

Certificate in Land-based Service Engineering Level 2

Assignment Pack

3942



www.city-and-guilds.co.uk
November 2004

City & Guilds is the UK's leading provider of vocational qualifications, offering over 500 awards across a wide range of industries, and progressing from entry level to the highest levels of professional achievement. With over 8500 centres in 100 countries, City & Guilds is recognised by employers worldwide for providing qualifications that offer proof of the skills they need to get the job done.

The City & Guilds Group includes City & Guilds Pitman Qualifications, specialising in IT, office-based qualifications and English as a second language awards, and ILM (the Institute of Leadership & Management) providing management qualifications, learning materials and membership services. Land based qualifications are offered through NPTC, also part of the City & Guilds Group. City & Guilds also manages the Engineering Council Examinations on behalf of the Engineering Council.

General information about City & Guilds is available on our website www.city-and-guilds.co.uk or from our Customer Relations team at the address below or by phoning 020 7294 2800 or e-mailing enquiry@city-and-guilds.co.uk

City & Guilds fully supports the principle of equal opportunities and we are committed to satisfying this principle in all our activities and published material. A copy of our equal opportunities policy statement 'Access to assessment' is available on our website or from the Customer Relations team.

City & Guilds publications are available from our Publication Sales department at the address below or by phoning 020 7294 2850 or faxing 020 7294 3387

First published 2004

©2004 The City and Guilds of London Institute All rights reserved.

City & Guilds is a trademark of the City and Guilds of London Institute.

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

City & Guilds
1 Giltspur Street
London, EC1A 9DD
T +44 (0)20 7294 2468
F +44 (0)20 7294 2400
www.city-and-guilds.co.uk

Contents

Section 1	5
General Guidance on the Assignments	5
Section 2	6
Assignment Writing	6
Assignment templates	8
Key points	8
Assignment Templates	9
Unit 002 Fabrication and Joining in the Land-based Sector	9
Unit 003 Maintenance of Tractors and Other Land-based Machinery	12
Section 3	13
Sample Assignments	13
Level 2 Certificate in Land-based Service Engineering	14
General guidance	15
Further information	32

Introduction

This assignment pack is designed for centres running the City & Guilds Level 2 Certificate in Land-based Service Engineering. It must be used in association with the Scheme Handbook which is available from the City & Guilds website www.city-and-guilds.co.uk.

This pack is divided into three sections:

Section 1 General guidance on the Assignments

This contains information about how the assignments are designed and guidance on marking and grading.

Section 2 Assignment Writing

This contains useful advice on writing assignments for the award, the stages to go through, quality control procedures and submission of centre devised assignments. It also contains the assignment templates and notes on how to use them.

Section 3 Sample Assignments

This contains the sample assignment for Unit 003.

Underpinning Knowledge questions*

Short answer questions produced by City & Guilds in association with BAGMA to assess the underpinning knowledge areas for Unit 003.

To be given to the candidate following each relevant task.

*A CD-ROM containing the questions and sample answers is available from City & Guilds. Please place your order by telephone on

0207 294 2536 or 0207 294 2761

Section 1

General Guidance on the Assignments

Marking and Grading

The assignments are graded Pass/Fail.

Each aspect must be marked and awarded a Pass/Fail. Candidates MUST achieve a MINIMUM of a Pass in EACH aspect of performance. Candidates who do not achieve one or more aspects of performance within a task will need to retake that aspect no sooner than 7 days after their first attempt.

Underpinning knowledge questions

The questions included in the assignments do NOT need to be taken in formal examination conditions, however, they should be taken under supervision as lecturers need to ensure the answers to the questions are the candidate's own work.

A maximum of one hour is recommended for each set of questions.

To preserve the integrity and useful life of the questions, candidates should NOT retain their answer sheets. A candidate's success in a written assessment should be recorded by a statement from the centre, quoting the relevant unit number or areas of knowledge assessed, which can then be used by candidates as evidence.

