Level 3 Forestry and Arboriculture 0174-012/512

Part of 0174-35 and 0174-38

November 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 in Forestry and Arboriculture.** 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

Level 3 Forestry and Arboriculture (1) – Theory Exam (2 hours)

The exam is graded and a candidate must achieve at least a Pass grade in order to be 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, 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:

- 11 - 12 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 %)
AO1 **Recalls knowledge** from across the breadth of the qualification	30%
AO2 2 **Demonstrates understanding** of concepts, theories and processes from a range of learning outcomes.	50%
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

Level 3 Forestry and Arboriculture - Theory exam (1)

The exam assesses:

- **Unit 307: Plant and Soil Science**
- **Unit 350: Understand the principles of tree felling and chainsaw use**
- **Unit 352: Understand the principles and identify the signs of pests, diseases and disorders of trees.**

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
307 Plant and Soil Science	L01 Recognise the function of plant structures	1.1 Internal and external structures of plants 1.2 Function of plant structures	**15**
	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 Investigate characteristics of soil types 3.3 Affects soils have on plant growth and development 3.4 Cultural techniques that affect soil characteristics	
350 Understand the principles of tree felling and chainsaw use	LO1 Recognise uses of chainsaws and commonly used methods for dealing with problem trees.	1.1 The variety of uses of chainsaws 1.2 Assessment of different problem trees 1.3 Methods for felling problem trees 1.4 Evaluate tree felling activities	**13**
	LO2 Maintain chainsaws to manufacturer's recommendations	2.1 Safety features of a chainsaw 2.2 Inspect and carry out maintenance operations on selected chainsaws 2.3 Identify common faults in chainsaws	
	LO3 Safely fell and cross cut small diameter trees	3.1 Assess risks prior to felling and cross cutting operations 3.2 Methods for felling and cross cutting selected small diameter trees to meet given objectives 3.3 Dispose of waste using appropriate methods	
352 Understand the principles and identify the signs of pests, diseases and disorders of trees	LO1 Understand the principles of ill health in trees be able to identify the signs and symptoms of common biotic pathogens and abiotic disorders	1.1 The principles of ill health in trees 1.2 The common causes of ill health in trees 1.3 The consequences of pests, diseases and disorders for trees	**20**
	LO2 Understand common biotic pathogens	2.1 The signs and symptoms of common biotic pathogens 2.2 The signs and symptoms of common abiotic disorders 2.3 Diagnose damage to trees	

	LO3 Understand monitoring, prevention and control measures of common biotic	3.1 Lifecycles of common invertebrate, vertebrate, fungal and bacterial pathogens 3.2 The significance of the lifecycle for correctly identifying pathogens 3.3 Host and pathogen relationships	
	LO4 Understand monitoring, prevention and control of common biotic pathogens	4.1 Monitoring of common biotic pathogens 4.2 Prevention of common biotic pathogens 4.3 Control of common biotic pathogens 4.4 Legal and environmental considerations associated with control of common biotic pathogens	
		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.

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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.

** 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.
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Question type:	Example question:	Mark scheme
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.	Explain **two** reasons for using the correct bar and chain combination on a chainsaw. (2 marks)	• Optimising performance by matching bar/chain length with the power of the saw. (1 mark) • Minimising wear and tear on the saw and the operator. (1 mark) • Safety reasons -keeping the chain speed within recommended limits. (1 mark)

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 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.	When using a stump grinder there is potential to cause environmental damage to the ecosystems and environment in and around the work area. a) State one cause of environmental damage that may occur. (1 mark) b) Suggest a suitable control measure to reduce the likelihood of this damage occurring. (1 mark)	a) Use of stump grinder generates a lot of noise which could: disturb any wildlife present (1 mark) or cause inconvenience to members of the public in close proximity to the work-site.(1 mark) b) By carrying out an environmental impact survey before beginning work you can reduce the likelihood of disturbance to existing wildlife. (1 mark). Work can be scheduled to be carried out when noise will cause the least amount of interruption to members of the public. (1 mark) Carrying out prestart check before use to ensure the exhaust and noise reducing features of the stump-grinder are in good working order. (1 mark)

