



GCSE MARKING SCHEME

SUMMER 2025

**GCSE
INTRODUCTION TO THE BUILT ENVIRONMENT –
UNIT 1
3509U10-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

WJEC GCSE INTRODUCTION TO THE BUILT ENVIRONMENT – UNIT 1

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Guidance for examiners

Positive marking

It should be remembered that candidates are writing under examination conditions and credit should be given for what the candidate writes, rather than adopting the approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

For questions that are objective or points-based, the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision made.

Mark schemes often list points which may be included in candidates' answers. The list is not exhaustive. *The inclusion of 'Credit any other valid response.'* (or similar instruction) within mark schemes allows for the possible variation in candidates' responses. Credit should be given according to the accuracy and relevance of candidates' answers.

Appropriate terminology is reflected in exemplar responses in mark schemes. However, unless there is a specific requirement within a question, candidates may be awarded marks where the answer is accurate but expressed in their own words.

Banded mark schemes

For band marked questions, mark schemes are in two parts, the indicative content and the assessment grid.

The indicative content suggests the range of points and issues which may be included in candidates' answers. It can be used to assess the quality of the candidate's response. As noted above, indicative content is not intended to be exhaustive and candidates do not have to include all the indicative content to reach the highest level of the mark scheme.

However, in order to reach the highest level of the mark scheme a candidate must meet the requirements of the highest mark band. Where a response is not creditworthy, that is, it contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

Candidates' responses to questions are assessed against the relevant assessment objectives. In GCSE Built Environment, each question will address one assessment objective.

The marking of banded mark questions should always be positive. This means that, for each candidate's response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding; they are not deducted from a maximum on the basis of errors or omissions.

Examiners should first read and annotate the candidate's answer to pick out the evidence that is being assessed in that question. The mark scheme can then be applied. This is done as a two stage process.

Stage 1 – Deciding on the band

Beginning at the lowest band, examiners should look at the candidate's answer and check whether it matches the descriptors for that band. If the descriptors at the lowest band are satisfied, examiners should move up to the next band and repeat this process for each band until the descriptors match the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the candidate's response should be used to decide on the mark within the band. For instance, if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Stage 2 – Deciding on the mark

During standardising (the marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a candidate's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Question	Answer	AO1	AO2	AO3	Total Mark
1.	Non-residential buildings are common structures within the built environment sector.	2			2
	(a) Name two types of non-residential buildings.				
	Award one mark for each correct non-residential building named, to a maximum of two marks, for example: • shops • offices • public buildings • factories • warehouses • hospitals • schools • cafes / restaurants • sports stadiums <i>Credit any other valid response.</i>				
	(b) Name three electrical services that are installed in non-residential buildings.	3			3
	Award one mark for each correct electrical service named, to a maximum of three marks, for example: • energy supply • lighting • communication lines • telephones • IT networks • fire detection and protection • security and alarm systems <i>Credit any other valid response.</i>				

Question	Answer	AO1	AO2	AO3	Total Mark
2.	A pre-demolition plan is required before demolition work is carried out.				
	State three important details that should be included in a pre-demolition plan.	3			3
	Award one mark for each correct detail stated, to a maximum of three marks, for example: • site security set up • disconnection of utilities such as electricity, gas water and sewage • removal of hazardous materials • soft strip of non-structural elements • taking down superstructure • removal of slab and foundations • site finish • site conditions and constraints • condition of existing building structure • proximity to nearby residential area or busy road • use of explosives • manual or machine demolition • compliance with Construction, Design and Management Regulations. <i>Credit any other valid response.</i>				

Question	Answer	AO1	AO2	AO3	Total Mark
3.	(a) (i) Give an example of an engineered wood product (EWP). Award one mark for a correct example of an EWP, for example: • Eco joist • Glulam • Chipboard • Oriented Strand Board (OSB) • Plywood • Trussed rafters • Structural sections • MDF, medium density fibreboard <i>Credit any other valid response.</i>	1			1
	(ii) Describe one benefit of EWPs when compared with sawn timber. Award one mark for a basic description of the benefit when compared with sawn timber, for example: • available in large sheets • large sizes • more stable than sawn timber • less liable to twist, bend split • cheaper than natural timber • no need to glue pieces of timber together • potential for increased structural spans Award two marks for either two benefits or a more developed description of the benefit when compared with sawn timber, for example: • available in large sheets, designed to overcome limitations on size of sawn/natural timber • large surface area of EWP sheets reduces the need to glue or join pieces of sawn timber together • relative stability of EWPs leads to less movement such as twisting, bending and splitting • EWPs are more cost-effective than sawn/natural timber leading to less waste being produced <i>Credit any other valid response.</i>	2			2