Original completed answer sheets should be kept for auditing purposes by the assessor in their own assessment records of candidates' performance. Please refer to City & Guilds General Regulations for confirmation of the period of time in which records should be maintained to meet regulatory requirements.

Feedback

The assignments are intended as a formal assessment of candidates' practical skills. They are not designed as teaching aids. Should a candidate fail any of these tasks other than on health & safety grounds, as stated above, appropriate feedback should be given by the assessor both to the candidate and the tutor concerned.

Assessors must ensure that candidates understand why a particular grade has been given for the award.

If a candidate's work is selected for verification, samples of work must be available to the appointed external verifier.

Section 2

Assignment Writing

Producing your own assignments

Assignment templates are supplied for Centres who wish to produce their own assignments. Centres should ensure that each task is covered and the assignment should be submitted to City & Guilds before use.

Where a centre decides to write and conduct their own assignments rather than utilising the sample assignment and questions provided by City & Guilds the following applies:

Machinery, tools and equipment

Centres must have access to sufficient equipment in the college or training centre to ensure candidates have the opportunity to cover all of the practical activities.

It is acceptable for centres to use specially designated areas within a centre for some of the units.

The equipment, systems or machinery must be of an industrial standard and be capable of being used under normal working conditions.

The centre devised assignments must be made up of **three** sections:

1. Assessor's Guidance Notes

This section is intended for use by the assessor only. It should contain

- a health and safety statement
- the location of where the assignment should be taken
- the requirements for tools, equipment, materials and data
- notes on the content of the assignment to include any preparatory work required by the assessor/centre
- details of evidence and recording requirements
- time consideration.
- Any new assignments set must have the same time allocated to the completion of the assignment as set in the guidance note in the assignment template.

2. Candidate's Instructions

The candidate's instructions should contain:

- general advice to candidates about the need to understand the assignment before starting work and the need to seek guidance if clarification is required
- guidance on the time limits
- the importance of health and safety
- an assignment brief which sets the scene or a scenario to contextualise the task(s)
- clearly defined tasks covering a range of practical activities – an outline of each task should be provided rather than a series of marking checklists
- recording/report sheets for recording the progress of the activity
- notes which refer to how the evidence they produce should be stored and labelled.

Fault diagnosis

Centres may find it difficult to arrange a 'live' fault diagnosis assignment opportunity. Centres may arrange for a realistic 'fault scenario' to be in agreement with their external verifier.

Submission of centre devised assignments

All assignments **must** be approved for use by City & Guilds. Each assignment should be submitted with a copy of the Centre-devised assignment submission report, contained as a separate document in the Scheme Handbook.

Centres **must** submit all centre devised assignments to City & Guilds, Centre Devised Unit, 1 Giltspur Street, London, EC1A 9DD.

Six weeks before they intend to use the assignment if submitted electronically to the following email address: centredevised@city-and-guilds.co.uk

Eight weeks before they intend to use the assignment if a paper based submission is made (**Three** copies should be provided).

Paperwork and submission of results

All records should be retained by the assessor for external verification purposes. Candidates should **not** retain the questions or answer sheets from the underpinning knowledge questions.

For each component claimed, assessors should complete a Form S and tick 'results submission', enter scheme number and component and 'P' for pass and return to City & Guilds, Data and Systems, 1 Giltspur Street, London, EC1A 9DD.

Assignment templates

Key points

Using the same template for every assignment helps:

- to ensure that every assignment is complete
- to promote national standards
- to improve the appearance and quality of assignments
- candidates to understand what is required for each assignment.

Cover page, giving:

- the name and level of the qualification
- the number and name of the unit
- title of the assignment
- the date issued

An introduction, giving:

- a brief overview of the assignment
- a list of materials/equipment provided
- a list of materials/equipment the candidate will need to complete the assignment.

The aims of the assignment, stating:

the knowledge, understanding and skills, including the Key Skills if appropriate, that the candidate will be able to demonstrate.

