



Level 3 Technicals in Constructing the Built Environment

**6720-
040 / 6720-540**

Part of 6720-34 and 6720-36

November 2017 Version 1.1

Guide to the examination

Version and Date	Change Detail	Section
June 2019 v1.1	Amendment to number of resit opportunities	1. Details of the exam

Who is this document for?

This document has been produced for centres who offer **City & Guilds Level 3 Technicals in Constructing the Built Environment**. It gives all of the essential details of the qualification's external assessment (exam) arrangements and has been produced to support the preparation of candidates to take the exam/s.

The document comprises four sections:

1. **Details of the exam.** This section gives details of the structure, length and timing of the exam.
2. **Content assessed by the exam.** This section gives a summary of the content that will be covered in each exam and information of how marks are allocated to the content.
3. **Guidance.** This section gives guidance on the language of the exam, the types of questions included and examples of these, and links to further resources to support teaching and exam preparation.
4. **Further information.** This section lists other sources of information about this qualification and City & Guilds Technical Qualifications.

1. Details of the exam

External assessment

City & Guilds Technical qualifications have been developed to meet national policy changes designed to raise the rigour and robustness of vocational qualifications. These changes are being made to ensure our qualifications can meet the needs of employers and Higher Education. One of these changes is for the qualifications to have an increased emphasis on external assessment. This is why you will see an external exam in each of our Technical qualifications.

An external assessment is an assessment that is set and/or marked by the awarding organisation (ie externally). All City and Guilds Technical qualifications include an externally set and marked exam. This must be taken at the same time by all candidates who are registered on a particular qualification. We produce an exam timetable each year. This specifies the date and time of the exam so you can plan your delivery, revision and room bookings/PC allocation in plenty of time.

The purpose of this exam is to provide assurance that all candidates achieving the qualification have gained sufficient knowledge and understanding from their programme of study and that they can independently recall and draw their knowledge and understanding together in an integrated way. Whilst this may not be new to you, it is essential that your learners are well prepared and that they have time to revise, reflect and prepare for these exams. We have produced a Teaching, Learning, and Assessment guide that is you should refer to alongside the present document ([Teaching, Learning and Assessment Guide](#)). If a learner does not pass the exam at their first attempt, there is only one opportunity to resit the exam, so preparation is essential.

Exam requirements of this qualification

- **Constructing the Built Environment** – Theory exam (2 hours).

The exam is graded and a candidate must achieve at least a Pass grade in order to be awarded the qualification. (In addition to the exam, a synoptic assignment must also be completed and passed). You can find full details of the synoptic assignment in the *Qualification Handbook* and the *Synoptic Assessment Guide* – please see the link to the qualification page at the end of this document.

When does the exam take place?

The exam is offered on two fixed dates in March or June. The exact dates will be published at the start of the academic year in the *Assessments and Exam Timetable* <http://www.cityandguilds.com/delivering-our-qualifications/exams-and-admin>.

At the start of the programme of study, in order to effectively plan teaching and exam preparation, centres should know when the exam will be taking place and allocate teaching time accordingly. Section 2 of this document gives a summary of the content that needs to be covered in order to prepare learners for the exam and full details of this are given in the Qualification Handbook.

Form of exam

The exam for this qualification can be taken either on paper (6720-540) or online (6720-040).

Can candidates resit the exam?

Candidates who have failed an exam or wish to retake it in an attempt to improve their grade, can do so **twice**. The third and final retake opportunity applies to Level 3 only. The best result will count towards the final qualification. If the candidate fails the exam three times then they will fail the qualification.

How the exam is structured

Each exam has a total of 60 marks and is made up of:

- approximately 16-18 short answer questions
- 1 extended response question.

Short answer questions are used to confirm **breadth of knowledge and understanding**.

The extended response question is to allow candidates to demonstrate **higher level and integrated understanding** through written discussion, analysis and evaluation. This question also ensures the exam can differentiate between those learners who are 'just able' and those who are higher achieving.

More details about and examples of question types are given in Section 3 of this document.