Question		Answer	AO1	AO2	AO3	Total Mark
3	(b)	Mortar is a material used in building construction.				
	(i)	State two ingredients of mortar. Award one mark for each correct ingredient named, to a maximum of two marks, for example: • sand • cement • water • plasticiser – e.g. Febmix (accept trade name) <i>Credit any other valid response.</i>	2			2
	(ii)	Describe the function of mortar in building construction. Award one mark for a basic description of the function of mortar in building construction, for example: • mortar provides a level bed • mortar holds/glues bricks together • adds decorative colours or patterns to masonry walls Award two marks for a more developed description of the function of mortar in building construction, for example: • mortar is used to bond and point bricks stones and blocks • fills and seals the gaps between building blocks and spreads the the weight evenly • is a workable paste which hardens to bind building blocks such as stones, bricks, and concrete masonry units <i>Credit any other valid response.</i>	2			2

Question		Answer	AO1	AO2	AO3	Total Mark
4.		All buildings have a substructure and a superstructure.				
	(a)	Explain the function of a building's substructure. Award one mark for a basic outline of the function of a building's substructure, for example: <i>The substructure is the parts of a building that are below ground level.</i> Award two marks for a more developed outline of the function of a building's substructure, for example: <i>The substructure is the parts of a building that are below ground level and provides the structural stability for the building.</i> Award three marks for a fully developed outline of the function of a building's substructure, for example: <i>The substructure describes the elements of a building that are below ground level and provides the structural stability for the building by distributing the weight of the building over a large area.</i> Indicative content: • Provide a firm base for the weight of the building. • Provide support for everything that is above ground. • Transfer load to the foundations and then to the soil underneath. • To spread the load of the elements that are above ground. <i>Give credit for correctly naming elements of the substructure such as foundations, pilings, basement walls etc.</i>	3			3

Question		Answer	AO1	AO2	AO3	Total Mark
4	(b)	Explain the function of a building's superstructure. Award one mark for a basic outline of the function of a building's superstructure, for example: <i>The superstructure is the part of a building that is constructed above ground level.</i> Award two marks for a more developed outline of the function of a building's superstructure, for example: <i>The superstructure is the part of a building that is constructed above ground level and provides living space for occupants of the building.</i> Award three marks for a fully developed outline of the function of a building's superstructure, for example: <i>The superstructure is the part of a building that is constructed above ground level and provides living space for occupants of the building as well as protection from the weather.</i> Indicative content: • Includes the load-bearing and non-load-bearing framework/elements. • Transfers loads from the upper parts of the building to the substructure. • Designed to provide a controlled environment. • Provides shelter to occupants. • Privacy. • Security. <i>Give credit for correctly naming elements of the superstructure such as floors, walls, roof supports etc.</i>	3			3

Question		Answer	AO1	AO2	AO3	Total Mark
5.	(a)	Complete the table by naming the correct type of building to match the description given (<i>an example has been provided</i>). Only acceptable answers: (i) COMMERCIAL (ii) AGRICULTURAL (iii) INDUSTRIAL	3			3
	(b)	A sports stadium is to be developed on a greenfield site near a large town. Explain the main infrastructure requirements of this project. Indicative content: <i>Note: Infrastructure can be explained as the system by which people, products and services (energy, water and telecommunications) are moved around from place to place).</i> - the stadium needs to be connected by transport networks such as roads, railways, bridges in order for stadium employees, spectators and event participants to travel to and from the stadium - adequate vehicle parking is required for staff and spectators, deliveries, events organisers etc. - the stadium needs to be received essential services such as energy, water and sewerage. - energy for lighting and heating of the stadium as well as function rooms, causeways, walkways, lifts etc. are provided by infrastructure powerlines and pipes. - telecommunications infrastructure is the complex network that enables us to communicate and receive information via fixed telephone cables, satellites, the internet, televisions and mobile phone technology. <i>Credit any other valid response.</i>		6		6

