Write your name here

Surname	Other names

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Centre Number	Candidate Number

Construction and the Built Environment

Level 2
Unit 4: Create the Built Environment: Structures

Thursday 20 May 2010 – 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.

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5/5/4/3

H 3 5 8 0 5 A 0 1 2 8

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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 Your work as a Trainee Site Manager means that you are involved in creating programs for the construction work.

The Site Manager has asked you to look at the pre-contract program for the site clearance prior to the main works commencing on site.

	Community Centre Enabling Works												
	Contract No 1234												
	Activity	Weeks											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Site survey												
2													
3	Demolition												
4													
5	Top soil strip												
6	Temporary spoil heaps												
7													
8	Cart away surplus												
9	Soil stabilisation												
10	Trench excavation												
11													
12	Site fill												
13													
14	Compacting hardcore												

With reference to the chart, put a cross ☒ in the correct box to identify the five missing activities.

(a) Activity 2 is:

(1)

A	First fix	☒
B	Brickwork to DPC	☒
C	Deliver frame	☒
D	Disconnect services	☒
E	Grouting	☒

(b) Activity 4 is:

(1)

A	Trench blinding	☒
B	Brickwork to superstructure	☒
C	Site clearance	☒
D	Fence site	☒
E	Drainage	☒

(c) Activity 7 is:

(1)

A	Superstructure blockwork	☒
B	Lay trench blocks	☒
C	Cut down trees	☒
D	Fence site	☒
E	Excavate to reduced level	☒

(d) Activity 11 is:

(1)

A	Cavity insulation	☒
B	Earthwork support	☒
C	Site set up	☒
D	Superstructure blockwork	☒
E	Painting	☒

(e) Activity 13 is:

(1)

A	Landscaping	☒
B	Lay DPM	☒
C	External works	☒
D	Hardcore beds	☒
E	Windows	☒

(Total for Question 1 = 5 marks)

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2 The Site Manager is testing your knowledge of the methods involved in constructing foundations. The following are photographs taken on construction projects.

(a) In the picture below, you will see a trench box. This is used to provide:

(1)

A	Safety support	☒
B	Construction support	☒
C	Steel support	☒
D	Earthwork support	☒

(b) In the picture below, the operative is:

(1)

A	Checking reinforcement	☒
B	Rodding drains	☒
C	Compacting concrete	☒
D	Concrete slump testing	☒

(c) In the picture below, the machine is:

(1)

A	Checking depth	☒
B	Soil testing	☒
C	Excavating foundations	☒
D	Blinding	☒

(d) In the picture below, the bricklayer is:

(1)

A	Laying bricks	☒
B	Laying trench blocks	☒
C	Laying drainage	☒
D	Laying hardcore	☒

(e) In the picture below, the type of floor is:

(1)

A	Concrete	☒
B	Suspended timber	☒
C	Solid beam	☒
D	Beam and block	☒

(Total for Question 2 = 5 marks)

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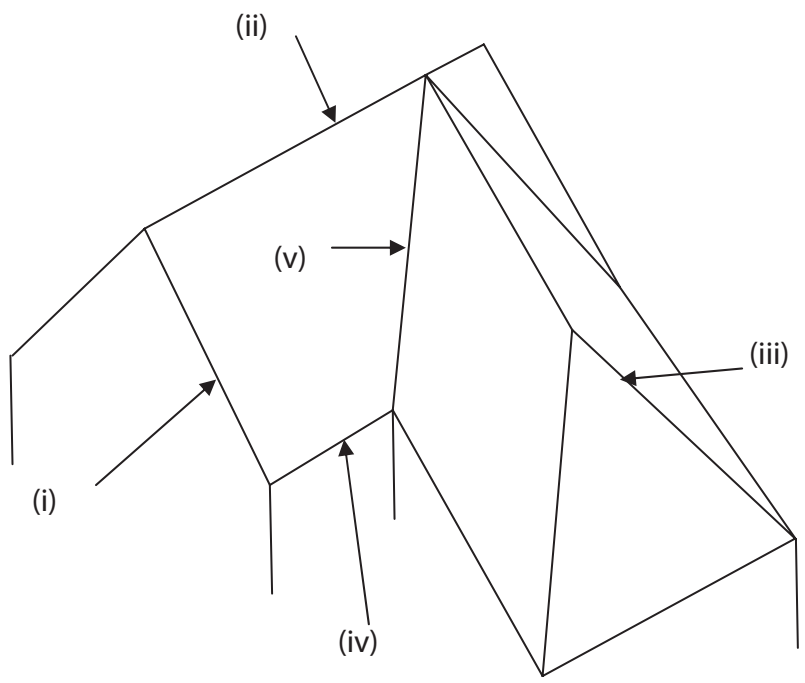
3 You are now working as an Assistant Site Manager and the site is now at the roofing stage.

