



Mark Scheme (Results)

June 2016

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 judgment 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)	A- Fencing C- Temporary lighting	(2)

Question Number	Answer	Mark
1(b)	<p>1 mark for each: Up to a maximum of two marks:</p> <ul style="list-style-type: none"> • Gas • Water • Electricity • Telecommunications • Drainage • Oil pipelines <p>Accept any other appropriate answers</p>	(2)

Question Number	Answer	Mark
2(a)(i)	<p>Any one from the following: Up to a maximum of one mark:</p> <ul style="list-style-type: none"> • stiffness of the mix (1) • workability (1) • uniformity (1) • consistency (1) • indirectly acts as a means of checking that the correct amount of water has been added to the mix (1) <p>Accept any other appropriate answers.</p> <p>Do not accept test concrete/how much concrete slumps.</p>	(1)

Question Number	Answer	Mark
2(a)(ii)	<p>One from:</p> <ul style="list-style-type: none"> • test the strength of concrete (1) <p>Accept any other appropriate answers.</p>	(1)

Question Number	Answer	Mark
2(b)	C-Machine E-Visual	(2)

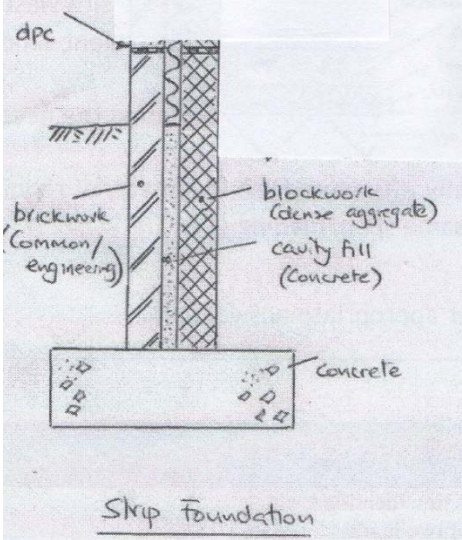
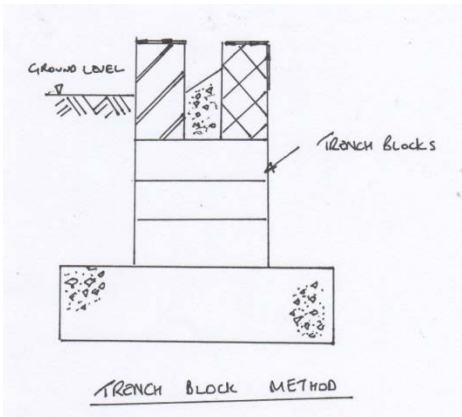
Question Number	Answer	Mark
3	A-Glass fibre E-Foam	(2)

Question Number	Answer	Mark
4(a)	C-Facing brickwork E-Rendered blockwork	(2)

Question Number	Answer	Mark
4(b)	<p>1 mark for each internal partition type identified: Up to a maximum of two marks</p> <ul style="list-style-type: none"> • Stud • Timber/timber stud • Metal/metal stud • Glazed • Blockwork/solid blockwork • Paramount • Brickwork • Demountable • Clay blocks <p>Accept any other appropriate answers</p>	(2)

Question Number	Answer	Mark
5	<p>1 mark for each identified floor finish: Up to a maximum of two marks</p> <ul style="list-style-type: none"> • Screeded • Chipboard • (tongue-grooved) softwood floorboards • Skirtings • Carpets • Tiles/quarry tiles/ceramic tiles/porcelain tiles • Lino/linoleum/vinyl/laminate • Concrete • Stone • Marble • Terrazzo • Granite • Cork • Slate • Parquet blocks <p>Accept any other appropriate answers</p>	(2)

Question Number	Answer	Mark
6	<p>1 mark for each label: Up to a maximum of four marks</p> <p>(i) Stone chippings (ii) Furring (iii) Insulation (iv) Vapour Layer/ vapour barrier/vapour check barrier/vapour control/foil backed plasterboard</p> <p>Accept any other appropriate answers</p>	(4)

Question Number	Answer	Mark
7	<p>Marks should be awarded for appropriate placing of the components of the diagram. Accept fill patterns in place of annotation. 1 mark for each label or fill pattern. Up to a maximum of 5 marks:</p> <ul style="list-style-type: none"> 1 mark for concrete foundation 1 mark for external brickwork 1 mark for common brickwork shown below ground level 1 mark for facing brickwork above ground level 1 mark for cavity fill 1 mark for blockwork 1 mark for weepholes 1 mark for dpc 1 mark for brickwork ties/wall ties 1 mark for trench blocks 1 mark for ground level 1 mark for backfill to trench   <p>Accept similar valid alternative sketches.</p>	(5)

Question Number	Answer	Mark
8	<p>2 marks for each advantage explained: 1 mark for identification of an advantage, and 1 mark for explanation of that advantage. Up to a maximum of four marks.</p> <ul style="list-style-type: none"> • Open web system (1) so no need to notch or drill for pipes and cables(1) • Structurally more stable (1) so will not shrink/warp/twist (1) • Joists are made to measure (1) so no site wastage (1) • Eco-joists are 40% lighter than equivalent solid joists(1) so easier handling on site(1) • Long continuous spans (1) eliminating the need for intermediate support walls (1) • Structurally efficient (1) so less material required to achieve same span/loading (1) <p>Accept any other appropriate answers.</p>	(4)