Band	AO2
3	5-6 marks A very good explanation of the infrastructure requirements, which shows: • thorough knowledge and clear understanding of the main infrastructure requirements of this type of project. • a confident grasp of the specific infrastructure needed to provide services and transport networks to the sports stadium.
2	3-4 marks A good explanation of the infrastructure requirements, which shows: • a generally secure knowledge and understanding of the main infrastructure requirements of this type of project. • a generally secure grasp of the infrastructure needed to provide services and transport networks to the sports stadium.
1	1-2 marks A basic explanation of the infrastructure requirements, which shows: • a basic knowledge and understanding of the infrastructure requirements of this type of project. • a limited grasp of of the infrastructure needed to provide either services or transport networks to the sports stadium.
	0 marks Response not creditworthy or not attempted.

Question	Answer	AO1	AO2	AO3	Total Mark
6.	A portal frame is a common building structure.				
(a) (i)	Identify components (1) and (2) of the portal frame shown. Only acceptable answers: 1 RAFTER (BEAM) 2 Column / Stanchion / Pillar	2			2
(ii)	Name two materials suitable for use in the construction of portal frames. Award one mark for each correct material named, to a maximum of two marks, for example: • Steel • Reinforced pre-cast concrete ('concrete' not accepted) • (either) Laminated timber or Glulam • Aluminium • Wood <i>Credit any other valid response.</i>	2			2
(iii)	A warehouse is to be constructed on an industrial estate. State two benefits of portal frame construction for this project. Award one mark for each correct benefit stated, to a maximum of two marks, for example: • can span large distances • large buildings can be constructed quickly. • lightweight and can be fabricated off-site • can be bolted to a substructure • simple and rapid form of structure to erect • weather-proof enclosure • relatively low cost • large spaces can be enclosed with relatively little use of materials • lack of internal supports / open plan • enlarged / expanded easily <i>Credit any other valid response.</i>	2			2

Question		Answer	AO1	AO2	AO3	Total Mark
6	(b)	Thatched roofing is a traditional construction method used in the conservation of the historic built environment. Outline one other traditional construction method. Award up to 2 marks for outlining a traditional construction method including a material used. Award one mark for a basic outline of a method, for example: <i>Working with lead sheeting.</i> Award two marks for a more developed outline of a method, for example: <i>Forming lead sheets to make a roof covering on traditional buildings such as churches.</i> Indicative content: • masonry and stone carving • bricklaying – traditional methods of laying bricks for walls, arches • timber framing / rafter and purlin roofs • traditional carpentry, joinery and wood carving • roofing using natural shingles • leadwork, including sheeting and ornamental work • plasterwork, including mouldings and repairs, Sgraffito • blacksmithing, and ornamental metal working • bronze casting – door hardware • glasswork – stained glass, glass blowing • flooring – traditional wood flooring, tiling, terrazzo • painting & decorating – gilding, faux finishing <i>Credit any other valid response.</i>	2			2

Question	Answer	AO1	AO2	AO3	Total Mark
7.	Heat pumps are an increasingly common method of heating buildings using energy generated from renewable sources.				
(a) (i)	Describe the main principles of the technology involved in heat pumps. Award one mark for a limited description that includes few of the points in the Indicative scope. Award two marks a good description that includes many of the points in the Indicative scope. Award three marks a very good description that includes most of the points in the Indicative scope. Indicative Scope: (Answers may contain specific reference to ground, air or water source heat pumps) Ground source: • a network of water pipes buried underground, water and anti-freeze is pumped through the pipes, absorbing the naturally occurring heat stored in the ground, • transferred from ground into a heat exchanger that extracts the heat and transfers it to a heat pump in building, • heat is pumped to radiators or underfloor heating or stored in a hot water cylinder. Air source: • the air source heat pump absorbs heat from the outside air into a liquid refrigerant at a low temperature, • using electricity, the pump compresses the liquid to increase its temperature • heat is pumped to radiators or underfloor heating or stored in a hot water cylinder. Water source: • heat from a natural water source is pumped to a heat exchanger where it's absorbed by a refrigerant, • as the refrigerant heats up, it turns from a liquid into a gas which is compressed and passed into a heat condenser to heat water. • heat is pumped to radiators or underfloor heating or stored in a hot water cylinder.	3			3