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



(a) Label (i) shows:

(1)

A	Batten	☒
B	Fascia	☒
C	Soffit	☒
D	Verge	☒

(b) Label (ii) shows:

(1)

A	Base	☒
B	Ridge	☒
C	Fascia	☒
D	Soffit	☒

(c) Label (iii) shows:

(1)

A	Valley	☒
B	Verge	☒
C	Jack	☒
D	Hip	☒

(d) Label (iv) shows:

(1)

A	Elevation	☒
B	Eaves	☒
C	Soffit	☒
D	Barge	☒

(e) Label (v) shows:

(1)

A	Eaves	☒
B	Join	☒
C	Valley	☒
D	Girth	☒

(Total for Question 3 = 5 marks)

4 The Site Manager has asked you to consider the following materials for the weather protection of a building.

The table below shows a list of different materials that can be used for covering building envelopes.

Put a cross ☒ in the correct box to indicate whether each material is used horizontally, vertically, both, or is not suitable.

Material	Horizontally	Vertically	Both	Not suitable
Built up felt	☒	☒	☒	☒
Clay Tiles	☒	☒	☒	☒
Mastic asphalt	☒	☒	☒	☒
Lead	☒	☒	☒	☒
Plaster	☒	☒	☒	☒

(Total for Question 4 = 5 marks)

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5 The Site Manager has asked you to examine the construction plant on site.

(a) Which of the following is used to move materials vertically?

(1)

A	backactor	☒
B	compressor	☒
C	hoist	☒
D	dumper	☒

(b) Which of the following is used to move materials both horizontally and vertically?

(1)

A	dumper	☒
B	skip	☒
C	tower crane	☒
D	tipper	☒

(c) For demolition work, some excavators can be fitted with a hydraulic:

(1)

A	crusher	☒
B	breaker	☒
C	chisel	☒
D	arm	☒

(d) Which of the following is used to gain access to height?

(1)

A	loading shovel	☒
B	backactor	☒
C	teleporter	☒
D	cherry picker	☒

(e) Which of the following is used to supply air to various hand-held tools?

(1)

A	transformer	☒
B	pump	☒
C	grinder	☒
D	compressor	☒

(Total for Question 5 = 5 marks)

6 Prefabrication is an important sustainable technique that is increasingly used in modern methods of construction.

In the table below, put a cross ☒ in the correct box to indicate whether each item can be prefabricated in timber, concrete, both or neither.

	Timber	Concrete	Both	Neither
Pitched roofs	☒	☒	☒	☒
Floors	☒	☒	☒	☒
Walls	☒	☒	☒	☒
Drainage	☒	☒	☒	☒
Stairs	☒	☒	☒	☒

(Total for Question 6 = 5 marks)

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7 As an Assistant Site Engineer you have to order concrete. The following are statements about concrete.

(a) Concrete is strongest in:

(1)

A	expansion	☒
B	shear	☒
C	stress	☒
D	tension	☒
E	compression	☒

(b) Concrete is weak in:

(1)

A	tension	☒
B	strain	☒
C	stress	☒
D	expansion	☒
E	contraction	☒

(c) Formwork is used to support:

(1)

A	pre-cast concrete	☒
B	pre-stressed concrete	☒
C	insitu concrete	☒
D	unfixed concrete	☒
E	irrigated concrete	☒

(d) Large volumes of concrete can be moved by:

(1)

A	pumping	☒
B	dumping	☒
C	pushing	☒
D	sliding	☒
E	skipping	☒

(e) Concrete must be left to:

(1)

A	pour	☒
B	cure	☒
C	settle	☒
D	level	☒
E	soften	☒

(Total for Question 7 = 5 marks)

8 As an Assistant Buyer you have to consider the environment. Timber framed construction is a form of prefabrication that provides many sustainable benefits for the environment when compared with traditional methods of construction.

(a) Sustainable timber framed construction should use:

(1)

A	forest timber sources	☒
B	reclaimed timber sources	☒
C	hardwood timber sources	☒
D	managed timber sources	☒
E	unnatural timber sources	☒
F	softwood timber sources	☒

(b) Using timber framed construction can reduce:

(1)

A	waiting time	☒
B	down time	☒
C	shrinkage time	☒
D	fitting time	☒
E	standing time	☒
F	drying time	☒

(c) Timber framed construction can improve the level of:

(1)

A	heat loss	☒
B	workmanship	☒
C	insulation	☒
D	heat gain	☒
E	specification	☒
F	noise reduction	☒

(d) Which of the following controls is much more effective in prefabricated timber framed constructions?

(1)

A	Program	☒
B	Quality	☒
C	Site	☒
D	Labour	☒
E	Quantity	☒
F	Resource	☒

(e) The use of timber framed construction cuts down on CO_2 pollution by reducing the use of:

(1)

A	water	☒
B	MDF	☒
C	cement	☒
D	plywood	☒
E	DPM	☒
F	DPC	☒

(Total for Question 8 = 5 marks)

9 You have been asked by the Contracts Manager to update the progress to the main contract program on your site. Part of this process is understanding the content of program activities.