A briefing for the assignment, giving:

- a description of the vocational context of the assignment.

The numbered tasks, stating:

- exactly what candidates have to do, what they have to produce and approximately timings
- how tasks relate to specific evidence requirements
- advice on how to achieve higher grades.

What to hand in, stating:

- exactly what work candidates must hand in, in what form and when

Assignment Templates

Unit 002 Fabrication and Joining in the Land-based Sector

Guided Time Allowance Minimum 10 hours

General Guidance Attention to health and safety and potential risks is an essential aspect of this assignment. Centres should ensure that all necessary tools, equipment and materials are available to candidates.

Practical Content

The assignment must cover the following:

Outcome 1 – Practical activities

1. select the most effective process for a given application and quality specification
2. use hand tools and equipment to produce fabrications to meet a quality specification

Candidates must be assessed on oxy-acetylene welding, however assessors may choose between the MMA or MIG welding process.

Candidates need only produce a selection of welds in different positions for assessment purposes.

Outcome 2 – Practical activities

1. produce fillet and butt welded joints in low carbon steel using the MMA welding process
2. produce welded butt joints in the flat position using the MMA welding process
3. produce tee, lap and corner fillet welded joints in the flat and horizontal/vertical welding positions using the MMA welding process

Outcome 3 – Practical activities

1. produce fillet and butt welded joints in low carbon steel using the MIG process
2. produce welded butt joints in the flat position using the MIG welding process
3. produce tee, lap and corner fillet welded joints in the flat and horizontal/vertical welding positions using the MIG welding process

Outcome 4 – Practical activities

1. produce fillet and butt welded joints in low carbon steel using the oxy-acetylene process
2. produce welded butt joints in the flat position using the oxy-acetylene welding process
3. produce lap and corner fillet welded joints in the flat and horizontal/vertical welding positions using the oxy-acetylene welding process

Example of welds to be produced for outcome 2 & 3

MMA welding process or MIG process Total welds: 4

	Flat	Horizontal/Vertical
Butt	*	
Fillet/Corner		*
Tee	*	
Lap		*

Example of welds to be produced for outcome 4

oxy-acetylene process Total welds: 4

	Flat	Horizontal/Vertical
Butt	*	
Fillet/Corner		*
Tee	*	
Lap		*

Total: 8 welds

Outcome 5 – Practical activities

1. produce a soldered joint to a quality specification

Assessor Guidance

Candidates are expected to be supplied with a drawing specification by the centre or be allocated additional time for producing them

Candidates work is to be assessed against the drawing of specification

Grading	<p>The completed fabrication must meet an overall tolerance of ± 3 mm for all critical dimensions.</p> <p>Each welded joint must meet the following specification, identifiable by visual and destructive testing methods</p> <p>Weld contour</p> <ul style="list-style-type: none"> • Weld is linear • Weld is of uniform profile • Weld has a consistent width of weld face • Weld ripples have a good and consistent form • The toes of weld blend smoothly with the parent metal without overlap <p>Undercut</p> <ul style="list-style-type: none"> • Weld is 70% free from undercut and incomplete filling • Depth of any undercut does not exceed 1.5 mm <p>Surface defects</p> <ul style="list-style-type: none"> • Weld surface is free from cracks • Weld surface is substantially free from porosity, shrinkage cavities • Weld surface and adjacent parent metal is mostly free from arcing and tool marks • The joins at all but one external stop/start position merge smoothly and show no pronounced hump or crater in the weld surface
----------------	---

