Mark Scheme (Final)

June 2018

NQF BTEC Level 1/Level 2 First Award Construction and the Built Environment

Unit 1: Construction Technology

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at: www.edexcel.com/contactus

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

June 2018
Publications Code 21492K_RMS

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.

BTEC NG Construction Unit 1 (1806) Mark Scheme

Question Number	Answer	Marks
1(a)	A – To resist uplift from wind C **-** To resist the spread of the walls	(2)

Question Number	Answer	Marks
1(b)	1 mark for each of: • Plasterboard (1) • Concrete (1) • Blockwork (1) • Intumescent paint (1) • Brickwork (1) **Accept any other appropriate answers.** Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
2(a)	B-Compounds D-Welfare facilities	(2)

Question Number	Answer	Marks
2(b)	A – Gas E – Electricity	(2)

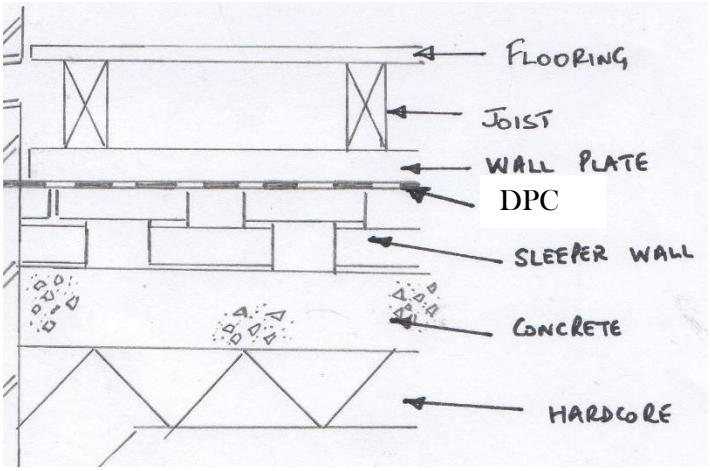
Question Number	Answer	Marks
2(c)	1 mark for each of: • Steel trench sheets (1) • Timbering (1) • Hydraulic trench supports (1) • Aluminium waling (1) • Trench box (1) **Accept any other appropriate answers.** Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
2(d)	1 mark for each of: • Strip/wide strip • Trench/mass fill/deep strip • Raft • Pile/short bored pile **Accept any other appropriate answers.** Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
2(e)	1 mark for any of: • Injuries (resulting from lack of working space) (1) • Inhalation of noxious fumes (1) • Asphyxiation (1) • Fire (1) • Drowning (1) **Accept any other appropriate answers.** Up to a maximum of one mark.	(1)

Question Number	Answer	Marks
3	2 marks for one reason explained. 1 mark for identification of a reason, and 1 mark for linked explanation. Up to a maximum of 2 marks. • To reduce the need to design for artificial light (1) as a building's orientation would maximise the use of natural daylight(1) • Facing south (1) to harness the benefits of natural sunlight (1) • To reduce energy requirements of a building (1) by maximising solar gains(1) • To incorporate solar/photovoltaic panels (1) in order to produce energy (1) • To reduce glare from the Sun (1) that affects the building operations/occupants (1) **Accept any other appropriate answers**. Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
4	2 marks for an explanation. 1 mark for identification of the reason, and 1 mark for a linked explanation. • British standards are specifications and performance standards (1) used to ensure that materials are fit for purpose / protect the public/building owners from the use of inappropriate materials/to ensure consistency (1) **Accept any other appropriate answers**. Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
5	Marks should be awarded for appropriate placing of the components on the diagram. **Accept fill patterns in place of annotation.** 1 mark for each correct label, up to a maximum of 5 marks. 1 mark for correct location of: • Hardcore • Concrete • Sleeper/honeycomb wall • DPC • Wall plate • Joist • Flooring • Air brick/vent • Insulation • earth/soil  **Accept similar valid alternative sketches.** Up to a maximum of 5 marks	(5)

Question Number	Answer	Marks
6	1 mark for each correct label: (i) Hipped/pitched (ii) Mono pitch (iii) Flat (iv) Lean-to	(4)

Question Number	Answer	Marks
7	2 marks for one reason explained: 1 mark for identification of a reason, and 1 mark for linked explanation. Up to a maximum of 2 marks. • Cellulose is a recycled material (1) compared to foam which has no recyclable content/ so it is better for the environment (1) • Cellulose requires less embodied energy to manufacture (1) compared to a high embedded energy requirement of petroleum based manufacture of foam (1) • Foam eg Styrofoam is manufactured from oil (1) which is a fossil fuel and a finite resource (1). **Accept any other appropriate answers**. Up to a maximum of two marks.	(2)