Question	Answer	AO1	AO2	AO3	Total Mark
7	(a) (ii) Describe one benefit and one limitation of heat pump technology. Benefit: Award one mark for a basic description of a benefit of heat pump technology, for example: <i>Are more environmentally friendly than traditional heating methods.</i> Award two marks for a more developed description of a benefit of heat pump technology, for example: <i>Are more environmentally friendly than traditional heating methods such as gas boilers that use non-renewable energy.</i> • generally, have lower running costs than traditional heating methods, • require less maintenance than traditional heating methods, • safer, especially compared to gas-powered heating systems, • all types of heat pumps substantially reduce carbon emissions, • can be used to cooling as well as heat buildings, • have a long lifespan during which the initial financial outlay can be redeemed, • can be eligible for installation grants. <i>Credit any other valid response.</i> Limitation: Award one mark for a basic description of a limitation of heat pump technology, for example: <i>Heat pumps cost a lot of money to install.</i> Award two marks for a more developed description of a limitation of heat pump technology, for example: <i>Heat pumps cost a lot of money to install, and it takes a long period of time to earn the initial investment back through savings in running costs.</i> • high upfront cost of installing heat pumps, • can be challenging to install, large radiators needed, • planning permission can be required, • although heat pumps can work during periods of low temperature, they may need to be supplemented by other heating methods, • heat pumps are not entirely carbon neutral as they depend on an electrical supply, • not suitable for all properties. <i>Credit any other valid response.</i>	4			4

Question	Answer	AO1	AO2	AO3	Total Mark
7	(b) (i) Describe the use of grey water in domestic water systems. Award one mark for a basic description of the reuse of grey water, for example: <i>Grey water is wastewater from showers, baths, washbasins and washing machines.</i> Award two marks for a more developed description of the reuse of grey water, for example: <i>Grey water is wastewater from showers, baths, washbasins and washing machines. It can be collected and used for flushing and garden watering.</i> • does not include wastewater from toilets (blackwater), • wastewater that is not considered to be potentially dangerous, • can be treated before reuse, • can be syphoned directly from the bath or sink, • valve can be fitted to the external waste pipe • directed to a water butt and used as needed. <i>Credit any other valid response.</i> (ii) State one benefit of using greywater. Award one mark for stating a benefit of its reuse, for example: • greatly reduces the demand on mains water, • reduces the volume of water discharged into sewage systems • saves money, less mains water used, • reduces water bills, • contributes to water conservation, • more sustainable, environmentally friendly. <i>Credit any other valid response.</i>	2			2
		1			1

Question		Answer	AO1	AO2	AO3	Total Mark
8.	(a)	Identify two construction activities carried out by a carpenter. Award one mark for each relevant activity identified to a maximum of two marks. Indicative content: • installs floor joists, • floorboards, • roof trusses, • wall partitions • fits interior woodwork – staircases, • doors, • skirting boards, • cupboards, kitchens • first & second fix.	2			2
	(b)	Describe the responsibilities of the following professional roles. Award one mark for each relevant description of the responsibilities to a maximum of two marks. Indicative content: Architect: • creates new buildings • designs construction projects • renovates or changes existing buildings • produces designs to meet client requirements along with regulations, legislation and environmental requirements • produces detailed drawings for the contractor. Structural engineer: • designs the structural elements of construction projects • plans and manages structures • solves design and development problems • assesses potential risks within a project • focuses on the design, assessment and inspection of structures • ensures structures are stable and safe. <i>Credit any other valid response.</i>	4			4

Question	Answer	AO1	AO2	AO3	Total Mark
9.	A hazardous wood preservative is to be used as part of a renovation project.				
(a)	Explain two measures that are required to prevent injury and illness. Assess the quality and appropriateness of the candidate's responses, then: Award one mark for each basic explanation, for example: <i>A risk assessment needs to be carried out on using the hazardous material.</i> Award two marks for each more developed explanation, for example: <i>Reading and following the product information provided with the wood preservative then creating a risk assessment on its safe use.</i> Total the marks for up to two explanations (to a maximum of four marks). Indicative content: • assessing the risks of the activity • deciding what precautions are necessary • preventing (or controlling) exposure • ensuring that control measures are followed • monitoring the level of exposure • preparing procedures to deal with accidents • training and supervising employees • considering the shelf life of the wood preservative • planning for safe disposal of any waste preservative • ventilation of work area • consideration of appropriate PPE • HASAWA regulations followed • COSHH assessments carried out • safety signage displayed <i>Credit any other valid response.</i>		4		4
(b)	State two safety procedures to be followed when working with electricity. Award one mark for each safety procedure to be followed to a maximum of two marks. Indicative content: • should only be worked on by a competent person • appropriate procedures and precautions should be followed • use of protective equipment • know the means of cutting off the supply of electricity • appropriate PPE is worn where necessary • risk assessments completed beforehand and followed • manufacturer's instructions followed • do not work near liquids	2			2

