



GCSE MARKING SCHEME

SUMMER 2022

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

INTRODUCTION

This marking scheme was used by WJEC for the 2022 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

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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.		<i>The UK housing industry builds a variety of different homes.</i>				
	(a)	State three types of house built in the UK.	3			3
		Award one mark for each correct house type product, for example: • Semi detached • Terraced • detached • flats • bungalows • maisonettes • sheltered housing Credit any other valid response.				
	(b)	State three services that require an electrical supply within an hotel.	3			3
		Award one mark for each correct element (relevant to a hotel), for example: • power supplies (accept energy) • LV lighting • Escalators • Lifts • WIFI and telephones • Fire alarms • CCTV Credit any other valid response.				
	(c)	Name two mechanical services that support large buildings.	2			2
		Award one mark for each correct mechanical service that supports large buildings, for example: • Airconditioning • Heating e.g. pumps • Ventilation e.g. fans and extract in bathrooms • Fire sprinkler systems, automatic smoke windows Credit any other valid response.				

Question	Answer	AO1	AO2	AO3	Total mark
2.	<i>The built environment has a natural life cycle which starts with the extraction of raw materials, followed by construction, reuse and demolition.</i>				
(a)	State one raw material extracted by each of the following industries.	3			3
	(i) Mining – extract of coal to make steel, extract of gypsum for plasterboard, (ii) Forestry – cutting down and processing of timber for construction (iii) Quarries – extract of granite or chalk to make type 1 road base, slate, stone for walls				
(b)	Mortar is used in the construction of brickwork. Besides cement state two other materials that are required for mortar.	2			2
	Award one mark for each correct material, for example: • water • small/fine aggregate – building sand • plasticiser – e.g. Febmix (accept trade name) Credit any other valid response (including additives trade name).				
(c)	Describe how a tree is converted for use in construction	3			3
	Award one mark for each stage max three marks. • trees are cut down using machine feller and/or chainsaw • log is transported to a saw mill • converted into boards • air or kiln dried • further processing Credit any other valid response. No penalty for wrong sequence.				

Question	Answer	AO1	AO2	AO3	Total mark
3.	<i>A building has reached its end of life and is going to be demolished.</i>	4			4
(a)	State two details that should be included within a pre-demolition plan.	2			
	Award one mark for correctly identifying any of the following from the specification. - hazardous materials - utilities and disconnections - structures and party walls - site conditions and constraints. Accept any other suitable answer.				
(b)	State two safety procedures that must be followed to protect the public during demolition.	2			
	Award one mark for correctly identifying an example against each to a max of two marks. - Protective solid hoarding surrounding the demolition area - Exclusion zones - Debris netting - Signage - Security operatives on site - Clear hazard identification - Footpath closures - Road closures - Scaffolding - Earth bunds - Tunnel corridors at ground level of scaffolding Accept any other suitable answer.				

Question	Answer	AO1	AO2	AO3	Total mark
4.	Complete the table comparing the features and characteristics of religious buildings to those of commercial buildings. An example has been provided.		4		
	Religious Award one mark per comparison point to a max of two marks. Aesthetics / architecture (1) with religious context (1) Services at various hours during the day (1) or significant days Possibly unheated (1) as not habitable areas (1) Multi-function spaces (1) for music and worship (1) Credit any other valid response. Commercial Award one mark per comparison point to a max of two marks. Large floor spaces (1) for retail sales (1) Inviting front display areas (1) Requirements for stock rooms (1) Location is important (1) Branding and signage to front (1)		2		
			2		

Question	Answer	AO1	AO2	AO3	Total mark
5.	<i>A range of different materials can be used to construct a block of flats.</i>				
	Describe two materials that can be used for intermediate floors.	4			4
	Award one mark for identification of the benefit and one mark for a linked explanation per material. - timber (1) joists – laid between supports (1) - engineered (1) timber e.g. eco joists (1) with metal struts - beam and block floors (1) – manufactured in precast concrete (1) - precast concrete planks (1) laid right across between external walls (1) Credit any other valid response.				