	<p>Butt welds</p> <ul style="list-style-type: none"> • Excess weld metal is up to a maximum height of 3 mm • Full penetration is visible for 50% of the length of the weld • Penetration bead does not protrude more than 3 mm <p>Fillet welds only</p> <ul style="list-style-type: none"> • Weld leg lengths do not differ in leg length by more than 2.0 mm • The weld is largely free from concavities (maximum concavity allowed is 2.0 mm over 30% of weld length) <p>Each soldered or brazed joint must meet the following specification, identifiable by visual and destructive testing methods</p> <ul style="list-style-type: none"> • The join is linear • The join is of uniform profile • The join has a consistent width • The toes of weld blend smoothly with the parent metal without overlap • There is no excessive metal deposits • The join is across the entire joint • The joins at all external stop/start positions merge smoothly and show no pronounced hump or crater in the surface
Grading criteria	
Pass	50%

Unit 003 Maintenance of Tractors and Other Land-based Machinery

Guided Time Allowance	Maximum of 4 hours per task
General Guidance	Attention to health and safety and potential risks is an essential aspect of this assignment. Centres should ensure that all necessary tools, equipment and materials are available to candidates.
Practical Content	<p>The assignment should consist of eight separate tasks as follows:</p> <p>Outcome 1 – Outcome 4</p> <ol style="list-style-type: none">1. Service a fuel system on a CI power unit2. Service hydraulic systems3. Check and replace a battery4. Remove and replace an alternator5. Check and replace lighting units6. Service and adjust a safety overload device7. Calibrate a machine8. Sharpen and adjust a cutting device <p>Underpinning knowledge. A test containing five short answer questions covering aspects that are not demonstrated by the practical activity.</p>
Assessor Guidance	<p>This assignment should take place in a workshop equipped with relevant machinery and tools for work to be carried out.</p> <p>Adequate supervision needs to be provided in accordance with HSAW regulations.</p> <p>Safety equipment and codes of practice associated with the machinery and practices must be understood and implemented by the candidate. Failure to work safely will result in the failure of the assignment. It is the responsibility of the assessor to monitor candidates' attitude and practice of safety at all times and to ensure that all personal protective equipment/respiratory protective equipment (PPE/RPE) is appropriately used and that all safety codes of practices associated with the assignment are obeyed.</p>
Grading	<p>A Pass candidate may have sought advice prior to carrying out the tasks. A minimum of a Pass should be achieved in every aspect of performance.</p>

Section 3

Sample Assignments

This section includes sample assignments. Centres may utilise these or create their own. If centres decide to create their own assignment they should follow the guidelines for producing and submitting centre devised assignments as outlined in Section 1.

Each sample assignment contains details of how the assessor should set up and run the assignment, the tasks, instructions for the candidate and grading and marking sheets.

These assignments will be valid until July 2005. New assignments will be made available through the City & Guilds website and centres will be informed.

There are two sections in the sample assignment.

The assessor's guide contains detail of the conduct of the assignment, materials and equipment required and recording sheets.

The candidate's guide contains details of the tasks required and recording sheets.

Level 2 Certificate in Land-based Service Engineering

Practical Assignment

Maintenance of Tractors and other Land-based Machinery

Unit 003 – Assessors' Assignment Guide

3942-02-003

General guidance

This assignment should take place in a workshop equipped with relevant machinery and tools for work to be carried out.

Adequate supervision needs to be provided in accordance with HSaW regulations.

Safety equipment and codes of practice associated with the machinery and practices MUST be understood and implemented by the candidate. Failure to work safely will result in the failure of the assignment.

It is the responsibility of the assessor to monitor candidates' attitude and practice of safety at ALL times and to ensure that ALL personal protective equipment/respiratory protective equipment (PPE/RPE) is appropriately used and that all safety codes of practices associated with the assignment are obeyed.

The assessor should ensure that each candidate has a copy of the **candidate assignment guide and any additional information**, which has been referred to in the instructions. The assessor will need to ensure that all standards, manufacturer's data and equipment referred to are available for use. Appropriate and sufficient machines, tools and consumables should be made available in order that the candidate can complete the assignment.

Candidates may seek guidance from their assessors in the interpretation of Manufacturer's standards.

