

Level 3 Advanced Technical Extended Diploma in Agriculture (1080) (Arable) (0171-012/0171-512)

Part of 0171-33

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 Advanced Technical Extended Diploma in Agriculture (1080) (Arable)**. 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 Agriculture** – Theory exam (2) (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 (0171-512) or online (0171-012).

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 and is made up of:

- approximately 12-15 short answer questions;
- 1 extended response question.

Multiple choice and 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 | 33% |
| AO2 Demonstrates understanding of concepts, theories and processes from a range of learning outcomes. | 47% |
| 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

Pathway: Arable (1080)

The exam assesses:

- Unit 316: Pollution and waste control management
- Unit 317: Farm Habitat Management
- Unit 326: Spreaders and Sprayers
- Unit 335: All-Terrain Vehicles and Rough Terrain Telescopic Forklifts

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 |
|--|--|--|-----------------|
| 316 Pollution and waste control management | LO1 Know the sources and attributes of organic and inorganic waste | 1.1 Organic and inorganic wastes 1.2 Factors that influence the quantity of waste | 12 |
| | LO2 Know the scope of waste management legislation and regulation | 2.1 Legislation and codes of practice that control the storage, handling and disposal of farm waste 2.2 Waste management and husbandry system | |

| | | | |
|-----------------------------|---|---|----|
| | LO3 Plan for managing waste in a farm environment | 3.1 management of organic and inorganic farm waste 3.2 Storage and disposal facilities for organic and inorganic farm waste | |
| | LO4 Dispose of waste in a farm environment | 4.1 Safe disposal of selected organic farm waste 4.2 Waste management plan for organic and inorganic waste | |
| 317 Farm Habitat Management | LO1 Understand the development of the agricultural landscape | 1.1 Development of the agricultural landscape 1.2 Effects of legislation or policy on the development of the agricultural landscape 1.3 Effects of organisations on the development of the agricultural landscape | 12 |
| | LO2 Understand the ecology of farm habitats and wildlife species | 2.1 Ecological importance of habitat diversity 2.2 Biodiversity action plan | |
| | LO3 Carry out farm habitat and species surveys | 3.1 Ecological surveying of a farm habitat 3.2 Results of farm habitat and species surveying | |
| | LO4 Carry out practical farm habitat management | 4.1 Equipment and resources for practical management 4.2 Practical management techniques 4.3 Improving farm habitat management | |
| 326 Spreaders and Sprayers | LO1 Know machinery used for the application of pesticides and fertilisers to agricultural crops | 1.1 The operation of spraying machinery 1.2 The operation of spreading machinery | 12 |
| | LO2 Prepare, operate and maintain spraying and spreading machinery | 2.1 Machinery preparation 2.2 Machinery operation 2.3 Machinery maintenance | |

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|---|---|---|----|
| | LO3 Know factors affecting efficiency and accuracy of pesticide and fertiliser placement | <p>3.1 Variables affecting the efficiency and accuracy of pesticide and fertiliser placement</p> <p>3.2 Impacts of changing variables on efficiency and accuracy of pesticide and fertiliser placement</p> | |
| | LO4 Understand the impact of developments in application technology on operator safety and environmental protection standards | <p>4.1 Impacts of developments in application technology on operator safety</p> <p>4.2 Impacts of developments in application technology on environmental protection standards</p> <p>4.3 Legislation relevant to the application of pesticides and fertilisers</p> | |
| 335 All-Terrain Vehicles and Rough Terrain Telescopic Forklifts | LO1 Know the function of key components found within All-Terrain Vehicles and Rough Terrain Telescopic Forklifts | <p>1.1 Purpose of key components used in ATVs</p> <p>1.2 Purpose of key components used in RTFLs</p> <p>1.3 Operator adjustments and inputs on key components used in ATVs</p> <p>1.4 Operator adjustments and inputs on key components used in RTFLs</p> | 12 |
| | LO2 Understand the operating principles and applications of All-Terrain Vehicles and Rough Terrain Telescopic Forklifts | <p>2.1 Operating principles and features of different power units</p> <p>2.2 Operating principles and features of transmission systems</p> <p>2.3 Operating principles of engineering</p> | |
| | LO3 Prepare and operate All-Terrain Vehicles and Rough Terrain Telescopic Forklifts with associated attachments | <p>3.1 Preparation of ATVs</p> <p>3.2 Preparation of RTFL</p> <p>3.3 Operation of ATVs</p> <p>3.4 Operation of RTFL</p> | |

| | | | |
|--|--|---|---------------------------------------|
| | LO4 Maintain and service All-Terrain Vehicles and Rough Terrain Telescopic Forklifts | 4.1 Routine maintenance on ATVs 4.2 Routine maintenance on RTFLs | |
| | | | 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:

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

Example question:

On a new sprayer, give **two** changes or adjustments that the operator can make to change the spray quality. (2 marks)

number of pieces of information/examples and the length of response required by the question.

Answer:

- Adjust the spray pressure (1 mark)
- Change the nozzle size (1 mark)

Accept any other relevant answer

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.

a) Name the four stages of the four stroke cycle of a diesel engine, in the correct order. (2 marks)

b) Explain **two main** reasons why diesel engines are used in Rough Terrain Telescopic Fork Lifts (RTFL), rather than petrol engines. (4 marks)

Answer

a) 1 mark for the stages and 1 mark for the correct order

Induction, Compression, Power, Exhaust (1 mark)

or any other relevant names for the stages
Correct order (1 mark)

b) 2 marks for each reason explained max. 4 marks

- Diesel engines have more torque than petrol engines, (1) giving more pulling or pushing power (1)
- Diesel engines rev lower (1) and generally need less maintenance (1)
- Diesel engines create less carbon monoxide (1) and so are safer in less well ventilated areas (1)
- Diesel engines use less fuel (1) and so are more economical to run (1)
- Accept any other suitable answer

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

A farmer is using a Rough Terrain Telescopic Forklift (RTFL) to load 600kg bags in to a fertiliser spreader.

