

# Level 3 Advanced Technical Extended Diploma (1080) (Farm Mechanisation) (0171-014/0171-514)

Part of 0171-33

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**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 (1080) (Farm Mechanisation)**. 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 (0171-514) or online (0171-014).

## 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 11-13 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 <b>Recalls knowledge</b> from across the breadth of the qualification	40%
AO2 <b>Demonstrates understanding</b> of concepts, theories and processes from a range of learning outcomes.	40%
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

### Pathway: Farm mechanisation (1080)

The exam assesses:

- **Unit 310: Land based Power units**
- **Unit 318: Undertake land based workshop processes**

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
310 Land based Power units	LO1 Know the function of key components found	1.1 Purpose and function of key components 1.2 Operator adjustments 1.3 Control systems	38
	LO2 Know operating principles of land-based machines and power units	2.1 Power unit 2.2 Transmission system 2.3 Electrical and hydraulic systems	

	LO3 Undertake routine maintenance of land-based machines and power units	3.1 Risk assessment 3.2 Routine maintenance 3.3 Recording documents	
	LO4 Understand the applications of land-based machines and power units	4.1 Characteristics of power units, transmissions and hydraulic systems 4.2 Operating settings 4.3 Alternative designs	
318 Undertake land based workshop processes	LO1 Understand the importance of health and safety and safe working practice within a workshop environment	1.1 Potential hazards 1.2 Legislation and/or codes of practice 1.3 Following legislation and safe working practices.	10
	LO2 Use hand tools, joining and cutting equipment	2.1 Purpose of hand tools and joining and cutting equipment 2.2 Use of hand tools, joining and cutting equipment 2.3 Maintenance procedures for hand tools, joining and cutting equipment	
	LO3 Use materials for given purposes	3.1 Material used to repair equipment 3.2 Repair objectives	
	LO4 Maintain, replace or repair worn or broken components on land based equipment	4.1 Machine inspection 4.2 Tools and materials 4.3 Repair and component replacement procedures	
		Total marks for sections:	48 marks
		Integration across units*:	12 marks

**Total marks for exam: 60 marks**

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

<b>Give example(s) illustrate/</b>	Use examples or images to support, clarify or demonstrate, an explanation, argument, theory, etc
<b>Give a rationale</b>	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:

**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:

What does the acronym COSHH stand for? (1 mark)

**Answer:**

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

Control of Substances Hazardous to Health

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### 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) Other than Personal Protective Equipment (PPE), list **three** facilities that should be provided in a workshop for the health and safety of employees. (3 marks)
- b) Describe how **each** of the facilities listed in 10a) aid the health and safety of employees. (3 marks)

### Answer:

a) 1 mark for each facility from the following, up to 3 marks

- Washing facilities
- First aid kit
- Granules /sand
- Guarded machines
- Exhaust gas extraction system
- Any other relevant answer

b) 1 mark for each description from the following, up to 3 marks

- Washing facilities - to remove contaminants from hands/to maintain personal hygiene
- First aid kit – to deal with cases of minor injuries
- Granules/sand- to soak up oil spills to prevent slips
- Guarded machines -such as grinders and pillar drills to protect operator and others from injury
- Exhaust gas extraction system- to remove noxious fumes from the working area
- Any other relevant answer

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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,

You are about to change the points on a large cultivator attached to a tractor, in a land-based workshop.

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.

Discuss the procedures you need to follow, before, during and after changing the points, in order to carry out the task safely and efficiently and in accordance with the current legislation and code of practice. (12 marks)

### Indicative content

#### Before:

- Carry out a risk assessment or follow any risk assessment already produced for the task – including reference to accident book and RIDDOR
- PPE: wear steel toe cap boots, goggles, overalls, ear defenders, barrier cream or gloves to protect hands as appropriate
- Pressure wash cultivator if necessary
- Make sure work area is clean and tidy before you start
- Do not rely on the tractor hydraulics, use axle stands
- Make sure the new points and bolts are the right ones before starting (refer to manufacturer's parts book)
- Check the first aid kit is complete
- Appropriate training undertaken

#### During:

- Ensure tools fit for purpose are selected (ring spanners or sockets of the correct size)
- Use of air tools would speed up the work
- Beware heads of bolts may be sharp, do not hold with hands
- If the bolts will not undo, use angle grinder, oxy-acetylene, or cold chisel to remove them
- Use exhaust gas extraction system if starting the tractor
- Do not climb on, or put yourself under the machine unnecessarily
- Keep the work area secure

#### After:

- Clean and replace tools
- Dispose of old points and bolts in metal re-cycling and other waste appropriately
- Wash hands after use

- Update records of the service and any advice for future operations
- Ensure PPE used is cleaned and stored correctly

**Band 1 (1 – 4 marks)**

The candidate has failed to discuss many of the procedures for each of the stages (before, during and after) of the task. The candidate has provided minimal rationale as to why the procedures are required to carry out the task safely and efficiently. The candidate's response is just a list of procedures not following a logical order.

**Example answer:**

You often have to change the points on a cultivator in the autumn when you are busy. You need to buy them and then get the spanners and equipment together that you need to change them. You will have to lift the machine up as you will have to get to the points. Don't rely on the hydraulics. Find some axle stands. If you can get into a workshop it is better as you have everything you need. The farmer may already have a stock of spares in the workshop and it is a job that is done in the morning before you start. Sometimes if it rains it is a good opportunity to get the machine and replace worn parts.