The assessor will need to ensure that all standards, manufacturer's data and equipment referred to are available for use. Appropriate and sufficient machines, tools and consumables should be made available in order that the candidate can complete the assignment.

Candidate response sheets/recording sheets are included within the Candidates' Assignment guide and the assessor should ensure the candidate has access to these.

NOTE: In order to pass this assignment ALL aspect of safety MUST be demonstrated to the assessor at ALL times. Failure to do so will result in the assignment being halted.

Timing and Assessment guidance

The maximum guided time allowance for each task is specified. The assignment may be spread over the whole year and tasks may be taken in any order.

Assessors should record candidates' grades on the overall grading sheet for the assignment.

Assignment content and candidates' instructions

Candidates are advised to read all the instructions carefully before starting work and to check with their tutor/assessor if necessary to ensure that they fully understand what is required. Candidates are expected to work safely at all times with regards to current legislation. This assignment will be stopped if safe working practices are NOT applied at ALL times.

Candidate response/recording sheets are included within the Candidates' Assignment Guide which the candidates are advised to use.

This assignment is made up of eight tasks:

- A Service a fuel system on a CI power unit
- B Service hydraulic systems
- C Check and replace a battery
- D Remove and replace an alternator
- E Check and replace lighting units
- F Service and adjust a safety overload device
- G Calibrate a machine
- H Sharpen and adjust a cutting device

The tasks may be taken in any order, however it is recommended that no more than two are taken in one day.

The Tasks

The assessor should ensure that the candidate has sufficient information to carry out the tasks. A maximum guided time allowance of **four hours** is recommended for each task. Following each task the candidate is expected to take a series of five short answer questions.

Task A Service a fuel system on a C.I. power unit.

The candidate is required to

- 1 Prepare the machine for repair.
- 2 Ensure machine is immobilised before working on it.
- 3 Close diesel tap.
- 4 Remove and replace:
 - 4.1 primary and secondary fuel filters
 - 4.2 injectors
 - 4.3 injector pump.
- 5 Set up to manufacturer's instructions.
- 6 Open diesel tap and vent system following manufacturer's procedures.
- 7 Start machine in a safe manner.
- 8 Check for leaks and rectify.
- 9 Correctly dispose of all waste materials and debris.
- 10 Follow health & safety requirements and good working practice.

Task B Service Hydraulic Systems

The candidate is required to

- 1 Ensure machine is immobilised before working on it
- 2 Thoroughly clean the machine/system.
- 3 Drain and retain or dispose of oil/fluid as necessary.
- 4 Remove ancillary hoses, pipes etc. sealing all pipes to prevent ingress of dirt.
- 5 Replace ancillary equipment and top up hydraulic system with oil/fluid to recommended levels.
- 6 Start machine and warm up check for leaks and rectify.
- 7 Compare pressure and flow against manufacturer's instructions for temperature engine speed settings where applicable.
- 8 Re-check fluid levels and for leakage.
- 9 Record results for comparison and records
- 10 Follow health & safety requirements and good working practice
- 11 Inspect and check work conforms to the specification.

Task C – Check and replace a battery

The candidate is required to

- 1 Prepare the machine for repair.
- 2 Ensure machine is immobilised before working on it.
- 3 Disconnect battery earth lead first before carrying out major replacements or removing battery.
- 4 Service a battery:
 - 4.1 Remove battery from compartment observing correct handling techniques, and clean in preparation for service.
 - 4.2 Check electrolyte level and top up.
 - 4.3 Check electrolyte relative density.
 - 4.4 Charge battery.
 - 4.5 Carry out high rate discharge test.
 - 4.6 Re-fit, secure and check engine start.
- 5 Follow health & safety requirements and good working practice