Question	Answer	AO1	AO2	AO3	Total Mark
10.	Planning permission has been given for the construction of a new development of sustainable houses in a rural location. Recommend measures that can be taken to reduce the environmental impact during the construction phase of the development. Answers may refer to the following main components: Reducing environmental impact during construction: • limiting the pollution released into water, air or the ground during construction and use of the built environment • developers may try to reduce the impact on nature by building tunnels under roads for newts to use, or creating new roosts for bats when their original roosts are lost because of development • reducing carbon dioxide emissions during construction and use of the built environment. • Minimise land disturbance and leave maximum vegetation cover to prevent erosion and run-off. • control dust through use mesh screens and fine water sprays to control dust and dampen down the site. • cover stores of cement, sand, and other powders, and locate them where they will not be washed into waterways or drainage areas. • use non-toxic paints, solvents, and other hazardous materials wherever possible • segregate and monitor toxic substances to prevent spills and site contamination. • collect any wastewater generated from site activities in settlement tanks and dispose according to environmental regulations. • avoid any burning of materials on site. • reduce noise pollution through careful handling of materials; and use modern, quiet power tools, equipment, and generators. • use of sustainable materials such as wood, recycled steel and bricks • salvaged / reclaimed slates or tiles, thatch or timber shingles can be used on roofs. • insulation materials from natural sources such as straw and wool instead of fibreglass or polyurethane.			10	10

Band	AO3
4	9-10 marks Many excellent recommendations are made that include strong evidence of thoroughly examining the scenario giving: • a detailed and clear analysis of the measures that can be taken to reduce the environmental impact during the construction phase of the development • writing is very well structured and organised, using accurate grammar, punctuation and spelling • a range of specialist terminology is used with accuracy.
3	6-8 marks A number of good recommendations are made that include secure evidence of examining the scenario giving: • a good description of the measures that can be taken to reduce the environmental impact during the construction phase of the development • writing is generally well structured and organised, using mainly accurate grammar, punctuation and spelling • specialist terminology is used with accuracy.
2	3-5 marks Some basic recommendations are made that include some evidence of examining the scenario to: • outline a basic description of the measures that can be taken to reduce the environmental impact during the construction phase of the development • writing has some structure and some organisation, limited grammar, some punctuation and spelling errors • terminology is basic.
1	1-2 marks Limited recommendations are made that include little evidence of examining the scenario to: • demonstrate limited knowledge of the measures that can be taken to reduce the environmental impact during the construction phase of the development • some errors in grammar, punctuation and spelling, which affect clarity of communication • writing shows limited use of specialist terminology.
	0 marks Response not creditworthy or not attempted.

Mapping of questions to specification content and assessment objectives

Unit 1

Question		Specification content (main focus)									Mark allocation			
		Section								Part	Total Marks	AO1 Marks	AO2 Marks	AO3 Marks
		2.1.1	2.1.2	2.1.3	2.1.4	2.1.5	2.1.6	2.1.7	2.1.8					
1	(a)	2								a		2		
	(b)	3								c		3		
2			3							e		3		
3	(a)		3							b		3		
	(b)		4							b		4		
4	(a)				3					a		3		
	(b)				3							3		
5	(a)			3						b,c,d		3		
	(b)			6						h			6	
6	(a)					6				c		6		
	(b)					2				d		2		
7	(a)				7					c		7		
	(b)				3					c		3		
8	(a)							2		g		2		
	(b)							4		a,b,c,d		4		
9	(a)								4	c			4	
	(b)								2	e		2		
10							10			a,b,c,d				10
Total marks		5	10	9	16	8	10	6	6		70	50	10	10