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

You need to carry out some sanitation felling for disease control in a woodland. Discuss considerations you should address in this situation and justify the actions you would take. (12 marks)

Mark Scheme

Indicative content:

- Legislation (eg HASAWA, CROW, PUWER etc)
- Environmental (eg Damage to flora and fauna. Damage to habitats. Pollution of watercourses.)
- Practical (eg Method statements and risk assessments for felling and waste. Equipment and labour required.)
- Economic (eg cost of labour and equipment)

Band 1 (1-4 marks)

Basic discussion with a limited range and depth of considerations of sanitation felling for disease control in a woodland, but few links made to the scenario. Discussion is not well developed or balanced. Limited justification of their choice of actions. There will be few or no specialist terms.

Example band 1 response

If I was carrying out sanitation felling, I would take into consideration:

- *biosecurity*
- *the effect it has on the trees*
- *what's caused the tree to be diseased.*

Biosecurity is a consideration because if I was felling I would take biosecurity seriously because I would not want to spread the disease further. I would dispose of the waste properly, clean all equipment after use and clean boots for the diseases.

I would consider the effect it has on the trees to see if I need to fell the trees any differently. I also need to see what caused the disease to stop the spread of it to other trees.

Band 2 (5-8 marks)

Adequate discussion of good range and depth of considerations of sanitation felling for disease control in a woodland with good links to the scenario. Good justification of their choice of actions. There will be some use of specialist terms, although they may not always be used appropriately.

Example band 1 response

Firstly, I would take into consideration how much crop would need to be removed in order to starve or irradiate the disease, and if it would be beneficial. I would also consider the matter of after felling the infected timber, how it would be removed from the site and how and where it would be safely disposed of as to not create another diseased site elsewhere. Secondly, I would take into consideration the cost of removing, extracting and disposing of all the timber and whether it would be economically efficient in the long run. I would also take into account the cost of decontaminating equipment and PPE. Lastly, I would also take into consideration what could be replanted if the disease cannot be removed, or if to clear fell the site and leave the site for a few years and then replant a different species would be the best option. I would also take into consideration the cost of clear felling and replanting the entire site and if it would be economically efficient.

Band 3 (9-12 marks)

Comprehensive discussion with extensive range of considerations of sanitation felling for disease control in a woodland. Clear links to the scenario have been made. Detailed justification of their choice of actions. Specialist terms will be used correctly and appropriately.

Example band 3 response

Health and safety of operators and public / site safety should be considered. We would first need to carry out a risk assessment to identify hazards and controls, to ensure all operators are working in a safe manner. Waste disposal is another consideration. What is the disease and how are we going to be able dispose of it? Which leads to equipment needed. This would largely rely on the type of disease but we would need to identify whether we chip the waste, bury it, burn it or need to take it off-site. Some of this equipment would need to be ready on-site before felling begins. We need to make sure equipment fit for purpose and is the right equipment being used for the job. Has it been regularly maintained and inspected? Are all safety features present and working correctly? Is all lifting equipment LOLER certified? I would make sure a competent person has signed off on these having checked against records and the equipment itself.

Another consideration are felling techniques. Does the disease dictate a safer technique than straight-fell from the base? We would need to identify what the impact of said disease was, check for any decay and potentially test trees with something like an increment borer and fractometer.

It is also necessary to sanitise tools and other work equipment as this would help to limit further spread of the disease. We would need to use appropriate sanitisation techniques in line with biosecurity guidelines set out by the Forestry Commission.

An agreed area to fell needs to be taken into account through the marking of trees. This would avoid any healthy trees being felled. The condition the woodland need to be left in and if we would need to remove stumps needs to be considered. If so, we need to decide whether we use a stump grinder, mulcher, mechanical excavation, burning or let natural processes take effect. We would need to ensure any operations were carried out in line with the Countryside and Wildlife Act and the Environmental Protection Act in relation to wildlife, particularly nesting birds at given times of the year, and the surrounding environment, including flora and fauna and watercourses.

For the points above relating to machinery, we would need to evaluate the following to help decide: Operator skills / qualifications, site access, location, cost (against time for value), availability of machinery, tree species / age and customer requirements.

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 be 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-technicals-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

Joint Council for Qualifications

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