Task D – Remove and replace an alternator

The candidate is required to

- 1 Prepare the machine for repair.
- 2 Ensure machine is immobilised before working on it.
- 3 Remove battery earth lead.
- 4 Clean around work area and follow manufacturer's recommended disconnecting and removal procedure for an alternator
- 5 Check condition of pulleys and drive belt and replace if required.
- 6 Re-fit or replace alternator, and ensure all fasteners and electrical connections conform to manufacturer's settings and locations.
- 7 Correctly set drive belt tension.
- 8 Re – connect battery, run and check alternator is functioning correctly.
- 9 Stop engine and make final visual check of fasteners, drive belt and connections to ensure they are correct to specification.
- 10 Follow health & safety requirements and good working practice

Task E – Check and replace lighting units

The candidate is required to

- 1 Prepare the machine for repair.
- 2 Ensure machine is immobilised before working on it.
- 3 Servicing lighting units:-
 - 3.1 Check fuses and replace with correct type.
 - 3.2 Check cable continuity and earth connection on a lighting circuit.
 - 3.3 Check a switch for correct operation using either a continuity tester or multi-meter and replace as required.
- 4 Re-wire a trailer lighting system plug or socket.
- 5 Check lighting system for correct operation.
- 6 Follow health & safety requirements and good working practice

Task – F Service and adjust a safety overload device

The candidate is required to

- 1 Prepare work area.
- 2 Prepare the implement for repair (clean).
- 3 Make the implement safe by isolating from power source.
- 4 Remove guards and drive shaft as appropriate.
- 5 Shear bolt
 - 5.1 Remove old pin or cartridge assembly and bushes as appropriate.
 - 5.2 Re-fit new pin or cartridge assembly, ensuring it meets manufacturer's specifications.
- 6 Slip clutch
 - 6.1 Slacken clutch springs (ensuring correct sequence).
 - 6.2 Remove all clutch components (ensuring correct sequence).
 - 6.3 Clean all components (ensuring correct dust safety precautions).
 - 6.4 Check serviceability of all components with reference to manufacturer's data.
 - 6.5 Replace components as required, re-assemble and set to manufacturer's specification.
- 7 Overrun clutch
 - 7.1 Remove all clutch components
 - 7.2 Clean all components
 - 7.3 Check serviceability of all components
 - 7.4 Remove and set to manufactures specification
- 8 Re-fit drive shaft and guards.
- 9 Test under load
- 10 Follow health & safety requirements and good working practice

Task G - Calibrate a machine

The candidate is required to

Calibrate one of the following:

- A fertiliser spreader
- B chemical sprayer
- C seed drill

- 1 Attach machine to suitable tractor.
- 2 Check operation of machine.
- 3 Set machine as specified.
- 4 Fill machine with suitable amount of calibration material.
- 5 Carry out static calibration.
- 6 Check that the machine is distributing material at the correct rate, and evenly over the distribution pattern. Adjust machine as required/clear blockages.
- 7 Adjust machine as required/clear blockages.
- 8 Confirm static results in accordance with manufacturer's data.
- 9 Follow health & safety requirements and good working practice

Task H - Sharpen and adjust cutting device

The candidate is required to

- 1 Prepare work area.
- 2 Prepare the machine for repair.
- 3 Ensure machine is immobilised before working on cutting device.
- 4 Remove knives using a safe approved method.
- 5 Sharpen knives to manufacturer's specification or replace if required.
- 6 Re-fit 2 different types of knives and adjust to manufacturer's specification.
- 7 Re-assemble and test machine. Follow health & safety requirements and good working practice

Assignment Grading Sheet

Unit 003 Maintenance of Tractors and other Land-based Machinery

To be completed by the Assessor and signed by the candidate

Candidate name	Enrolment number
Centre name	Centre number

													UPK	Pass	Date
Tasks	Elements to task														
	1	2	3	4	5	6	7	8	9	10	11	12			
A															
B															
C															
D															
E															
F															
G															
H															

UPK = underpinning knowledge

Assessor comments

Signature of assessor												Date		
Signature of candidate												Date		
Signature of internal verifier (where applicable)												Date		
Signature of external verifier (where applicable)												Date		

Level 2 Certificate in Land-based Service Engineering (3942)

Practical Assignment

Maintenance of Tractors and Other Land-based Machinery

Unit 003 – Candidates' Assignment Guide

3942-02-003

General Guidance

You are advised to read all the instructions carefully before starting work, and to check with your assessor if necessary to ensure that you fully understand what is required.

