox"/>
<b>D</b>	grout	<input type="checkbox"/>

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



5 The company would like to use prefabricated timber frames for future housing developments.

Put a cross ☒ in the box next to the correct word(s) to identify the sustainability benefits.

(a) Prefabrication reduces:

(1)

<b>A</b>	dry lining	<input checked="" type="checkbox"/>
<b>B</b>	efficiency	<input checked="" type="checkbox"/>
<b>C</b>	quality	<input checked="" type="checkbox"/>
<b>D</b>	on-site waste	<input checked="" type="checkbox"/>
<b>E</b>	unskilled labour	<input checked="" type="checkbox"/>

(b) Prefabrication can help to reduce:

(1)

<b>A</b>	crane use	<input checked="" type="checkbox"/>
<b>B</b>	insulation	<input checked="" type="checkbox"/>
<b>C</b>	flooring	<input checked="" type="checkbox"/>
<b>D</b>	plasterboarding	<input checked="" type="checkbox"/>
<b>E</b>	contract duration	<input checked="" type="checkbox"/>

(c) Prefabrication benefits the key stakeholders and wider community by reducing:

(1)

<b>A</b>	job opportunities	<input checked="" type="checkbox"/>
<b>B</b>	use of construction plant	<input checked="" type="checkbox"/>
<b>C</b>	environmental impact	<input checked="" type="checkbox"/>
<b>D</b>	light pollution	<input checked="" type="checkbox"/>
<b>E</b>	insulation	<input checked="" type="checkbox"/>



(d) Timber framed prefabrication may enable savings to be made on:

(1)

<b>A</b>	roof finishes	<input type="checkbox"/>
<b>B</b>	floor joists	<input type="checkbox"/>
<b>C</b>	dry lining	<input type="checkbox"/>
<b>D</b>	foundations	<input type="checkbox"/>
<b>E</b>	insulation	<input type="checkbox"/>

(e) Timber framed prefabricated units improve:

(1)

<b>A</b>	insulation levels	<input type="checkbox"/>
<b>B</b>	lighting levels	<input type="checkbox"/>
<b>C</b>	aesthetics	<input type="checkbox"/>
<b>D</b>	heat transfer	<input type="checkbox"/>
<b>E</b>	sound insulation	<input type="checkbox"/>

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

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6 You have been asked by the environmental manager to look at sustainable site practices that could be used on your project.

Put a cross ☒ in the box next to the correct word(s) which most appropriately completes the following sentences.

(a) Construction landfill can be sustainably reduced by using a:

(1)

A	shredder	<input checked="" type="checkbox"/>
B	waste disposal site	<input checked="" type="checkbox"/>
C	recycling skip	<input checked="" type="checkbox"/>
D	waste incinerator	<input checked="" type="checkbox"/>
E	waste carrier	<input checked="" type="checkbox"/>

(b) The transfer of construction dirt to local roads can be minimised by the use of a:

(1)

A	warning notice	<input checked="" type="checkbox"/>
B	wheel wash	<input checked="" type="checkbox"/>
C	car wash	<input checked="" type="checkbox"/>
D	road sweeper	<input checked="" type="checkbox"/>
E	wheel clamp	<input checked="" type="checkbox"/>

(c) Site waste can be reduced by the use of:

(1)

A	bagged materials	<input checked="" type="checkbox"/>
B	stock piled materials	<input checked="" type="checkbox"/>
C	silo mixed materials	<input checked="" type="checkbox"/>
D	ready mixed materials	<input checked="" type="checkbox"/>
E	packaged materials	<input checked="" type="checkbox"/>



(d) Noise from construction plants can be reduced by the use of:

(1)

<b>A</b>	weekend working	<input type="checkbox"/>
<b>B</b>	evening working	<input type="checkbox"/>
<b>C</b>	regular maintenance	<input type="checkbox"/>
<b>D</b>	site wastage	<input type="checkbox"/>
<b>E</b>	sharp attachments	<input type="checkbox"/>

(e) Specifying low embedded energy materials reduces:

(1)

<b>A</b>	water consumption	<input type="checkbox"/>
<b>B</b>	costs	<input type="checkbox"/>
<b>C</b>	carbon emissions	<input type="checkbox"/>
<b>D</b>	wastage	<input type="checkbox"/>
<b>E</b>	insulation	<input type="checkbox"/>

**(Total for Question 6 = 5 marks)**

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7 You have been asked to compare two different structures; one is a steel portal frame, the other is a domestic timber frame.

In the left hand column is a list of statements about framed construction.

Put a cross ☒ in the box to indicate whether each statement typically applies to the steel frame, the timber frame, to both or to neither.

