Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2019

Construction and the Built Environment

GCB11

Assessment Unit 1
The Construction Industry for the 21st Century

[GCB11]
FRIDAY 25 JANUARY, MORNING

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all eleven** questions.
Questions **1, 2, 3, 5, 6** and **10** should be answered in relation to the enclosed drawings and specifications previously issued as pre-release material.
You should not bring any of the material previously issued into this examination.
You will be provided with a clean copy of the pre-release material.

INFORMATION FOR CANDIDATES

The total mark for this paper is 120.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in questions **9** and **10**.

A scale ruler is required.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
Total Marks	

Section A

Answer **all** questions

Questions 1, 2, 3, 5, 6 and 10 relate to the pre-release material

Examiner Only	
Marks	Remark

1 **(a)** State the type of external wall construction used in the house shown in the pre-release material.

_____ [1]

(b) State the difference between the following two types of wall structures:

Non load bearing walls

Load bearing walls

_____

_____

_____

_____

_____ [2]

(c) List **six** functional requirements of walls.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____ [6]

(d) Stainless steel wall ties have been specified for use in the house shown in the pre-release material. State **two** reasons why you would specify these wall ties when designing a wall structure.

_____

_____

_____ [2]

2 List **three** of the main roles that the following construction personnel would have for a house as shown in the pre-release material.

Examiner Only	
Marks	Remark

(a) Architect

1. _____

_____

2. _____

_____

3. _____

_____ [3]

(b) Joiner

1. _____

_____

2. _____

_____

3. _____

_____ [3]

(c) Plumber

1. _____

_____

2. _____

_____

3. _____

_____ [3]

Examiner Only	
Marks	Remark

3 Using the pre-release material, give the following internal room dimensions in **millimetres**. Some dimensions may need to be scaled.

(a) The length and width of the kitchen.

Length _____ mm Width _____ mm [4]

(b) The overall width of the dwelling.

Width _____ mm [2]

(c) The width and height of window B at the front of the dwelling.

Width _____ mm Height _____ mm [4]

(d) The overall length of the hall.

Length _____ mm [2]

(e) The total number of internal doors in the dwelling.

The total number of internal doors is _____ [2]

(f) The total floor area of the kitchen **in square metres**.

Show your calculations below. _____ sq m [2]

4 Under the Health and Safety at Work (Northern Ireland) Order 1978 list **four** duties of an employee on any construction site.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____ [4]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

5 **(a)** Name the point at which the two roofs meet at right angles to each other as shown in the pre-release material.

_____ [1]

(b) Name the inclined timbers fixed between the wall plate and ridge which transfer the live and dead loads to the wall plate.
They are found underneath the roofing felt.

_____ [1]

(c) Name the board fixed horizontally along the front of a house.
The gutter is usually fixed to this board.

_____ [1]

(d) Name the timber member fixed on top of the load bearing walls.

_____ [1]

(e) What is the correct name given to the horizontal timber running along the top of the roof?

_____ [1]

(f) List **five** of the principal functions of a roof.

1. _____
2. _____
3. _____
4. _____
5. _____ [5]

Examiner Only	
Marks	Remark

6 State the function and location of the following components used in the pre-release material.

(a) Insulation

_____

_____

_____ [2]

(b) Damp-proof course (D.P.C.)

_____

_____

_____ [2]

(c) Double glazing

_____

_____

_____ [2]

(d) Lead flashing

_____

_____

_____ [2]

(e) Architrave

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

7 **(a)** Describe what you understand by an Area Plan as it relates to Northern Ireland.

[5]

(b) Describe what you understand by **"Sustainable Development in the Countryside"** as a rural planning policy for Northern Ireland.

[5]

Section B

Answer **all** questions

Examiner Only	
Marks	Remark

8 The image shown in **Fig. 1** is typical of a specific type of framed construction.

© Chief Examiner

Fig. 1

(a) Name the type of frame structure shown in **Fig. 1** and the material from which it is made.

_____ [2]

(b) List **five** examples of the types of building which this structure could be used for.