Assessment Objectives

The exams are based on the following set of assessment objectives (AOs). These are designed to allow the candidate's responses to be assessed across the following three categories of performance:

- **Recollection** of knowledge.
- **Understanding** of concepts, theories and processes.
- **Integrated application** of knowledge and understanding.

In full, the assessment objectives covered by the exam for this qualification are:

Assessment objective	Mark allocation (approx %)
<i>The candidate..</i>	
AO1 Recalls knowledge from across the breadth of the qualification	37%
AO2 Demonstrates understanding of concepts, theories and processes from a range of learning outcomes.	43%
AO4 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.	20%

Booking and taking the exam

All assessments for City & Guilds Technical Exams must be booked through Walled Garden. There is a deadline for booking exams, synoptic assessments and any other centre marked assessments, please refer to the time line to check these dates.

The exam must be taken under the supervision of an invigilator who is responsible for ensuring that it is conducted under controlled conditions. Full details of the conditions under which the exam must be taken can be found in the Joint Council for Qualifications (JCQ) document, [Instructions for Conducting Examinations \(ICE\)](#).

Special consideration

Candidates who are unable to sit the exam owing to temporary injury, illness or other indisposition at the scheduled time may qualify for special consideration. This is a post-examination adjustment that can, in certain circumstances, be made to a candidate's final grade. The Joint Council for Qualifications' guide to the special consideration process can be found at www.jcq.org.uk .

To make a request for special consideration, please contact: policy@cityandguilds.com

Access arrangements

Access arrangements are arrangements that allow candidates with particular requirements, disabilities or temporary illness to take assessments, where appropriate, using their normal way of working. The Joint Council for Qualifications document, *Access Arrangements and Reasonable Adjustments* gives full details and can be downloaded [here](#).

For further information and to apply for access arrangements please see:

[Access arrangements - When and how applications need to be made to City & Guilds](#)

[Applying for access arrangements on the Walled Garden](#)

2. Content assessed by the exam

The exam assesses:

- **Unit 301: Domestic construction technology**
- **Unit 302: Industrial and commercial construction technology**
- **Unit 303: Health and safety in the Built Environment**

Each exam assesses a sample of the content of these units. This means that a single exam will **not** cover 100% of the unit content. The full range of content will be assessed over a number of examination series. Details of the coverage of a particular exam paper will **not** be released in advance of the exam itself. Centres should **not** make assumptions about what will be assessed by a particular exam based on what has been covered on previous occasions. In order to be fully prepared for the exam, learners **must** be ready to answer questions on **any** of the content outlined below.

The table below provides an overview of how the qualification's Learning Outcomes are covered by each exam and the number of **marks** available per Learning Outcome (ie **not** the number of *questions* per Learning Outcome). In preparing candidates for the exam, we recommend that centres take note of the number of marks allocated to Learning Outcomes and to assign teaching and preparation time accordingly.

In preparing candidates for the exam, centres should refer to the Qualification Handbook which gives full details of each Learning Outcome.

The following is a summary of only that qualification content which is assessed by the exam and **not** a summary of the full content of the qualification.

Unit	Learning outcome	Topics	Number of marks
301 Domestic construction technology	L01 Identify the different forms, elements, components and materials used in domestic construction	1.1 Substructure and superstructure forms 1.2 Primary and secondary elements 1.3 Components and materials	18
	L02 Recognise traditional and modern methods of domestic construction	2.1 Methods used in traditional and modern construction 2.2 Characteristics of traditional and modern construction	