Question Number	Answer	Mark
9	<p>1 mark for each function identified: Up to a maximum of two marks</p> <ul style="list-style-type: none"> • Provide ventilation • Provide light • Provide aesthetics • Provide access • Provide a means of escape/egress • Provide a view <p>Accept any other appropriate answers</p>	(2)

Question Number	Answer	Mark
10	D – wind loading	(1)

Question Number	Answer	Mark
11	<p>2 marks for each reason explained: 1 mark for each reason identified, and 1 mark for a linked explanation, up to 2 marks. Up to a maximum of two marks.</p> <ul style="list-style-type: none"> • More materials required to be used on sloping ground (1) costly construction issues (1) • More substantial substructure walls may be needed (1) because of the increased depth of fill (1) • Increase in construction time(1) because of need to compact material (1) • Increased use of construction plant (1) due to the cut and fill nature of the substructure (1) <p>Accept any other appropriate answers.</p>	(2)

Question Number	Answer	Mark
12	<p>2 marks for each advantage explained: 1 mark for an advantage identified, and 1 mark for a linked explanation, Up to a maximum of 4 marks.</p> <ul style="list-style-type: none"> • Can be more cost effective(1) because deep excavation is not required/when bearing capacity of soil make strip unsuitable/resulting in less disposal of off-site surplus material (1) • Can cope with mixed or poor ground conditions soft spots, sand layers (1) because the raft is able to span areas with lower ground bearing capacity (1) • Provides a level working platform for completion of the superstructure/allows for storage of heavy materials(1) because the ground floor slab is formed by the completion of the raft (1) • Raft is rigid (1) so allows differential settlement to occur without causing excessive damage to the superstructure (1) <p>Accept any other appropriate answers</p>	(4)

Question Number	Answer	
13	<p>2 marks for one advantage and one disadvantage of cross-wall construction explained: 1 mark for an advantage or disadvantage identified, and 1 mark for a linked explanation. Up to a maximum of 4 marks.</p> <p>Advantages-</p> <ul style="list-style-type: none"> • Suitable for large number of identical units (1) because layout can be replicated (1) • Economic (1) due to fast build time (1) • Saves time/money (1) because walls ready for direct decoration without plastering (1) • Building is weather tight sooner (1) because of pre-installed windows/doors(1) <p>Disadvantages-</p> <ul style="list-style-type: none"> • Can be unattractive to buyers(1) because of repetition of layout/weathering (1) • Increased lead time (1) as the units need to be designed and manufactured prior to delivery to site (1) • Specialist plant and equipment to erect (1) due to heavyweight construction (1) <p>Accept any other appropriate answers</p> <p>Do not accept cheaper/easier/quicker without a comparator</p>	(4)

Question Number	Indicative content	Mark
14	<p>Advantages of using green renewable materials:</p> <ul style="list-style-type: none"> • Reduced pollution- emissions from both the manufacture of materials • Can be aesthetically pleasing. • Can be cost effective over time (initial costs can be greater than some non-renewable materials to be used) • Reduces depletion of finite resources • Preserves the environment. • Many renewable materials are recyclable <p>Disadvantages of using green renewable materials:</p> <ul style="list-style-type: none"> • Possible additional initial expense, may take time to recover additional investment of materials. Could also mean houses could be more expensively priced compared to nearby properties. • Availability of materials- if specialised materials are required in the building designs they may not be readily available-transportation costs may be high. • Specialist construction processes may be required e.g. a straw bale construction form which could increase costs and the duration of the construction phase. • Buyers' perceptions and resale price- public confidence in the use of low embodied natural materials is relatively low. <p>Advantages of using locally supplied construction materials:</p> <ul style="list-style-type: none"> • Closer proximity reduces travel time of delivery vehicles therefore a reduction in pollution, emissions etc. • Good public relations for the developer and demonstrates an investment in the community. • Local knowledge of suppliers means they are better placed to appreciate and satisfy local preferences. • Supply chains are generally shorter, leading to greater certainty and predictability of delivery times. • Boost to local economy in terms of jobs/investment/commerce/business. <p>Disadvantages of using locally supplied construction materials:</p> <ul style="list-style-type: none"> • Developer may pay more for materials as a result of the lack of competitive pricing. • Lack of choice of materials available may result in lower quality/could limit innovation in design. • Local suppliers may not have the capacity to meet demand. 	(8)

Level	Mark	Descriptor
0	0 marks	No rewardable material
1	1-3 marks	A few key points identified, or one point described in some detail. The answer is likely to be in the form of a list. Only one viewpoint considered. Points made will be superficial/generic and not applied/directly linked to the situation in the question. The learner has showed a basic understanding sustainable materials and methods.
2	4-6 marks	Some points identified, or a few key points described. Consideration of more than one viewpoint but there will be more emphasis on one of them. The answer is unbalanced. Most points made will be relevant to the situation in the question, but the link will not always be clear. The learner has showed a good understanding sustainable materials and methods.
3	7-8 marks	Range of points described, or a few key points explained in depth. Most sides of the case are considered and the answer is well balanced, giving weight to most viewpoints. The majority of points made will be relevant and there will be a clear link to the situation in the question. The learner has showed a developed understanding sustainable materials and methods.

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