1. _____

2. _____

3. _____

4. _____

5. _____ [5]

Examiner Only	
Marks	Remark

(c) Discuss **three** reasons why this type of structure is suitable for the buildings you have listed in **(b)**.

[5]

(d) State **four** advantages of using this type of structure.

1.

2.

3.

4.

[4]

(e) Discuss **two** ways in which this type of structure can be designed to resist wind loads.

[4]

9 Compare how modern **timber framed structures** differ from those constructed from **concrete brick and block**. You should use the following headings to assist with your answer:

Wall construction
Insulation
Fire resistance
Transmission of loads
Methods of creating openings
Flexibility in design

[10]

Examiner Only	
Marks	Remark

10 Before the client gives final approval for the houses in the pre-release material to be constructed, he has asked you to **evaluate ways** in which he **can reduce the use of fossil fuels** in the day to day running costs of the house.

[10]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

11 **(a)** Draw a timber window frame in the box below which would fulfil the following specifications:

One top hung opening casement including hinges
One side hung opening casement including hinges
One fixed light [5]

(b) Add **five** of the following labels to your drawing:

Head
Stile
Sill
Mullion
Transom
Fixed light
Opening casement
Hinge position
Opening sash [5]

THIS IS THE END OF THE QUESTION PAPER

Rewarding Learning

General Certificate of Secondary Education
January 2019

Construction and the Built Environment

Pre-Release Material

Examination Copy

Assessment Unit 1:
The Construction Industry for the 21st Century

GCB11

[GCB11]

FRIDAY 25 JANUARY, MORNING

You must use **this** clean copy of the Pre-Release Material in the examination and **not** your own annotated copy.

NOTE: Students will require the use of a scale ruler during the examination.

Introduction
A copy of the pre-release information for this examination is included in the following pages.

Relate your answer to a small development of 10 houses with an expected tender sum of £3.2 million. The house shown in the pre-release material is one of the houses in this development.

This small development has been located on the edge of a provincial town, just inside the Green Belt. As part of the Area Plan the site has been designated as residential use. The Planning Department will be guided by the Town and Country Planning Act 1990.

The pre-release material contains two drawings and specifications.

The Client has employed the following people to oversee the design of his development:

Architect
Structural Engineer
Building Services Engineer

The Contractor will employ the following team:

Foreman
Bricklayer
Joiners
Plumbers

Specification

Cavity Wall Construction

Outer leaf: 100 mm concrete block, 150 mm cavity, stainless steel retaining wall ties to BS 1243. 150 mm cavity to be filled with cavity fill insulation.
Inner leaf: 100 mm lightweight block work. Provide sand/cement plaster and carlite finish to inner face. Wall ties to be spaced at 750 mm horizontally, and 450 mm vertically, and unbonded jamb ties to be spaced 300 mm vertically. 30 mm thick insulation to all jambs, between lintels and behind sill. D.P.C. in front of insulation in each case.

External wall finishes

Rendered wall painted cream.

External roof finishes

Concrete interlocking brown roof tiles.
Brown uPVC fascia board.
Brown powder coated aluminium gutter.

Windows

Brown powder coated aluminium window frames.

Solid floor construction

Seal all floors with two coats of penetrating liquid dust proofer, 100 mm fine aggregate screed, 150 mm high density floor insulation. Visqueen 1200 grade D.P.M., 100 mm concrete sub-floor, 150 mm consolidated hard core.

Damp proof course

Vertical D.P.C. to all window and external door jambs, horizontal D.P.C. behind and under sills and stepped lintels. Wall D.P.C. to external skin, layers at 150 mm minimum above finished ground levels.
D.P.C. to internal walls to overlap and be bonded to floor D.P.M. by a minimum of 215 mm.

Foundations

650 mm × 350 mm foundations to 350 mm walls.
450 mm × 350 mm foundations to 100 mm walls.
The above to be concrete strip foundations. The size and depth of foundations shown to be determined and agreed with Building Control when subsoil bearing pressures are known.

NOTE Students will require the use of a scale ruler during the examination.