Question	Answer	AO1	AO2	AO3	Total mark
6.	<i>Our heritage in buildings should be preserved for the benefit of future generations to enjoy.</i>	6			6
	State three other reasons, with examples, why our heritage should be protected.				
	Award one mark for a valid reason and one mark for the linked example x 3 = six marks. Examples • to provide history for our future generations e.g. castles and earthwork structures to explore • preserves our identity e.g., World Heritage Status, UNESCO, e.g. quarries, castles • to preserve historic structures – from deterioration, e.g. St Fagan's • to retain aesthetic street scenes for planners, e.g. Anglesey, Chepstow, Monmouth • to retain lost trades, create new jobs for contractors and apprenticeships for trades, artisan workers • to preserve tourism revenue, provides experience and circulates wealth within a local economy Credit any other acceptable response				

Question		Answer	AO1	AO2	AO3	Total mark
7.	The construction industry has moved to more sustainable and environmentally friendly methods of construction.					
	(a)	State one social, one economic and one environmental benefit of sustainable construction.				
		(i) <i>Social</i>	1			1
		Award one mark for any of the following responses: • providing green spaces for communities • to improve air quality • to provide a space for recreation • improving environmental quality may: • improve occupants' comfort • reduce pressure on local infrastructure • improve productivity. Credit any other valid response.				
		(ii) <i>Economic</i>	1			1
		Award one mark for any of the following responses: • minimising waste • reducing energy consumption • improving water efficiency • reducing operating costs • optimising the life cycle of buildings Credit any other valid response.				
		(iii) <i>Environmental</i>	1			1
		Award one mark for any of the following responses: • reduction in pollution • reduced CO2 emissions • reduction in landfill • providing green spaces • habitat retention • create an aesthetically pleasing environment • helps avoid the depletion of natural resources Credit any other valid response.				
	(b)	Name two natural products and describe how they can be used for insulation.	4			4
		Award one mark for identification one mark for a linked description. • sheep's wool insulation (1) can be used which is hydroscopic (1) and breathable (1) and makes use of a fleece that currently has no value (1) • straw bales (1) use a waste product (1) from cereal crops (1) saving energy from ploughing in (1) Accept any other suitable answer.				

Question		Answer	AO1	AO2	AO3	Total mark
8.	<i>A new development is proposed on a large brownfield site. A derelict brick and concrete building with slate roof is still on the site.</i>					10
	(a)	Outline how each of the following can be achieved.				
		(i) Minimum waste disposal: Award one mark for identification plus one mark for linked outline. - retaining excavated materials (1) onsite as landscaping (1) - crushing waste materials (1) and using as fill (1) - sorting waste materials (1) into reusable, recyclable resources (1)	2			
		(ii) Re-use of materials: Award one mark for identification plus one mark for linked outline. - Carefully taking roof tiles (1) down and reusing (1) as a type 1 certified fill material - Demolishing brickwork (1) cleaning and re using (1) - Salvaging (1) useable materials that saves energy and environmental impact (1)	2			
		(iii) Recycling: Award one mark for identification plus one mark for linked outline - Crushing concrete as hardcore (1) onsite as filling materials (1) - Provision of metal skips (1) which provide revenue (1)	2			
	(b)	Organisations such as Natural Resources Wales help protect the environment. State four methods of protecting the environment.	4			
		One mark per point raised as follows: - Flooding measures (1) - Prevention of pollution - Being environmentally friendly - Permits and permissions (1) for activities - Waste management (1) - Forestry management (1) - Protected areas (1) - Environmental guidance (1) Accept any other appropriate answer.				