	Steel portal frame	Domestic timber frame	Both	Neither
Requires pad foundations	☒	☒	☒	☒
Requires a crane during erection	☒	☒	☒	☒
Requires mobile elevated platforms to erect	☒	☒	☒	☒
Requires scaffolding during erection	☒	☒	☒	☒
Requires grouting after erection	☒	☒	☒	☒

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





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8 As the assistant site manager you become involved in using the Bill of Quantities, which is an important costing tool for a project.

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

(a) An item included to cover unforeseen work is known as a(n):

(1)

<b>A</b>	approximate sum	<input type="checkbox"/>
<b>B</b>	contract sum	<input type="checkbox"/>
<b>C</b>	allocated sum	<input type="checkbox"/>
<b>D</b>	free sum	<input type="checkbox"/>
<b>E</b>	costing sum	<input type="checkbox"/>
<b>F</b>	contingency sum	<input type="checkbox"/>

(b) Work that cannot be measured will be valued using:

(1)

<b>A</b>	prime rates	<input type="checkbox"/>
<b>B</b>	daywork rates	<input type="checkbox"/>
<b>C</b>	hourly rates	<input type="checkbox"/>
<b>D</b>	weekly rates	<input type="checkbox"/>
<b>E</b>	bill rates	<input type="checkbox"/>
<b>F</b>	approximate rates	<input type="checkbox"/>

(c) The preliminaries section of the Bill of Quantities covers:

(1)

<b>A</b>	roofing work	<input type="checkbox"/>
<b>B</b>	first fix plumbing	<input type="checkbox"/>
<b>C</b>	daywork rates	<input type="checkbox"/>
<b>D</b>	general conditions	<input type="checkbox"/>
<b>E</b>	measured items	<input type="checkbox"/>
<b>F</b>	ground works	<input type="checkbox"/>



(d) Work that has not yet been specified at tender stage is included by a(n):

(1)

<b>A</b>	contract sum	<input type="checkbox"/>
<b>B</b>	provisional sum	<input type="checkbox"/>
<b>C</b>	budget cost sum	<input type="checkbox"/>
<b>D</b>	private sum	<input type="checkbox"/>
<b>E</b>	final sum	<input type="checkbox"/>
<b>F</b>	unknown sum	<input type="checkbox"/>

(e) Works undertaken by a nominated specialist would be included in a:

(1)

<b>A</b>	private sum	<input type="checkbox"/>
<b>B</b>	final account	<input type="checkbox"/>
<b>C</b>	specialist sum	<input type="checkbox"/>
<b>D</b>	contract sum	<input type="checkbox"/>
<b>E</b>	prime cost sum	<input type="checkbox"/>
<b>F</b>	super sum	<input type="checkbox"/>

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



9 The housing site you are working on is using a large number of prefabricated timber framed units.

Put a cross ☒ in the box next to the correct statement on the erection of such units.

(a) The base on which a prefabricated unit sits must be:

(1)

A	smooth	<input type="checkbox"/>
B	rough	<input type="checkbox"/>
C	plumb	<input type="checkbox"/>
D	level	<input type="checkbox"/>
E	twisted	<input type="checkbox"/>
F	bowed	<input type="checkbox"/>

(b) The vertical sections of the timber frames must be:

(1)

A	diagonal	<input type="checkbox"/>
B	level	<input type="checkbox"/>
C	horizontal	<input type="checkbox"/>
D	braced	<input type="checkbox"/>
E	back to back	<input type="checkbox"/>
F	plumb	<input type="checkbox"/>

(c) Using prefabricated floors is a quick method of providing:

(1)

A	diagonal bracing	<input type="checkbox"/>
B	insulation	<input type="checkbox"/>
C	stability to walls	<input type="checkbox"/>
D	roof support	<input type="checkbox"/>
E	shelter	<input type="checkbox"/>
F	fire protection	<input type="checkbox"/>



(d) The outside of the timber plywood panels is covered with a:

(1)

