



Mark Scheme (Results)

January 2017

NQF BTEC Level 1/Level 2 Firsts in
Construction and the Built Environment

Unit 1: Construction Technology (21492E)

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if a candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt about applying the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed-out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)	<p>One mark for each of:</p> <p>Intumescent paint – Fire resistance Carpeting – Sound insulation</p>	(2)

Question Number	Answer	Mark
1(b)	<p>One mark for:</p> <p>A – British Standards E – Strength classification</p>	(2)

Question Number	Answer	Mark
1(c)	<p>One mark for:</p> <p>B – Height restrictions D – Wall tie spacing</p>	(2)

Question Number	Answer	Mark
1(d)	<p>One mark for:</p> <p>B – Sprinkler system C – Compartments</p>	(2)

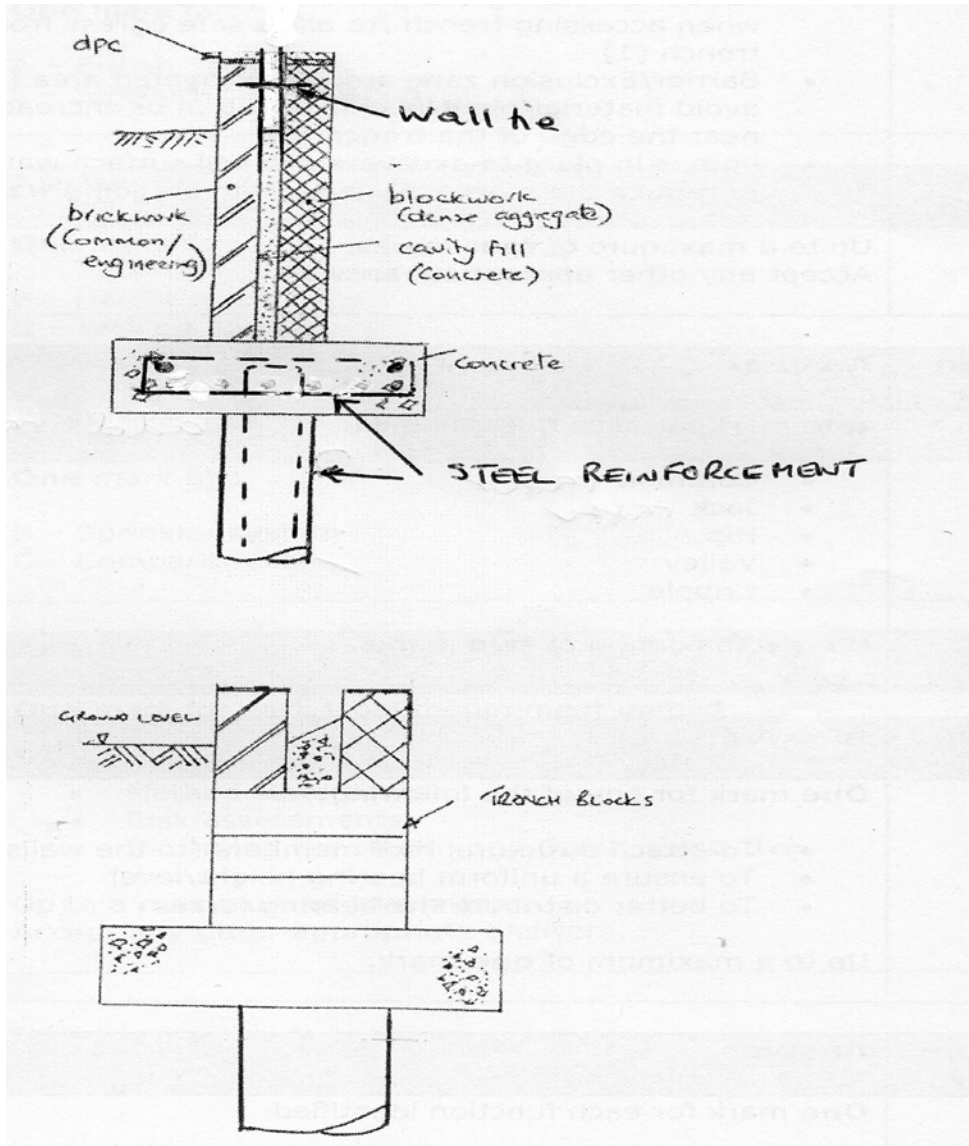
Question Number	Answer	Mark
2	<p>One mark for each legal requirement named:</p> <ul style="list-style-type: none"> • Construction health and safety plan • Method statements • Risk assessments • Informing the Health and Safety Executive <p>Up to a maximum of two marks. Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
3	<p>Two marks for two identified control measures and two marks for a linked explanation of each controlled measure, up to four marks:</p> <ul style="list-style-type: none"> • Adequate trench supports are in place (1) to avoid the side collapse of the trench (1) • Trained/Qualified personnel inspect/supervise (1) to ensure safe working practices are maintained (1) • Ladder access/egress available (1) to prevent injury when accessing trench /to allow safe egress from the trench (1) • Warning signs/Lighting/Barrier/Exclusion zone around excavated area (1) to avoid material/plant/people falling in or encroaching near the edge of the trench (1) • Pumps in place to excavate sub soil surface water (1) to reduce the risks associated with standing water (1) • Checking for existing services/the use of cable avoidance tool (CAT) (1) prevent damage/harm (1) • Use of high visibility clothing (1) to reduce the likelihood of personnel not being seen (1) <p>Up to a maximum of four marks. Accept any other appropriate answers.</p>	(4)