	LO3 Understand how domestic buildings perform in use	3.1 Performance expectations 3.2 Environmental issues	
302 Industrial and commercial construction technology	LO1 Recognise the methods used in industrial and commercial construction	1.1: Types of industrial and commercial buildings 1.2: Common construction forms 1.3 Materials used to construct common forms	9
	LO2 Understand site preparation and substructure work in industrial and commercial construction	2.1 Site and soil investigations 2.2 Site preparation techniques 2.3 Types and uses of foundations	
	LO3 Understand superstructure work in industrial and commercial construction	3.1 Forming connections to construction elements 3.2 Wall construction 3.3 Floor construction	9
	LO4 Identify roofing work in industrial and commercial construction	4.1 Roof construction techniques 4.2 Roof coverings	
303 Health and safety in the Built Environment	LO1 Determine how and where accidents occur in the construction industry	1.1 Accident statistics 1.2 Causes of accidents 1.3 Recording and reporting accidents	6
	LO2 Apply the principles of risk management	2.1 Hazard analysis 2.2 Risk management techniques	
	LO3 Understand health and safety legislation relevant to the construction industry	3.1 Legislation and regulations 3.2 Practical implications of regulations	6
	LO4 Develop training materials for use in the construction industry	4.1 Training needs	

4.2 Development of training material

Total marks for sections: 48 marks

Integration across units*: 12 marks

Total marks for exam: 60 Marks

* *Integration across units*. These marks relate to Assessment Objective 4. These marks are awarded to differentiate between levels of performance by candidates taking the exam. The marks are given for how well a candidate has applied their knowledge, understanding and skills from across the units that make up the qualification in an integrated way to meet the requirements of the exam questions.

3. Guidance

Vocabulary of the exam: use of 'command' verbs

The exam questions are written using 'command' verbs. These are used to communicate to the candidate the type of answer required. Candidates should be familiarised with these as part of their exam preparation.

The following guidance has been produced on the main command verbs used in City & Guilds Technicals exams.

A more detailed version of this table, which also includes the command verbs used in the assignments is published in *City & Guilds Technical Qualifications Teaching, Learning and Assessment* guide.

Command verb	Explanation and guidance
Analyse	Study or examine a complex issue, subject, event, etc in detail to explain and interpret, elements, causes, characteristics etc
Calculate	Work out the answer to a problem using mathematical operations
Compare (...and contrast) (or describe the similarities/differences)	Consider and describe the similarities (and differences) between two or more features, systems, ideas, etc
Define	Give the meaning of, technical vocabulary, terms, etc.
Describe	Give a detailed written account of a system, feature, etc (..the effect of...on...) the impact, change that has resulted from a cause, event, etc (..the process..) give the steps, stages, etc
Differentiate between	Establish and relate the characteristic differences between two or more things, concepts, etc
Discuss	Talk/write about a topic in detail, considering the different issues, ideas, opinions related to it
Distinguish between	Recognise and describe the characteristic differences between two things, or make one thing seem different from another
Evaluate	Analyse and describe the success, quality, benefits, value, etc (of an end product, outcome, etc)
Explain	Make (a situation, idea, process, etc) clear or easier to understand by giving details (..how..) Give the stages or steps, etc in a process, including relationships, connections, etc between these and causes and effects.

Give example(s) illustrate/	Use examples or images to support, clarify or demonstrate, an explanation, argument, theory, etc
Give a rationale	Provide a reason/reasons/basis for actions, decisions, beliefs, etc
Identify	Recognise a feature, usually from a document, image, etc and state what it is
Justify	Give reasons for, make a case for, account for, etc decisions, actions, conclusions, etc, in order to demonstrate why they suitable for or correct or meet the particular circumstances, context
Label	Add names or descriptions, indicating their positions, on an image, drawing, diagram, etc
List	Give as many answers, examples, etc as the question indicates (candidates are not required to write in full sentences)
Name	Give the (technical) name of something
Propose	Present a plan, strategy, etc (for consideration, discussion, acceptance, action, etc).
Select	Choose the best, most suitable, etc, by making careful decisions
State	Give the answer, clearly and definitely
Summarise	Give a brief statement of the main points (of something)

Question types

The following explains, and gives examples of, types of questions used in City & Guilds Technical exams. In preparing candidates to take the exam, it is recommended that you familiarise them with the requirements of each question type so that they can be effective and make best use of the time available when sitting the exam.

