



*Rewarding Learning*

**General Certificate of Secondary Education  
2025**

---

# **Construction and the Built Environment**

**Unit 1**

**Introduction to the Built Environment**

**[GCN11]**

**WEDNESDAY 4 JUNE, AFTERNOON**

---

**MARK  
SCHEME**

## **General Marking Instructions**

### ***Introduction***

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses. The mark schemes should be read in conjunction with these general marking instructions.

### ***Assessment Objectives***

Below are the assessment objectives for Construction and the Built Environment.

Candidates must:

- recall, select and communicate their knowledge of construction and the built environment and understanding of a range of contexts (AO1);
- apply skills, knowledge and understanding in a variety of contexts and in planning and carrying out investigations and tasks (AO2); and
- analyse and evaluate evidence, make reasoned judgements and present conclusions (AO3).

### ***Quality of candidates' responses***

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

### ***Flexibility in marking***

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

### ***Positive marking***

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

### ***Awarding zero marks***

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

### ***Types of mark schemes***

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication. Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

### **Levels of response**

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the “best fit” bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

### **Marking calculations**

In marking answers involving calculations, examiners should apply the “own figure rule” so that candidates are not penalised more than once for a computational error.

### **Quality of written communication**

Quality of written communication is taken into account in assessing candidates’ response to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is limited.

Level 2: Quality of written communication is satisfactory.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

**Level 1 (Limited):** The level of accuracy of candidates’ presentation, spelling, punctuation and grammar is limited. The candidate makes a limited selection and use of an appropriate form and style of writing.

The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary.

**Level 2 (Satisfactory):** The level of accuracy of candidates’ presentation, spelling, punctuation and grammar is satisfactory. The candidate makes a satisfactory selection and use of an appropriate form and style of writing supported with appropriate use of diagrams as required. Relevant material is organised with some clarity and coherence. There is some use of specialist vocabulary.

**Level 3 (Excellent):** The level of accuracy of candidates’ presentation, spelling, punctuation and grammar is excellent. The candidate successfully selects and uses the most appropriate form and style of writing, supported with precise and accurate use of diagrams where appropriate. Organisation of relevant material is excellent. There is excellent use of appropriate specialist vocabulary.

- 1 (a) Steel rectangular framed construction [2]
- (b) Any **four** from the following or other appropriate response.
- School
  - Hospital
  - Office Block
  - Apartments/Flats
  - Hotel
- [1] per building occupancy up to a maximum of [4] [4]
- (c) Any **two** from the following or other appropriate response.
- A framed structure is a network of beams and columns joined up to form the skeleton framework of the building.
  - The skeleton framework makes a number of small rooms suitable for occupancy.
  - The structural frame carries the total load of the building and transfers it to the foundation.
  - Cladding is fixed over the framework, or infill panels are placed between its members, to totally enclose the space within the building.
- [1] per activity up to a maximum of [2] [2]
- (d) • The beams and columns of this structure can be welded together.  
• The beams and columns of this structure can be bolted together.
- [2] per explanation up to a maximum of [4] [4]
- (e) Increased structural stability is achieved by:
- The addition of concrete lift shafts.
  - The addition of staircases
  - The addition of diagonal bracing of the frame.
  - Rigidity achieved by the external cladding.
- or any other reasonable answer.
- [2] per explanation discussion up a maximum of [4] [4]

AVAILABLE  
MARKS

**(f) Advantages**

- Foundations can be constructed while frame is being fabricated off site.
- Metal section easily obtainable in standard lengths.
- Speed and ease of erection.
- Building can be quickly closed in and made watertight.
- Framework prefabricated in a workshop and not affected by weather.
- Site works such as drainage, roads etc. can be carried out until framework is ready for erection.
- No weather hold-up during erecting the framework.
- Connected in factories by welding.
- Site connections are bolted.
- Structural stability easily provided through bracing and infill panels.
- Staircase/lift shaft.

**Disadvantages**

- Although steel is incombustible it has a poor resistance to fire as it bends easily when hot.
- Subject to corrosion.
- Larger rooms can have columns in them restricting space and function.

**Level 1 ([1]–[4])**

Candidates compare advantages and disadvantages of using rectangular framed construction. Candidates will show an understanding of the advantages and disadvantages in relation to foundations, materials, jointing methods, speed of erection and structural stability. Their level of accuracy for spelling, punctuation and grammar is limited. They discuss advantages and disadvantages in a limited form and style of writing. Their discussion is not fully coherent or organised and there is little use of specialist terms.

**Level 2 ([5]–[7])**

Candidates compare advantages and disadvantages of using rectangular framed construction. Candidates will show an understanding of the advantages and disadvantages in relation to foundations, materials, jointing methods, speed of erection and structural stability. Their level of accuracy for spelling, punctuation and grammar is satisfactory. They discuss advantages and disadvantages in a satisfactory form and style of writing. Their discussion is coherent or organised in most cases and they use a range of specialist terms.