Question Number	Answer	Mark
4(a)	<p>One mark for each rafter named:</p> <ul style="list-style-type: none"> • Common (rafter) • Jack (rafter) • Hip (rafter) • Valley (rafter) • Cripple (rafter) <p>Up to a maximum of two marks.</p>	(2)

Question Number	Answer	Mark
4(b)	<p>One mark for any of the following:</p> <ul style="list-style-type: none"> • To attach structural roof members (to the walls) • To ensure a uniform bearing height/level • To better distribute the bearing forces <p>Up to a maximum of one mark. Accept any other appropriate answers.</p>	(1)

Question Number	Answer	Mark
5(a)	<p>One mark for each function identified:</p> <ul style="list-style-type: none">• Safely transmit loads of the building to the sub-soil• To settle within acceptable limits for settlement• To support the loads of the building for its lifespan <p>Up to a maximum of two marks. Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
5(b)	<p>Marks should be awarded for appropriate placing of the components of the diagram.</p> <p>One mark awarded for each label or fill pattern.</p> <p>Up to a maximum of four marks.</p> <p>Short bored pile:</p>  <p>1 mark for pile 1 mark for concrete foundation/concrete beam 1 mark for reinforcement to ground beam/pile 1 mark for brickwork below ground level 1 mark for cavity fill 1 mark for cavity indicated (0 marks awarded if cavity has not been labelled) 1 mark for blockwork 1 mark for weep holes (not shown in diagram) 1 mark for dpc 1 mark for trench blocks 1 mark for appropriately placed ground level</p>	(4)

Question Number	Answer	Mark
6	<p>One mark for each:</p> <p>(i) – Wall tie/Fish tail tie/Wire tie/Butterfly tie (ii) – Insulation/cavity (iii) – Skirting/Plinth/Base board (iv) – Floor(ing)/Chipboard/Tongue and grooved softwood/Floorboards (v) – Joist hanger</p> <p>Up to a maximum of five marks.</p>	(5)