- An effective candidate will gauge the type and length of response required from the question and the number of marks available (which is given for each question on the exam paper).
- Short answer questions may not require candidates to write in complete sentences. Extended response questions will require a more developed response.
- Candidates should read the exam paper before attempting to answer the questions and should allocate time proportionate to the number of marks available for each question or section.

Question type:	Example question	Mark scheme:
<p>Short answer questions (restricted response) These are questions which require candidates to give a brief and concise written response. The number of marks available will correspond to the number of pieces of information/examples and the length of response required by the question.</p>	<p>Compare how risk assessments and method statements are used in construction projects. (5 marks)</p>	<p>Marks as shown up to a maximum of five marks.</p> <p>A risk assessment is a systematic process of evaluating the potential risks that may be involved in a projected activity or undertaking (1), who the risk may affect (1) and how it may be controlled (1).</p> <p>A method statement is a document detailing how a particular task or activity is to be carried out (1). A method statement should detail the possible risks associated with a particular part of a project (1) and the methods of control to be used to manage the work safely (1).</p>
<p>Structured Response Questions These are questions that have more than one part (eg a), b), etc.). The overall question is made up of linked, short answer questions</p>	<p>a) Identify two types of hazardous substance referred to in the Control of Substances Hazardous to Health (COSHH) Regulations. (2 marks)</p>	<p>a) Any two of the following at one mark each.</p> <ul style="list-style-type: none"> • Chemicals or products containing chemicals. • Fumes.

which move the candidate through the topic in a structured way. For example, the question will usually start with a 'recall'/'state'/'describe' question followed by an 'explain' to draw out understanding of the topic. They usually have a shared introductory 'stem', and the number of marks may increase through the question.

- Dusts.
- Vapours.
- Mists.
- Nanotechnology.
- Gases and asphyxiating gases.
- Biological agents.
- Germs such as leptospirosis or legionella.

Specific construction materials will be accepted if they come under any of the above headings.

b) Explain why asbestos is not included in the COSHH Regulations, despite being hazardous.

(2 marks)

b) Asbestos is exceptionally hazardous (1) and requires detailed regulations relating directly to asbestos alone (1).

Extended response questions

Extended response questions are those that require the candidate to write a longer written response using sentences and paragraphs. These usually require candidates to discuss, explain, etc. a topic in some detail. The question is often based on a short case study, scenario or other prompt. The level of detail should be gauged from the question and the number of marks available.

Example question

A 1970s medium-rise office block comprises a steel frame and glazed rain screen cladding. Both the frame and the walls are still structurally sound, but the roof is in urgent need of replacement. The project requires that thermal and sound insulation is upgraded and health and safety issues are considered.

Discuss what needs to be done to bring the office block to accepted modern standards.

(12 marks)

Mark scheme

Indicative content to include:

Common construction forms, wall construction, roof construction techniques, hazard analysis, practical implementation of regulations, thermal comfort, noise and vibration, reducing energy consumption, sustainable construction methods.

Band 1 (0 – 4 marks)

The candidate describes one advantage of a steel frame in limited detail, explains the principle of rainscreen cladding up to a point (but fails to offer a convincing account of the associated thermal and sound insulation properties), specifies a roof (but without explaining why the roof is suitable for the intended purpose) and outlines a limited range of health and safety hazards without linking the hazards to the task in hand.

Example band 1 response

First of all, the roof will need to be changed to a modern type of roof. The roof which I would recommend would be a hipped roof. The reason for this is because it will be a modern type of roof. Another reason is because it will support the required building it is needed. The insulation of the building will need to be upgraded. The wall insulation which I need to include, will be cavity wall insulation. The reason for a cavity wall insulation is because the cavity will very thick because it will be in the middle of the wall. For sound insulation, I would use sound foam boards. The foam will be put on the roofs of some of the rooms where the rooms will be very noisy. The sound insulation will be very useful. The health and safety elements of the building are to be considered. One of the elements to be considered is fire safety. I will make sure that there are fire exits on every floor. I will also make sure that there are fire extinguishers on every floor. The reason for this is because there could be a fire on a floor which could be put out, but they don't have one. Other safety issues would be for the building foundation to be strong and sturdy. The building must be able to withhold the strength of people.