Question Number	Answer	Marks
8	1 mark for a disadvantage identified, and 1 mark for a linked explanation, up to 2 marks per explanation. Up to a maximum of 4 marks. • Long spans are restricted (1) due to reduced depth of section compared to an engineered joist (1) • Less efficient/sustainable use of section (1) as timber solid joists are less efficient and heavier compared to engineering joists (1) • Potential for greater on- site wastage (1) as joists are not made to measure unlike engineered joists (1) • Solid joists are prone to warping and twisting (1) therefore herringbone or solid strutting would be required (1) • Timber joists are heavier than engineered joists (1) making installation more difficult/time consuming (1) • Solid timber joists are difficult to run services through as they need to be drilled/large holes can't be accommodated(1) but engineered timber joints are easy to drill/can accommodated large holes if using i-joist, or run services in gaps if using aluminium web joists(1) **Accept any other appropriate answers.** Up to a maximum of four marks.	(4)

Question Number	Answer	Marks
9	Any two from the following explanations of the reasons. 1 mark per reason identified, and 1 mark for a linked explanation, up to 2 marks per explanation. • Allows no standing water or ponding/better run off(1) which can cause leaks/damage/maintenance/cost issues(1) • Life cycle costs of a pitched roof lower than a flat roof (1) a flat roof life cycle is less than a pitched roof, which can be considerably longer (1) • May turn the additional space into additional dormer bedrooms etc (1) which will increase the value of the property (1) • Leaves/other debris gathering on a flat roof (1) resulting in the need for regular maintenance /and need to pay someone to clean off that is not required for a pitched roof(1) **Accept any other appropriate answers.**	(4)

	Up to a maximum of four marks.	

Question Number	Answer	Marks
10	C – Timber cladding E – Brickwork	(2)

Question Number	Answer	Marks
11	Any two from the following advantages of metal stud partitions compared to timber stud partitions. 1 mark per advantage identified, and 1 mark for a linked explanation, up to 2 marks per explanation. • Lightweight (1) therefore easier to handle/install/transport (1) • Reduction of storage requirements (1) because the sections stack inside one another (1) • Stability (1) because the metal studs do not warp or twist/not prone to take up moisture (1) • Increased durability (1) as not prone to insect attack (1) • Easier to install services (1) because the metal studs are perforated (1) **Accept any other appropriate answers.** Up to a maximum of four marks.	(4)

Question Number	**Indicative content**	Marks
12	Timber framed Advantages • Can use off-the-shelf designs making the design process speedier • A quick overall completion time • Internal trades can start immediately whilst the external envelope is being completed • Reduction in drying time as no wet internal finishes are used • Reduced site labour therefore saving money • Reduced reliance on masonry trades • A variety of external finishes can be applied facilitating contemporary/variety of design may make this an appealing form of construction • Timber is a renewable material Disadvantages • Lead time could negate the time advantage if bespoke designs are required	(8)

	• Susceptibility to decay of timber when exposed to excessive moisture • Lack of public confidence in this structural form • Lack of experienced builders and erection crews • Timber is fire susceptible. Pre-cast concrete cross-wall construction form Advantages • Fast build programme • Can have direct decoration to walls and ceilings with only minor surface preparation on- site • Factory installed elements • Early 'dry-box' allowing quick access for subsequent trades • Variety of non-load bearing cladding systems may be used • Heavyweight construction has inherent thermal mass properties • Dense construction material has noise reduction properties • Modular design enables repetitive layout appropriate to cheap affordable accommodation • Limited impact of inclement weather on construction • Inherent fire resistance properties Disadvantages • Limitations of possible designs/relative boring similar layout/format • Weathering if not rendered or cladding adopted can be unsightly • Maintenance of external appearance due to weathering may be required • Requires heavy lifting plant **Accept any other valid response.**	

Level	Descriptor	Marks
0	No rewardable material	0 marks
1	A few points identified, or one point described in some detail. 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 has demonstrated a basic understanding of the two construction forms.	1-3 marks
2	Some points identified, or a few 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 demonstrated a good understanding of the two construction forms.	4-6 marks
3	Range of points described, or a few points explained in depth. The majority of points made will be relevant and there is a clear link to the situation in question. The	7-8 marks

	learner has demonstrated a developed understanding of the two construction forms.	

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE