



# Level 3 Advanced Technical Diploma in Horticulture (720) (0174-32)

October 2017 Version 1.0

Guide to the examination

## Who is this document for?

This document has been produced for centres who offer **City & Guilds Level 3 Advanced Technical Diploma in Horticulture**. 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

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 links 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 or online.

## Can candidates resit the exam?

Candidates may resit the exam once only. If a candidate fails the exam both on the first attempt and when resitting it, that candidate has failed the qualification and cannot achieve it in that academic year.

## How the exam is structured

Each exam has a total of 60 marks available.

Each exam is made up of approximately:

- 10-11 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 <b>Recalls knowledge</b> from across the breadth of the qualification	30%
AO2 <b>2 Demonstrates understanding</b> of concepts, theories and processes from a range of learning outcomes.	50%
AO4 <b>Applies knowledge, understanding and skills</b> 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](http://www.jcq.org.uk).

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

### Level 3 Horticulture – Theory exam (2)

The exam assesses:

- Unit 304: Maintain turf in parks and gardens
- Unit 307: Plant and soil science
- Unit 308: Tree and shrub maintenance

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
304 Maintain turf in parks and gardens	LO1 Understand the maintenance of established turf	1.1 Factors affecting maintenance operations on amenity turf 1.2 The effect of maintenance on the growth and development of turf	10
	LO4 Understand the use, establishment and maintenance of wildflower meadows/low maintenance swards	4.1 Establishment and maintenance of wildflower meadows/low maintenance swards 4.2 Advantages, disadvantages and uses of wildflower meadows/low maintenance swards	

307 Plant and soil science	LO1 Recognise the function of plant structures	1.1 Internal and external structures of plants 1.2 Function of plant structures	26
	LO2 Understand the main physiological processes and growth and development of plants	2.1 Processes of plant physiology 2.2 Life cycle of selected plants 2.3 Growth and development of plants	
	LO3 Understand how soils affect plant growth and development	3.1 Soil types and soil formation 3.2 Characteristics of soil types 3.3 Affects soils have on plant growth and development 3.4 Cultural techniques that affect soil characteristics	
308 Tree and shrub maintenance	LO1 Understand the pruning of trees and shrubs	1.1 The aims and considerations of pruning trees and shrubs 1.2 Pruning techniques 1.3 The immediate and long term biological processes of trees and shrubs in response to pruning and possible consequences of not pruning 1.4 Legislation relevant to pruning trees and shrubs	12
			Total marks for sections: 48 marks
			Integration across units*: 12 marks
			<b>Total marks for exam: 60 Marks</b>

\* *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 <i>describe</i> 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

<b>Identify</b>	Recognise a feature, usually from a document, image, etc and state what it is
<b>Justify</b>	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
<b>Label</b>	Add names or descriptions, indicating their positions, on an image, drawing, diagram, etc
<b>List</b>	Give as many answers, examples, etc as the question indicates (candidates are not required to write in full sentences)
<b>Name</b>	Give the (technical) name of something
<b>Propose</b>	Present a plan, strategy, etc (for consideration, discussion, acceptance, action, etc).
<b>Select</b>	choose the best, most suitable, etc, by making careful decisions
<b>State</b>	Give the answer, clearly and definitely
<b>Summarise</b>	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><b>Short answer questions (restricted response)</b> 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>Describe collenchyma and guard cells in terms of the following:</p> <ol style="list-style-type: none"> <li>Structure of the cell</li> <li>Function of the tissue.</li> </ol> <p>(4 marks)</p>	<ul style="list-style-type: none"> <li>• Collenchyma cells are elongated cells with irregularly thick cell walls (1 mark)</li> <li>• Collenchyma cells provide structure and support for growing parts of the plant (1 mark)</li> <li>• Guard cells are kidney shaped with a thicker wall on the inside and a thinner wall on the outside. (1 mark)</li> <li>• Guard cells regulate the opening and closing of stomata to facilitate gas exchange and control transpiration in plants. (1 mark)</li> </ul>
<p><b>Structured Response Questions</b> These are questions that have more than one part (eg a, b), etc.). The overall question is made up of linked, short answer questions which move the candidate through the topic in a structured way. For example, the</p>	<p>a) Identify <b>two</b> soil characteristics affected by the addition of appropriate amounts of organic matter. (2 marks)</p>	<p>a)</p> <ul style="list-style-type: none"> <li>• Available water content (1 mark)</li> <li>• Nutrient level (1 mark)</li> <li>• Soil structure (1 mark)</li> </ul>

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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.

b) Describe **two** effects of the addition of appropriate amounts of organic matter on **each** characteristic. (2 marks)

b) Available water content:

- The distribution of pores and structure is improved as organic matter helps the aggregation of clay particles (1 mark)
- Organic matter holds moisture like a sponge improving soils water holding capacity (1 mark)

Nutrient level:

- It provides binding sites for nutrients so they are not washed out of the soil (1 mark)
- It adds slow release nutrients to the soil (1 mark)

Soil structure:

- Organic matter in soil binds other soil particles into aggregates (1 mark)
  - It breaks up heavier soils (1 mark)
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## 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

Discuss the impact that trees in proximity to turf can have on turf physiological processes and maintenance operations. (12 marks)

### Indicative content

Candidates should discuss potential impacts on the turf with reference to:

#### Grass physiological processes

- Trees- competition for resources/ Absorption of water and nutrients.
- Tree canopies - air movement/temperature/relative humidity/turf diseases/transpiration.
- Shade - turf growth habit/wear injury/moss/Photosynthesis.

#### Maintenance operations

- Mowing - rooting characteristics/Height of cut/frequency.
- Litter removal - leaves, fruit or bark debris/quality of cut.
- Top dressing – surface roots.
- Over seeding – shade tolerant.

### Band 1: 1-4 marks

A basic understanding of the subject with limited discussion and minimal reference to the impacts of trees in proximity to turf. Few or no terms used for the operations and turf physiological processes. To access the higher marks in the band, discussion is supported with some general examples.

#### *Example band 1 response*

*The proximity of trees to turf can impact on competition for resources, such as water, as tree roots can take up more.*

*Trees can also shade lawns which will reduce grass growth.*

*The proximity of trees to turf can make mowing and other maintenance processes difficult.*

*Tree proximity can also cause problems due to leaves on a lawn.*

## Band 2: 5-8 marks

A good understanding of the subject with a developed discussion and reference to specific and relevant impacts on turf physiological processes, supported with relevant examples. Some use of technical terminology used for the operations and turf physiological processes. To access the higher marks in the band, a range of impacts on both turf physiological processes and maintenance operations have been discussed.

### *Example band 2 response*

*The proximity of trees can have a serious impact on turf physiology, affecting mineral and water uptake due to competition for these resources from the extensive tree roots.*

*The proximity of trees can also impact on turf growth due to reducing the amount of photosynthesis that can take place in the turf grass leaves because of the shade of the tree canopy reducing the quantity of light received by the grass.*

*Maintenance operations of the turf can be affected by the trees obstructing or hindering machinery operation, for instance ride-on mower access and frequency of mowing during the year.*

*Tree proximity also contributes to more turf maintenance such as leaf blowing being required due to falling leaves and debris from the trees onto the lawn.*

*Tree roots can interfere with several turf maintenance operations such as mechanical top dressing and aeration.*

### Band 3: 9-12 marks

A thorough understanding of the subject with a fully developed discussion including the relevant impacts on turf physiological processes. A wide range of specific and appropriate examples are used to support the discussion. Consistent use of technical terminology for the operations and turf physiological processes. To access the higher marks in the band, a comprehensive range of impacts on both turf physiological processes and maintenance operations have been discussed.

#### *Example band 3 response*

*The proximity of trees to turf can have a serious impact on a number of turf grass physiological processes, affecting mineral and water uptake from the fibrous roots of the turf due to competition for these resources from the more extensive tree tap roots and thus reducing the amount of water and minerals available for other plant processes. This will also result in causing stress on the grass plants during periods of drought. Transpiration rates in the turf grass would be adversely affected, with subsequent negative effects on photosynthesis and mineral transport in the grass leaves leading to reduced growth and sward quality.*

*The proximity of a tree canopy has several serious effects on the physiology of the turf grass. The canopy can restrict air movement leading to potential grass fungal disease problems, the canopy will also reduce the quantities of radiant light reaching the turf. The effect of this reduced light would impact on photosynthetic ability of the grass and reduced growth or even in extreme stages cause yellowing due to lack of light. There may be other turf quality issues related to the shade caused by the tree canopy in that the reduced light will cause moss to grow which will have a detrimental effect on the quality of the turf and lead to an increase in the number and frequency of maintenance operations.*

*One of the effects of the reduced light and water availability on the turf grass is that root growth may be restricted with a consequential reduced leaf growth. This will impact on maintenance operations as the frequency of mowing will be reduced and more care required in selecting the height of cut particularly in the early and late season.*

*Maintenance operations of the turf will be affected by the trees obstructing or hindering machinery operation, for instance ride-on mower access and frequency of mowing during the year.*

*Tree canopy proximity will also result on the need for more specialist and frequent aspects of turf maintenance such as leaf blowing or raking being required due to falling leaves and debris from the trees accumulating on the lawn.*

***Example band 3 response (continued)***

*This will also impact on the quality of the cut, as tree debris could affect mowing operations by damaging blades or cylinders. The debris will impact on increasing the amount of time needed for maintenance operations. There may also be pest and disease implications associated with leaf debris accumulating on the lawn.*

*The presence of tree lateral roots can interfere with a number of seasonal turf maintenance operations such as mechanical top dressing and aeration.*

*Over-seeding on lawns affected by tree canopies needs to be facilitated by selecting shade-tolerant grass mixes. Fescue grasses are better at coping with shade, drought and poor nutrient levels.*

## 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 exam paper 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/land-based-services/horticulture/0174-technical-in-horticulture-and-forestry-arboriculture#tab=information>

which includes:

- Qualification handbook
- Synoptic Assignment
- Sample assessments

*Technical Qualifications, Resources and Support: [cityandguilds.com/techbac/technical-qualifications/resources-and-support](http://cityandguilds.com/techbac/technical-qualifications/resources-and-support)*

### Joint Council for Qualifications

*Instructions for Conducting Examinations: [www.jcq.org.uk/exams-office/ice---instructions-for-conducting-examinations](http://www.jcq.org.uk/exams-office/ice---instructions-for-conducting-examinations)*