(a) First fix joinery would include:

(1)

A	stud partitions	☒
B	hanging shelves	☒
C	hanging doors	☒
D	skirting boards	☒
E	glazing beads	☒
F	architraves	☒

(b) First fix electrical would include:

(1)

A	light switches	☒
B	ceiling roses	☒
C	consumer unit	☒
D	cabling	☒
E	light fittings	☒
F	boiler controls	☒

(c) First fix plumbing would include:

(1)

A	sink taps	☒
B	bath	☒
C	pipework	☒
D	toilet	☒
E	shower	☒
F	boilers	☒

(d) Second fix joinery would include:

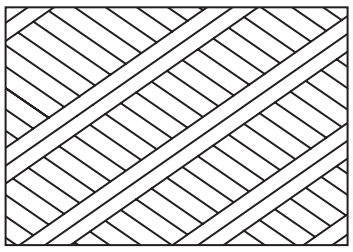
(1)

A	rafters	☒
B	ridge boards	☒
C	ceiling joists	☒
D	stud partitions	☒
E	architraves	☒
F	door frames	☒

(Total for Question 9 = 4 marks)

10 The following are fill patterns taken from a drawing on the project you are working on. The Site Manager has asked you to identify what they represent.

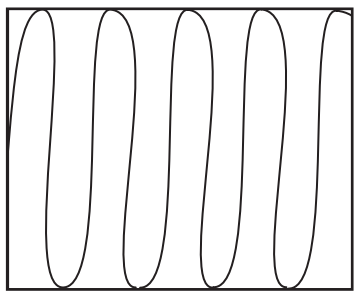
(a)



(1)

A	Blockwork	☒
B	Brickwork	☒
C	Cement	☒
D	Mortar	☒
E	Hardcore	☒
F	Earth	☒

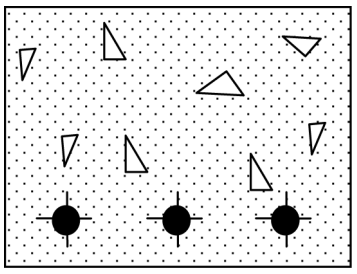
(b)



(1)

A	Blockwork	☒
B	Insulation	☒
C	Glass	☒
D	Metal	☒
E	Particle board	☒
F	Insulation board	☒

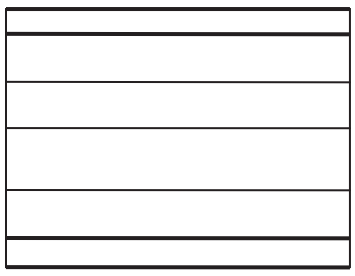
(c)



(1)

A	Screed	☒
B	Concrete	☒
C	Hardcore	☒
D	Glass	☒
E	Reinforced concrete	☒
F	Masonry	☒

(d)



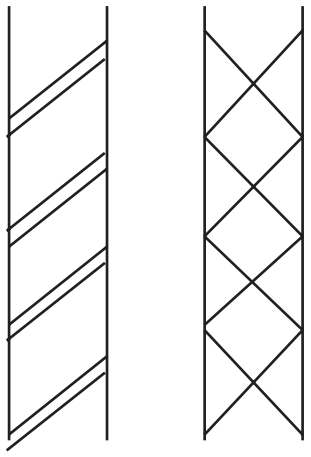
(1)

A	Hardboard	☒
B	Plasterboard	☒
C	Plywood	☒
D	Particle board	☒
E	Blockboard	☒
F	Laminboard	☒

(Total for Question 10 = 4 marks)

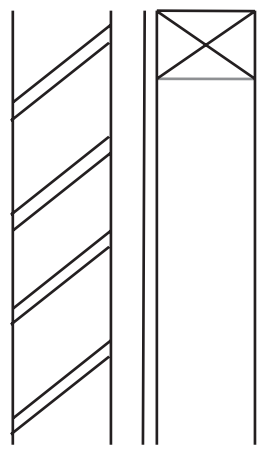
11 You have been asked to compare two different wall constructions, a traditional cavity wall and a timber framed external wall.

Put a cross ☒ in the correct box to indicate whether the statements below apply to Detail A only, Detail B only, to both, or neither.



Detail A

Traditional cavity wall



Detail B

Timber framed external wall

	Detail A only	Detail B only	Both	Neither
insulation must be added to the wall	☒	☒	☒	☒
a vapour barrier is required within the construction	☒	☒	☒	☒
wall ties are required for stability	☒	☒	☒	☒
brickwork inside face requires pointing	☒	☒	☒	☒

(Total for Question 11 = 4 marks)

12 As an Assistant Quantity Surveyor you realise that contract documentation is a valuable communication tool. The Bill of Quantities is a costing document for the contract.

Describe **one** use of the Bill of Quantities during a construction project.

(Total for Question 12 = 2 marks)

13 You are now working within the company's construction office. You have been asked to look at the different types of floors that could be installed on the ground floor of the new house type that has been designed.

Type 1 is a modern floor comprising pre-cast concrete with light weight concrete infill blocks.

Type 2 is a traditional timber suspended floor with softwood joists and chipboard flooring.

State **six** advantages type 1 has over type 2.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

5 .....

.....

6 .....

.....

(Total for Question 13 = 6 marks)

TOTAL FOR PAPER = 60 MARKS