

### 8710-031 SAMPLE

# T Level Technical Qualification in Building Services Engineering for Construction (8710)

Building Services Engineering Core (8710-30) – Theory exam (1) (8710-031)

If provided, stick your cand barcode label here.	Date of exam (TBC) Duration (2 hours 30 minutes)
Candidate name (first, last)	
First	
Last	
Candidate enrolment number	Date of birth (DDMMYYYY)  Gender (M/F)
Assessment date (DDMMYYYY)	Centre number Candidate signature and declaration

- If additional answer sheets are used, enter the additional number of pages in this box.
- 0 0
- Before taking the examination, **all candidates** must check that their barcode label is in the appropriate box. Incorrectly placed barcodes may cause delays in the marking process.
- Please ensure that you staple additional answer sheets to the **back** of this answer booklet, clearly labelling these with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.
- All candidates need to use a **black/blue** pen. **Do not** use a pencil or gel pen, unless otherwise instructed.
- If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. Do not write on the source documents.
- \*I declare that I had no prior knowledge of the questions in this examination and that I will not divulge to any person any information about the questions.

# You should have the following for this examination

- a pen with blue or black ink
- a non-programmable scientific calculator

#### **General instructions**

- The marks for questions are shown in brackets.
- This examination contains 24 questions. Answer all questions.
- Answer the questions in the spaces provided. Answers written in margins or on blank pages will **not** be marked.
- Cross through any work you do not want to be marked.

This exam has been split into **two** sections.

Below details the types of questions and marks available for each section.

Please allow time for each section accordingly.

**Section A** is made up of **77** marks and includes **21** short answer and medium answer questions.

**Section B** is made up of **33** marks and includes **3** extended response questions.





# **Section A**

	te <b>one</b> statutory document that specifically regulates <b>each</b> of the owing activities.	
a)	The use of power tools on a construction site.	(1 mar
b)	The hazards of working on live electrical systems during maintenance procedures.	(1 mar
Ide	ntify <b>three</b> solutions used to make a development socially sustainable.	(3 mark
List	<b>two</b> environmental technology systems that generate electricity.	(2 mark
List the	<b>two</b> professional bodies in Building Services Engineering, including the specialism y are affiliated with.	(2 mark

)	State <b>two</b> methods of tendering for a project.	(2 marks
	A risk assessment has been created to work in an excavation on a busy site to lay services.	
	Describe one potential risk and an appropriate control measure to mitigate the risk.	(2 mark
	What is the <b>most</b> appropriate type of automatic fire detector for use in a shower room?	(1 mar
	Explain what is meant by modular construction, giving one benefit of this construction type over traditional site base construction.	(3 mark



9	a)	Explain the difference between an incident and an accident.	(2 marks
	b)	Explain the difference in recording and reporting procedures for an incident and an accident.	(3 marks
10	Exp	plain <b>two</b> responsibilities of the Local Authority Planning Officer once planning	
	per	mission has been submitted.	(4 marks

on the same project.	g (4 mar)
	_
	_
Describe the purpose of the Environmental Protection Act when dealing with controlled waste.	(2 maı
	_
	_
Explain how the continued safety of power tools is monitored within a building services organisation.	(6 ma
	_
	_
	_
	_
	_

A ladder needs to scale a wall 8.3 m high and pass the top of the wall by a further 1 m.  Determine the <b>minimum</b> length of ladder required in order to maintain a correct ladder ratio.	Give <b>four</b> advantages of steel that makes it suitable for the structural frame of the	
Determine the <b>minimum</b> length of ladder required in order to maintain a correct ladder ratio.	nigh-rise building.	(4 mai
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Show your workings. (5 ma		
	Show your workings.	(5 ma

16

17

Explain the installation methods used when installing an underfloor heating system on a joisted floor and how they improve the system's performance.		(6 marks)
A contract which has a value of £2700.00 has over run and the client has decided to impose a penalty clause of 5% of the costs for every working week the job over runs.		
Calculate the penalty if the work over runs by three days. Show your workings.		(2 marks
	-	
	_	

Describe the requirements for drilling holes in wooden joists.	(4 ma
During the refurbishment of a commercial property new thermal insulation is to be	
installed to improve the efficiency of the building.	
Explain <b>two</b> implications that the new insulation materials can have on building services systems (cables and pipes).	(4 ma
	(4 ma



20 Explain **one** environmental technology system that can reduce the costs of **each** of the following metered supplies.

You must select a different environmental technology for **each**.

a)	Water.		(3 marks)
		-	
		-	
		_	
b)	Gas.		(3 marks)
		_	
		-	
		-	
		_	
c)	Electricity.		(3 marks)
		-	

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(5 marks)

(12 marks)

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## **Section B**

22	You are part of a team who are responsible for the design and build of a new office
	complex in a rural location. You are specifically involved in the building services
	technologies. The client wishes to maximise the use of environmental and smart
	technology systems and measures to reduce and monitor consumption, and therefore costs, of metered utility supplies such as water, gas, and electricity.

Analyse the uses of smart metering in relation to this project, discussing its likely effectiveness.

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(9 marks)





24	has very easy access for materials and machinery. The main constraint is that the time allowed for the construction work on site, from commencement to handover, is extremely limited.
	Evaluate the different types of construction methods and processes and suggest the

most suitable for this project.	a processes and suggest the

(12 marks)



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