Band 2 (5 – 8 marks)

The candidate describes several advantages of a steel frame in reasonable detail, explains the principle of rainscreen cladding correctly and provides a partial account of the associated thermal and sound insulation properties, specifies a roof and explains why the roof is suitable for the intended purpose in some detail, outlines a wide range of health and safety hazards, and links some of the hazards to the task in hand.

Example band 2 response

Firstly, one thing that I think needs to be done is a flat roof is built. I recommend a flat roof because the building will be quite high up and vulnerable to weather conditions and strong winds which would probably damage any other roof type whereas the flat roof will not be damaged by weather conditions or strong winds as there isn't anything for the strong winds to hit and the weather will be managed by drainage systems in the roof. This means that there will be no problems concerning the roof in the future. Secondly, another thing that I think needs to be discussed is how to upgrade the thermal and sound insulation that is already in the building. This needs to be discussed because although the structure is sound, it would appear that the current insulation there is poor. Things that can be done to improve this include installation of double glazed windows and a form of insulation is placed in between the exterior and interior walls. The interior wall would have to come off and then be put back up but because this is a steel frame structure, this can be done without much hassle but the installation of double glazed windows will take time and will require gaps being made in the wall but this can again be easily done because the cladding can be removed quite comfortably. Furthermore, health and safety issues need to be discussed. This is because there are new regulations of health and safety meaning that the building won't have these features in place. One of the new regulations is that all medium and high rise buildings must have an emergency staircase so that if there is a fire, there are two ways of safely evacuating the building. This

must be discussed because if these regulations are not in place, not only will the building be deemed not fit for use but it puts workers lives and wellbeing at risk so the building must be up to date with the newest health and safety regulations. Finally, one last thing that should be discussed is how to improve the energy efficiency of the building. This should be discussed because if the building improves its energy efficiency rating, it will not only save money but it will improve the environment because less energy is being wasted. It would also help give the company a great reputation which will ultimately make them more popular which is why the possibility of improving the energy efficiency rating should be considered.

Band 3 (9 – 12 marks)

The candidate describes a comprehensive range of the advantages of a steel frame in an in-depth manner, explains the principle of rainscreen cladding clearly and correctly and provides a full account of the associated thermal and sound insulation properties, precisely specifies a suitable roof and explains why the roof is suitable for the intended purpose in an in-depth manner, outlines a full range of health and safety hazards.

Example band 3 response

Because the building was built in the 1970s, possibly before the Health and Safety at Work Act was enacted, what was done then may not be adequate for today's purposes, and we may need to replace materials or use different techniques. The walls and frame are deemed to be structurally sound, so we can concentrate primarily on the roof. We should however check that there are no existing materials that are now considered to be hazardous. Asbestos would be one obvious example and the building should be checked by a competent person in order to determine whether any such hazardous materials had been used. Any such hazardous materials should be removed by experts and replaced with something deemed not to present a hazard. This would be done during the removal of the existing roof and installation of a suitable modern roof. The modern roof could be of several kinds such as a flat roof, monitor roof, shell roof or pitched roof and each has its own advantages, either of cost or of performance-in-use. My recommendation would be for a steel-framed pitched roof, with sufficient thermal insulation to reduce the U value of the building and to meet the requirements on Approved Document L, and roof lights to provide illumination from above. The reasons for this choice include the following: a steel frame has been used for the existing structure and that would make a steel-framed roof easier to design and fit, particularly in terms of connections; it would provide space beneath the pitched roof for building services; the erection time would be shorter; and less labour would be required. I would recommend covering the area of the roof that is not a roof light with solar tiles. These are much the same price as ordinary roof tiles but produce energy as well. This means that the overall the cost of heating the building will be lower than before and the insulation and the solar roof tiles will pay for themselves over time.