Question Number	Answer	Mark
7(a)	<p>Two marks for any of the following explanations of using sustainable building techniques. One mark for a benefit identified and one mark for a linked explanation, up to a maximum of two marks.</p> <ul style="list-style-type: none"> • More energy efficient homes (1) will increase demand for the developer's product (1) • Developer has green credentials (1) enhancing their reputation in the area (1) • Building Control approval is more likely(1) because sustainable homes will be more energy efficient/conserves fuel and power (1) <p>Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
7(b)	<p>Two marks for any of the following explanations of advantages of using a timber frame construction. One mark for identification and one mark for a linked explanation, up to two marks per explanation. Up to a maximum of four marks.</p> <ul style="list-style-type: none"> • Timber prefabricated off site (1) can run concurrently with construction of site roads and other infrastructure (1) • External envelope can be completed after the building is water tight (1) allowing following trades to work concurrently with the external cladding (1) • The roof can be completed at ground level (1) prior to delivery and erection of timber frame (1) • Factory production unaffected by weather (1) so would not impact on prefabrication works (1) • Quick build time (1) due to prefabricated panels/less drying time (1) • Easier to find the labour required (1) as fewer skilled operatives are required (1) • Timber is a natural material (1) which contributes towards the sustainability of the houses (1) <p>Accept any other appropriate answers.</p>	(4)

Question Number	Answer	Mark
8	<p>Four marks for two disadvantages explained. One mark for each disadvantage identified, and one mark for a linked explanation, up to two marks per explanation. Up to a maximum of four marks.</p> <p>Disadvantages:</p> <ul style="list-style-type: none"> • Slower speed of construction (1) as construction method is more labour intensive (1) • Increased maintenance issues (1) as timber can be subject to fungal/insect attack, wet/dry rot, etc. (1) • Are more expensive (1) on level sites (1) • Still require over site concrete and construction of honeycomb sleeper walls (1) requiring three different specialist teams (1) <p>Accept any other appropriate answers.</p>	(4)

Question Number	Answer	Mark
9	<p>Two marks for two additional costs explained. One mark for an additional cost identified, and one mark for a linked explanation, up to two marks per explanation. Up to a maximum of four marks.</p> <ul style="list-style-type: none"> • Site may not be fully developed (1) may have additional costs to install service infrastructure (1) • Creation of local amenities (1) to meet demand of the increased population (1) • Planning approval times may be longer (1) as a result of public concerns/which could delay construction and increase costs (1) • Relocation of animal habitats (1) if any endangered/protected species are present (1) • Trees may have preservation orders (1) which may mean the most cost effective layout is not an option/trees may need to be protected during construction works (1) <p>Accept any other appropriate answers.</p>	(4)

Question Number	Indicative content		Mark
10	<p>Advantages of a pitched roof:</p> <ul style="list-style-type: none"> • Aesthetically pleasing, tiles can be in different colours • Often most preferred form of roof by homeowners • Efficient in rain water drainage • Creates more storage space • Potential to create increased floor space through adaptation • Reduced maintenance costs <p>Disadvantages of a pitched roof:</p> <ul style="list-style-type: none"> • Initial cost more expensive than a flat roof • Speed of construction slower than a flat roof • Access for maintenance is difficult • Tiles susceptible to movement in high winds <p>Advantages of a flat roof:</p> <ul style="list-style-type: none"> • Ease of maintenance • Can be aesthetically pleasing • Speed of erection faster than a pitched roof therefore reduced initial cost • Can be adapted to form a roof garden/outdoor terrace <p>Disadvantages of a flat roof:</p> <ul style="list-style-type: none"> • Lifespan tends to be shorter than a pitched roof before some form of maintenance is required • Water run-off can be poor resulting in ponding and maintenance issues • Solar reflective paint required which needs regular maintenance • Roof structure may need further reinforcing if additional loading placed on it <p>Accept any other valid responses.</p>		(8)
Level	Mark	Descriptor	
Level		Descriptor	
0	0 marks	No rewardable material.	
1	1-3 marks	A few points identified. The answer is likely to be in the form of a list. Points made will be superficial/generic and not applied/directly linked to the situation in the question. The learner shows basic understanding of roof construction.	
2	4-6 marks	Some points identified. The answer is unbalanced with a greater focus on one form of construction. Most points made will be relevant to the situation in the question, but the link will not always be clear. The learner shows good understanding of roof construction.	
3	7-8 marks	Range of points described, explained in depth. Both types of roof construction are considered and the answer is well-balanced. The majority of points made will be relevant and there will be a clear link to the situation in the question. The learner shows well developed understanding of roof construction.	

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