GCSE Construction and the Built Environment

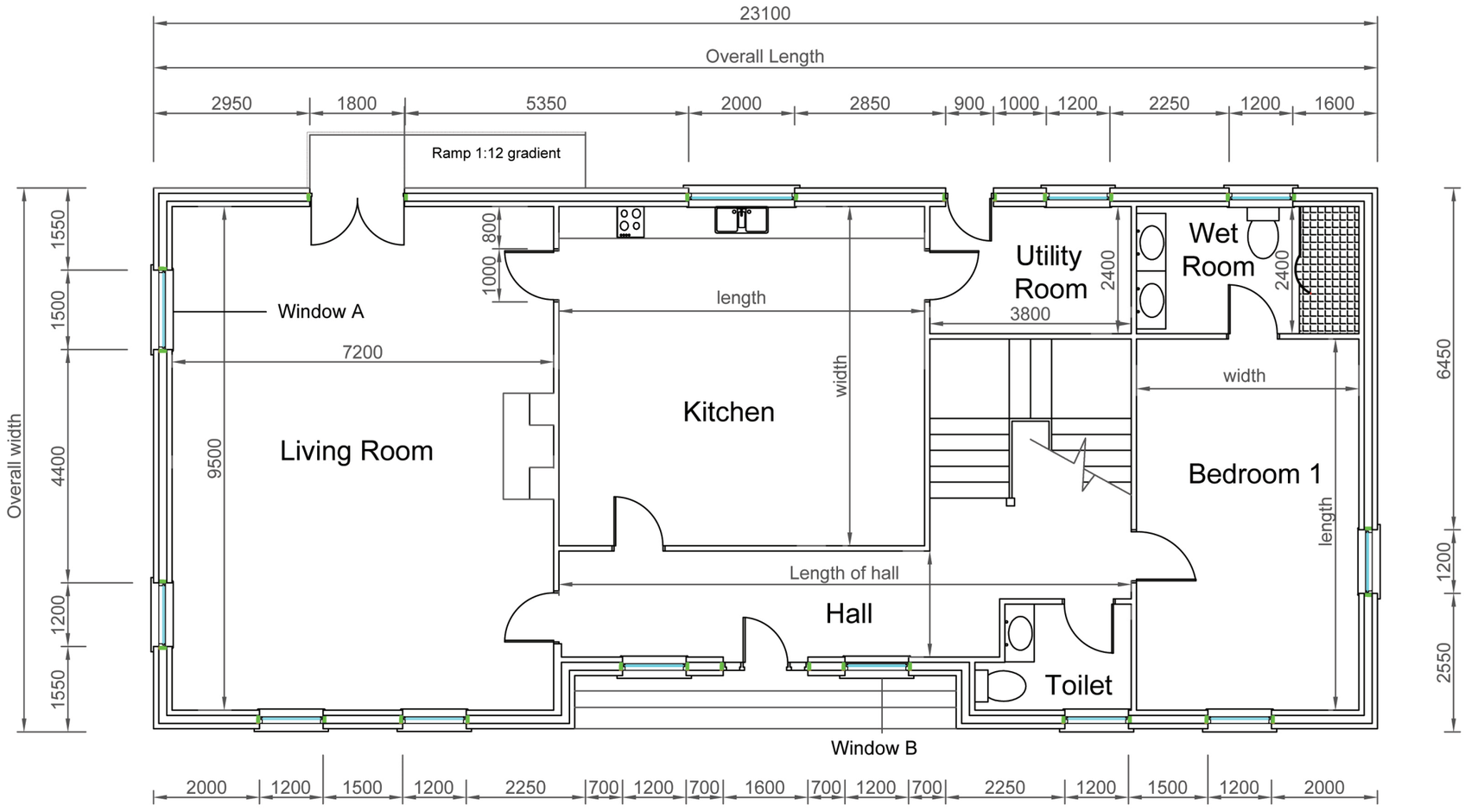
Front View **Drawing No 1**

Unit 1

Pre-release material

January 2019

SCALE: 1: 100



GCSE Construction and the Built Environment

Plan View Drawing No 2

Unit 1

Pre-release material

January 2019

SCALE: 1: 100