Question		Answer	AO1	AO2	AO3	Total mark
9.	<i>The UK Construction industry employs a wide range of professionals, managers and craft trades</i>					
	(a)	State three trades associated with the installation of building services.	3			3
		Award one mark for each of the following to a max three marks: • Electrical e.g. electrician • Gas engineering • Plumbing, e.g. plumbers • Heating & Ventilation engineers				
	(b)	Explain two responsibilities of a land surveyor in providing information for the architect.		2		2
		Award marks as follows: • surveys land (1), measuring existing features (1) of the natural and built environment • produces data (1) and drawings (1) for architects and engineers. • notes features (1) that may impact (1) upon the design Any other acceptable answer				
	(c)	Contrast the work carried out by a joiner with the work carried out by a carpenter.		4		4
		Joiner: • joins pieces of wood (1) together in a workshop, for example window frames and door frames which a carpenter fixes on site (1) into openings • joiner makes second fix items (1) such as staircases, window frames, door frames, doors (1) kitchens (1) Carpenter: • installs floor joists, floorboards, roof trusses, wall partitions (1) on site (1) in place with no machining or joinery operations • fits interior woodwork – staircases, doors, skirting boards, cupboards, kitchens (1) that have been produced by a joiner				

Question	Answer	AO1	AO2	AO3	Total mark
10	You are working on a construction site, on which a 5-storey block of flats (20m × 20m) is being constructed. You will be required to work at height on the outside of the building, so you need to be aware of the risks of this activity. • The primary structure is formed from a steel frame covered in concrete. • A tower crane is in the centre, and the external faces are clad in scaffolding with a goods/passenger lift. • The exterior is face brickwork. • A timber truss roof and slate tiled covering is proposed. • The building is partly completed and is currently at floor 3. Evaluate the risks in terms of control measures required for working at height.			10	10
	Answers may refer to the following main components. Risks • falls from height for example into excavations • falling objects that strike operatives below • slips and trips leading to a fall Control Measures Use of the following: • scaffolding, handrails, guardrails, brickmesh • hired in lift that meets all regulations • PPE • Method statements and risk assessments • Safe systems of work • Experienced operatives • Training, TBT's Site Induction Personal Protective Equipment • lanyards that are worn to slow down a fall • harness is worn on the body and attached to a harness • hardhat that prevents injuries to the head • Gloves – for grip • Safety boots – for positive movement across platforms Credit any other valid response.				

Band	AO3
4	9-10 marks An excellent analysis which includes strong evidence of thoroughly examining the scenario to: • a detailed and clear description of managing operative working at height has been given • full details of PPE requirements met • 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 good analysis which includes secure evidence of examining the scenario to: • a balance of descriptions across the 3 areas given • writing is generally well structured and organised, using mainly accurate grammar, punctuation and spelling. • specialist terminology is used with accuracy.
2	3-5 marks A basic analysis which includes some evidence of examining the scenario to: • one example of PPE cited • more than one item per classification • limited linked descriptions on working at height
1	1-2 marks A limited analysis which includes little evidence of examining the scenario to: • limited PPE knowledge • limited knowledge of working safely at height • some errors in grammar, punctuation and spelling, which affect clarity of communication. • writing shows limited use of health and safety 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)	3								(a)	3	3	0	0
	(b)	3								(b)	3	3	0	0
	(c)	2								(c)	2	2	0	0
2	(a)		3							(a)	3	3	0	0
	(b)		2							(b)	2	2	0	0
	(c)		3							(b)	3	3	0	0
3	(a)		2							(e)	2	2	0	0
	(b)		2							(e)	2	2	0	0
4				4						(b) (f)	4	0	4	0
5					4					(a) (b)	4	4	0	0
6						6				(d)	6	6	0	0
7	(a)						3			(a)	3	3	0	0
	(b)						4			(c)	4	4	0	0
8	(a)						6			(d)	6	6	0	0
	(b)						4			(b)	4	4	0	0
9	(a)							3		(h) (i) (j)	3	3	0	0
	(b)							2		(d)	2	0	2	0
	(c)							4		(g)	4	0	4	0
10									10	(a)(b)(d)(f)	10	0	0	10

Total marks	8	12	4	4	6	17	9	10		70	50	10	10
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