My choice for the thermal insulation would be fibre-glass matting which will both trap and refract sound and therefore double up as sound insulation. To act as a solid sound barrier in the walls we should introduce a double layer of dry-walling with a cavity between to trap sound waves on the principle of discontinuity. This should be installed behind the existing rainscreen cladding, which should be checked during installation of the insulation to see that it is still doing the job for which it was originally specified. This would include evidence of regular maintenance, thermal insulation to modern standards, aesthetically pleasing appearance, acceptable levels of acoustic performance and, increasingly important these days, sustainability and fire resistance.

There are several important health and safety issues associated with the project. These include control of hazardous materials, work at height on the roof, working in confined spaces under the roof, weather and wind speed at height, the protection of workers on the ground from falling objects and consideration of surrounding buildings when using plant such as cranes. The correct PPE should be used at all time and risk assessments followed. This would include safety harnesses when working at height and the use of gloves and a face mask when installing the insulation, due to the lung and skin problems associated with fibre glass.

Examination technique

Candidates with a good understanding of the subject being assessed can often lose marks in exams because they lack experience or confidence in exams or awareness of how to maximise the time available to get the most out of the exam. Here is some suggested guidance for areas that could be covered in advance to help learners improve exam performance.

Before the exam

Although candidates cannot plan the answers they will give in advance, exams for Technical qualifications do follow a common structure and format. In advance of taking the exam, candidates should:

- be familiar with the structure of the exam (ie number and type of questions).
- be aware of the amount of time they have in total to complete the exam.
- have a plan, based on the exam start and finish time for how long to spend on each question/section of the exam.
- be aware of how many marks are available for each question, how much they should expect to write for each question and allow most time for those questions which have the most marks available.

At the start of the exam session

At the start of the exam, candidates:

- should carefully read through the instructions before answering any questions.
- may find it helpful, where possible, to mark or highlight key information such as command words and number of marks available on the question paper.
- identify questions which require an extended written answer and those questions where all or part of the question may be answered by giving bullets, lists etc rather than full sentences.

Answering the questions

Candidates do not have to answer exam questions in any particular order. They may find it helpful to consider, for example:

- tackling first those questions which they find easiest. This should help them get into the 'flow' of the exam and help confidence by building up marks quickly and at the start of the exam.
- tackling the extended answer question at an early stage of the exam to make sure they spend sufficient time on it and do not run out of time at the end of the exam.

Candidates should avoid wasting time by repeating the question either in full or in part in their answer.

Candidates should **always** attempt every question, even questions where they may be less confident about the answer they are giving. Candidates should be discouraged however, from spending too long on any answer they are less sure about and providing answers that are longer and give more detail than should be necessary in the hope of picking up marks. This may mean they have less time to answer questions that they are better prepared to answer.

Extended answer questions

Before writing out in full their answer to extended questions, candidates may find it helpful to identify the key requirements of the question and jot down a brief plan or outline of how they will

answer it. This will help clarify their thinking and make sure that they don't get 'bogged down' or provide too much detail for one part of the question at the expense of others.

Towards the end of the exam

Candidates should always set aside time at the end of the exam to read back through and review what they have written in order to make sure this is legible, makes sense and answers the question in full.

If a candidate finds they are running out of time to finish an answer towards the end of the exam, they should attempt to complete the answer in abbreviated or note form. Provided the content is clear and relevant, examiners will consider such answers and award marks where merited.

Further guidance on preparing candidates to take the exam is given in the City & Guilds publication, [Technical Qualifications, Teaching, Learning and Assessment](#) which can be downloaded free of charge from City & Guilds website.

4. Further information

For further information to support delivery and exam preparation for this qualification, centres should see:

City & Guilds

Qualification homepage: <http://www.cityandguilds.com/qualifications-and-apprenticeships/construction/construction/6720-technical-in-constructing-the-built-environment#tab=information> which includes:

- Qualification handbook
- Synoptic Assignment
- Sample assessments

Technical Qualifications, Resources and Support: www.cityandguilds.com/techbac/technical-qualifications/resources-and-support

Joint Council for Qualifications

Instructions for Conducting Examinations: <http://www.jcq.org.uk/exams-office/ice---instructions-for-conducting-examinations>