Take off the nuts and fit the new parts as quick as you can. You will need spanners, points, penetrating oil and an angle grinder. The nuts can be really difficult, so you will need some force to move the bolts. Make sure you put the points on the right way around and clear up afterwards. Sometimes you have to use oxy-acetylene to heat the nut up to burn it off. Sometimes it's just quicker to do that for all of them as you know it will be difficult, it depends how quick you need to be.

When you have finished take the machine off the stands and clear up. You can then drive to the field. It is important from beginning to end you are safe and wear overalls etc.

**Band 2 (5 – 8 marks)**

The candidate has discussed a range of appropriate procedures for each of the stages of

the task. The candidate has occasionally provided reasons as to why the procedures are required to carry out the task safely and efficiently. The candidate's response is unlikely to have followed a logical order.

**Example answer:**

Before you start make sure you are aware of all the correct safety procedures. For example, prepare a risk assessment so you are aware of all the hazards involved. You will also need PPE such as overalls, goggles etc etc. The workshop needs to be clear, so you can get the tractor and machine in and it is best if you make sure the machine is properly supported whilst you work on it. You must be safe because the machine could drop on you if it is not supported properly. Hopefully someone has bought the right parts, or you may have to go and get them. Most farms have lots of spare tines in the corner ready for the autumn when you are busy. Hopefully the right bolts are with them as well because the bolts get damaged when the machine is used and are difficult to get off, so you may have to use an angle grinder or oxyacetylene to cut them off. Make sure you use goggles, gloves and keep flammable materials out of the way. It is a good idea to keep the workplace tidy otherwise you might trip. So, make sure you tidy up afterwards.

Keep working on all of the points until you have finished and make sure they are all tight as you do not want any dropping off in the field. It is an idea to pressure wash the machine before you start as that will make the job quicker. It is a good idea to work in a workshop because everything that you need is there. You will need spanners, penetrating oil, angle grinder, oxy-acetylene, axle stands, power supply.

When you have finished take the machine off the stands and clear up the tools and worn parts so that it is clear for the next person or the next time you are in the workshop.

**Band 3 (9 – 12 marks)**

The candidate has discussed a broad range of appropriate procedures for each of the stages of the task. The candidate has provided clear reasons as to why the procedures are required to

carry out the task safely and efficiently. The candidate's response is comprehensive and follows a logical order.

**Example answer:**

Before starting the task, it is important to make sure you have read the appropriate risk assessment and are familiar with the piece of equipment concerned and processes involved in reporting/recording any accidents (accident book and RIDDOR). For that you should either have received some training at College, had a session with the farm manager, read the manual for the machine or been in contact with manufacturer/dealers to familiarise yourself with the equipment. In any event it is wise to stop and consider the health and safety implications of changing the points on what is essentially a very heavy piece of equipment with sharp points etc. So, you should wear overalls and appropriate PPE which should include steel toe capped boots. Gloves are advisable and or barrier cream, but you should have ear defenders and goggles available. Additionally, you should never rely on just the tractor hydraulics to hold the machine up should you have to go underneath to reach part of the cultivator, so it is important that you have sufficient axle stands properly positioned (and rated to take the weight) to support the cultivator. The repair should be carried out on firm level ground or in a workshop and first aid equipment (checked) should be on hand if needed. Remember the amount of time you are under any machine (even when properly supported) should be kept to an absolute minimum to reduce risk and you should always think of other ways to you can reach the part concerned before going underneath or getting on top.

Pressure wash of the machine and allow time for it to dry. Check you have the correct replacement points, bolts, spanners, wire brush, easing fluid or grinder etc so you can work quickly and efficiently when you start. Make sure the workshop floor is clear of clutter to prevent trips etc whilst you are moving around so it is wise to decide where you are going to place the waste/used points and where the new ones will be put.

As you start the work, make sure the spanners are a tight fit and are on firmly before you attempt to loosen the nut. Consider using easing fluid in advance and make sure you pull the spanner in line with the turn of the nut (do not 'wring it') and consider where your hand will go if it suddenly comes loose (ouch! bruised knuckles/fingers as they collide with the metal frame!). Some nuts may be difficult, so you might have to use an angle grinder, chisel or even oxy acetylene (follow safety procedures) to release them. Air tools are handy if you have access to them. Check the compressor is switched on. It is a good idea to quickly check the tightness of all bolts for the time to save any problems later on and double check the tightness of the point and that you have put it on the right way round (if that applies).

If you start the tractor in the workshop, make sure you use gas extraction and again never leave the tractor cab and leave the engine running. Keep the key with you so no other operator can get on and start it up by mistake as you may be working on it. Care with some old bolts as after they are worn they get very sharp.

Lock the workshop if you go for breaks and consider leaving a notice on the tractor steering wheel warning that the machine is being repaired.

When the repair is complete clean and replace tools, so they are ready for the next person, dispose of old parts in the scrap metal bin, wash hands and update records. Clean and store away any PPE that might be needed by others.

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## 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

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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](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)*