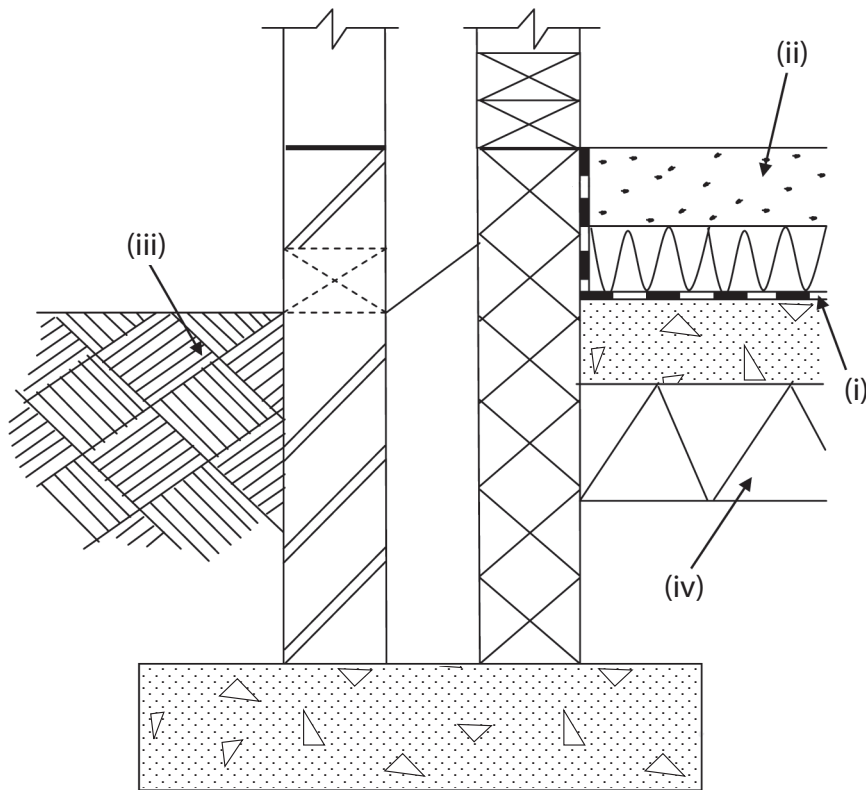
<b>A</b>	cavity membrane	<input type="checkbox"/>
<b>B</b>	breather membrane	<input type="checkbox"/>
<b>C</b>	rain cover membrane	<input type="checkbox"/>
<b>D</b>	sheathing membrane	<input type="checkbox"/>
<b>E</b>	thermal membrane	<input type="checkbox"/>
<b>F</b>	screen membrane	<input type="checkbox"/>

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



10 The following is a drawing on the project you are working on. The site manager has asked you to identify certain fill patterns.

Identify the different materials and components labelled (i) to (iv) by putting a cross  in the box next to the correct answer.



(a) Label (i) shows:

(1)

<b>A</b>	damp proof sheet	<input checked="" type="checkbox"/>
<b>B</b>	damp proof membrane	<input checked="" type="checkbox"/>
<b>C</b>	visqueen membrane	<input checked="" type="checkbox"/>
<b>D</b>	blinding	<input checked="" type="checkbox"/>
<b>E</b>	damp proof course	<input checked="" type="checkbox"/>
<b>F</b>	breather membrane	<input checked="" type="checkbox"/>



(b) Label (ii) shows:

(1)

<b>A</b>	carpet	<input type="checkbox"/>
<b>B</b>	concrete	<input type="checkbox"/>
<b>C</b>	plywood	<input type="checkbox"/>
<b>D</b>	stramit	<input type="checkbox"/>
<b>E</b>	sand	<input type="checkbox"/>
<b>F</b>	screed	<input type="checkbox"/>

(c) Label (iii) shows:

(1)

<b>A</b>	earth	<input type="checkbox"/>
<b>B</b>	top soil	<input type="checkbox"/>
<b>C</b>	sub soil	<input type="checkbox"/>
<b>D</b>	fill	<input type="checkbox"/>
<b>E</b>	clay	<input type="checkbox"/>
<b>F</b>	hardcore	<input type="checkbox"/>

(d) Label (iv) shows:

(1)

<b>A</b>	crushed brick	<input type="checkbox"/>
<b>B</b>	crushed concrete	<input type="checkbox"/>
<b>C</b>	hardboard	<input type="checkbox"/>
<b>D</b>	sand fill	<input type="checkbox"/>
<b>E</b>	earth	<input type="checkbox"/>
<b>F</b>	hardcore	<input type="checkbox"/>

(Total for Question 10 = 4 marks)



**11** You have been asked to compare two different methods of constructing a structural frame.

Put a cross ☒ in the box to indicate whether the associated statement applies to Method 1 only, Method 2 only, to both or to neither.

**Method 1**  
Insitu concrete

**Method 2**  
Pre-cast concrete

	Insitu concrete	Pre-cast concrete	Both	Neither
Requires formwork on-site	☒	☒	☒	☒
Crane required	☒	☒	☒	☒
Requires welding	☒	☒	☒	☒
Requires on-site curing time	☒	☒	☒	☒

**(Total for Question 11 = 4 marks)**





**12** As an assistant site manager you have to understand the various types of construction documentation.

Describe **two** ways in which ICT can be used to assist with project management and project planning.

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2 .....

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





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