Discuss the advantages of using a RTFL in this situation when compared with a tractor, and how the RTFL should be operated safely. You

prompt. The level of detail should be gauged from the question and the number of marks available.

should also discuss how the farmer can minimise damage to the environment when loading the fertiliser into the spreader. (12 marks)

Advantages of RTFL when compared to a tractor

- Telescopic boom gives greater reach and allows better placing of fertiliser inside the hopper
- More manoeuvrable - Four wheel steer can be an advantage when getting bags out from a tight situation
- Torque converter/hydrostatic transmission allows more control when approaching the spreader
- RTFL's usually have a greater lifting capacity

Safe operation

- Undertake a risk assessment before commencing work
- Load on flat ground, where possible
- Keep bags low and boom retracted where possible
- Pay attention to load sensors
- Ensure operator has training
- Beware of people and surroundings (especially when reversing)
- Do not stand under boom when cutting the bag/use correct cutting tool
- Make sure the tractor cab back window is closed, to avoid breakage
- Ensure mirrors and windows are clean.
- Make sure RTFL is in good working order
- Wear appropriate PPE

Minimising damage to the environment

- Sweep up any spilt material and dispose of it correctly
- Load away from drains, to avoid contamination of waterways

- Do not over fill spreader, to avoid spillage
- Empty bags completely, and store correctly
- Make sure RTFL has no oil leaks
- Make sure the oil supply to the feed gate on the spreader is switched off.

Band 1 (1-4 marks)

Minimal discussion on the advantages of a RTFL compared with a tractor, when loading a fertiliser spreader and how RTFL's should be operated safely. Limited discussion of how to minimise damage to the environment when loading the fertiliser into the spreader. Few specialist terms used with little structure to the discussion given.

Example answer:

It is better to use a telehandler for loading fertiliser because you can extend the boom and this makes the operation safer. The telehandler can usually carry more weight than a tractor so it is more stable.

In order to operate the telehandler safely you should do a risk assessment. You should check that the telehandler is in good condition before using it and fill the fertiliser hopper on flat ground and not get under the fertiliser bag.

The farmer can minimise damage to the environment by not getting any fertiliser spilt and clearing it up if any does get spilt. The spreader should not be overloaded as fertiliser may spill over the top. Make sure the telehandler doesn't have any oil leaks.

Band 2 (5-8 marks)

Good discussion on the advantages of a RTFL compared with a tractor, when loading a fertiliser spreader and how RTFL's should be operated safely. Adequate discussion of how to minimise damage to the environment when loading the fertiliser into the spreader. Some specialist terms will be used correctly. Information will be presented in an adequately structured format.

Example answer:

It is better to use a telehandler for loading fertiliser because you can extend the boom and this makes the operation safer and quicker. The telehandler can usually carry a greater weight than a tractor so it is more stable. The greater accuracy of placement of the fertiliser in the hopper minimises the risk of any spillage.

You should check that the telehandler is in good condition before using it by a risk assessment.

Load on flat ground, where possible, keep bags low and boom retracted where possible. Pay attention to load sensors. Ensure operator has training. Beware of people and surroundings (especially when reversing). Do not stand under boom when cutting the bag/use correct cutting tool. Ensure mirrors and windows are clean.

Wear appropriate PPE. When the spreader is being loaded, damage to the environment can be minimised by clearing up any spilt fertiliser. The spreader should not be loaded near

watercourses. The spreader should not be overloaded as fertiliser may spill over the top.

Make sure the oil supply to the feed gate is isolated before loading. Make sure the telehandler has no oil leaks.

Band 3 (9-12 marks)

Extensive discussion on the advantages of a RTFL compared with a tractor, when loading a fertiliser spreader and how RTFL's should be operated safely. Detailed discussion of how to minimise damage to the environment when loading the fertiliser into the spreader. Information will be presented in a well-structured and clear format.

Example answer:

It is better to use a telehandler for loading fertiliser because you can extend the boom and this makes the operation safer and quicker. The torque converter allows the telehandler to be driven more accurately and steadily. The greater accuracy of placement of the fertiliser in the hopper minimises the risk of any spillage. It also helps maximise the efficiency with which the fertiliser is spread as the load can be evenly

spread in the hopper. The telehandler can usually carry a greater weight than a tractor so it is more stable.

You should check that the telehandler is in good condition before using it by carrying out a risk assessment and a visual inspection of the machine. Load on flat ground so that the load does not become unstable. Keep bags low and boom retracted where possible so that the telehandler does not tip over. Pay attention to load sensors to prevent the machine from tipping forwards. Ensure operator has training as this is compulsory before using a telehandler or forklift. Beware of people and surroundings (especially when reversing) to minimise the risk of an accident occurring. Do not stand under boom when cutting the bag/use correct cutting tool in case the bag falls from the pallet tines. Make sure the tractor cab back window is closed, to avoid breakage. Ensure mirrors and windows are clean so that you have good visibility all around you. Wear appropriate PPE. When the spreader is being loaded damage to the environment can be minimised by clearing up any spilt fertiliser and spreading it evenly on the field. The spreader should not be loaded near watercourses in case any spillage contaminates the water. The spreader should not be overloaded as fertiliser may spill over the top and cause contamination. Make sure the oil supply to the feed gate is isolated before loading so that it cannot slowly open and spill fertiliser. Make sure the telehandler has no oil leaks.

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/land-based-services/agriculture/0171-technical-in-agriculture-and-landbased-engineering#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