**Level 3 ([8]–[10])**

Candidates compare advantages and disadvantages of using rectangular framed construction. Candidates will show an understanding of the advantages and disadvantages in relation to foundations, materials, jointing methods, speed of erection and structural stability. Their level of accuracy for spelling, punctuation and grammar is excellent. They discuss advantages and disadvantages in an excellent form and style of writing. Their discussion is coherent and very well organised and they use a wide range of specialist terms.

When a response is not worthy of credit [0] should be awarded.

[4] of the total marks awarded for quality of written communication. [10]

26

- 2 (a) • Finance  
• Plant  
• Labour  
• Materials  
• Time
- [1] per resource up to a maximum of [4] [4]

- (b) 2 × [2] for a response which shows an understanding of either Time, Plant, Labour, Materials or Finance. 2 × [1] for an example of each.

**Finance** is required by the client to purchase or construct a building or site. Stage payments would be made to the contractor to carry out construction/renovations. Finance would also be required to pay for other statutory requirements such as Planning Permission or Building Control approval. Examples include mortgage, bank loan and personal savings.

**Plant** will be required for various types of operations on site such as digging out trenches for drains and a telescopic handler for lifting heavy objects to higher levels such as the roof tiles.

**Labour** is required to carry out the construction of the project. The following type of labour could be employed: design team, contract team, trade operatives i.e., joiners, bricklayers, plumbers, and stone masons.

**Materials** include all resources required to carry out any project such as cement, timber, glass etc.

**Time** required to carry out the construction project, impact on cost, realistic time for the project. Example to include any given timeframe.

or any other reasonable answer. [6]

10

- 3 (a) Terrace housing/town house [1]
- (b) A row or street of houses occupied by different tenants. Separate doors/houses joined together. [2]
- (c) Detached House [1]
- (d) This is a building which is not connected to any other buildings. Two-storey dwelling with its own entrance. [2]
- (e) Semi-detached housing [1]
- (f) One large house divided in two by a part wall to form two houses. [2]
- (g) Flats/apartments/multi-storey [1]
- (h) Multi-storey erected where space is limited in built-up areas or where land is very expensive. [2]

12

4 (a) 2013 or 2020

[1]

AVAILABLE  
MARKS

- (b)
- 0 Strategic Definition
  - 1 Preparation and Brief
  - 2 Concept Design
  - 3 Developed Design or Spatial Co-ordination
  - 4 Technical Design
  - 5 Construction or Manufacturing in Construction
  - 6 Handover and Close Out
  - 7 In Use

Must be stated in the correct order.

[1] per response up to a maximum of [8]

[8]

- (c)
- Accepted as the most suitable plan (industry standard); the process is well known, and it is used by architects to achieve high quality workmanship.
  - The project is divided into well-defined stages; therefore, a step-by-step approach is adopted.
  - In each stage individual members of the design team can be given different targets, preventing an overlap of work, and enabling progress.
  - Each design team member knows what will be expected of them in their respective job roles; enabling realistic deadlines to be set.
  - Encourages good communication between team members.
  - Logical and systematic process.
  - The design work will be mostly complete before construction work commences.
  - The process enables clients who are not familiar with construction projects to keep track of the project.
  - Achievable completion dates can be set.
  - Enhances budgetary controls.
  - Encourages a culture of cooperation and teamwork.
  - The client will establish a well-defined brief; therefore, the design team will accomplish his requirements from the commencement of the process.
  - Increased job satisfaction.
  - Architects' fees can be based on the completion of the various stages, therefore the client will get value for money.

or any other reasonable answer.

[2] per response up to a maximum of [6]

[6]

15

- 5 (a) • Bricklayer  
• Electrician  
• Joiner  
• Plasterer  
• Plumber  
• Gas engineer  
• Tiler

[1] per response up to a maximum of [4]

[4]

**(b) Quantity Surveyor**

Any of the following or other appropriate response:

- Cost control function during the design process of the dwelling shown in the speculative housing development.
- Give advice to the client on cost.
- Prepare a Bill of Quantities for all materials associated with the building.
- Prepare the tender documents.
- Evaluate the tenders when they are returned.
- Measure up work for payment on site during the construction process.
- Prepare interim valuations.
- Prepare final accounts.
- Calculate quantity of materials required.

[1] per response up to a maximum of [2]

[2]

**Building Services Engineer**

Any of the following or other appropriate response:

- Building services engineers are responsible for the design, installation, operation and monitoring of the technical services in buildings.
- Consulting with builders and clients about their needs and budgets.
- Visiting building sites and assessing their suitability for construction.
- Designing unique systems for each individual building, such as energy, air conditioning, lifts, drainage and ventilation.
- Selecting proper building materials and components.
- Laying out energy sources, pipes, ventilation systems.
- Managing teams of people and working closely with them to complete the work on time and to a high standard.

[1] per response up to a maximum of [2]

[2]

8

**6 (a) Mandatory Signs**

They tell you something must be done. [1]

They have a white symbol on a blue circular background. [2]

**(b) Safe Condition Signs**

They give you useful information like the location of first aid points and fire exits. [1]

They have a white symbol on a green background. [2]

**(c) Warning Signs**

They alert you to a specific hazard. [1]

They have a Yellow triangular background inside a black border. [2]

**Total**

**AVAILABLE  
MARKS**

9

**80**