Safety equipment and codes of practice associated with engineering must be understood and implemented satisfactorily.

You may seek general guidance from the assessor on the interpretation of working drawings, symbols, technical specifications or service manuals. The outcome and decision however should be yours.

Note: In order to pass this assignment all aspects of safety MUST be demonstrated to the assessor at all times. Failure to do so will result in the assignment being halted.

In this assignment you will be expected to carry out the following tasks

- A Service a fuel system on a CI power unit
- B Service hydraulic systems
- C Check and replace a battery
- D Remove and replace an alternator
- E Check and replace lighting units
- F Service and adjust a safety overload device
- G Calibrate a machine
- H Sharpen and adjust a cutting device

During the task you will be expected to record your findings on the relevant task recording sheet.

You will also be required to answer five underpinning knowledge questions following each task.

All paperwork should be handed back to your assessor at the end of the task.

Your assessor should ensure that you have all the relevant tools and equipment needed to carry out the tasks. Your Assessor should supply you with a copy of the task recording sheet which gives details of the task.

Candidate Recording Sheets:

Task A Service a fuel system on a CI power unit

Candidate Name			
Machine Make	Model	Serial No.	Engine No.
	Candidates to record and describe work carried out, tools, equipment and parts used.		
<ol style="list-style-type: none"> 1. Prepare the machine for repair. 2. Ensure machine is immobilised before working on it. 3. Close diesel tap. 4. Remove and replace: <ol style="list-style-type: none"> 4.1 - primary and secondary fuel filters. 4.2 – injectors. 4.3 - injector pump. 5 Set up to manufacturer's instructions. 6 Open diesel tap and vent system following manufacturer's procedures. 7 Start machine in a safe manner. 8 Check for leaks and rectify. 9 Correctly dispose of all waste materials and debris. 10 Follow health & safety requirements and good working practice. 			

Candidate's signature	Date
Assessor's signature	Date

Task B Service Hydraulic Systems

Candidate Name			
Machine Make	Model	Serial No.	Engine No.
	Candidates to record and describe work carried out, tools, equipment and parts used.		
<ol style="list-style-type: none"> 1. Ensure machine is immobilised before working on it 2. Thoroughly clean the machine/system. 3. Drain and retain or dispose of oil/fluid as necessary. 4. Remove ancillary hoses, pipes etc. sealing all pipes to prevent ingress of dirt. 5. Replace ancillary equipment and top up hydraulic system with oil/fluid to recommended levels. 6. Start machine and warm up check for leaks and rectify. 7. Compare pressure and flow against manufacturer's instructions for temperature engine speed settings where applicable. 8. Re-check fluid levels and for leakage. 9. Record results for comparison and records 10. Follow health & safety requirements and good working practice 11. Inspect and check work conforms to the specification. 			

Candidate's signature	Date
Assessor's signature	Date

Task C Check and replace a battery

Candidate name			
Machine Make	Model	Serial No.	Engine No.
	Candidates to record and describe, work carried out, tools, equipment and parts used.		
<ol style="list-style-type: none"> 1. Prepare the machine for repair. 2. Ensure machine is immobilised before working on it. 3. Disconnect battery earth lead first before carrying out major replacements or removing battery. 4. Servicing battery <ol style="list-style-type: none"> 4.1 Remove battery from compartment observing correct handling techniques, and clean in preparation for service. 4.2 Check electrolyte level and top up. 4.3 Check electrolyte relative density. 4.4 Charge battery. 4.5 Carry out high rate discharge test. 4.6 Re-fit, secure and check engine start. 5. Follow health & safety requirements and good working practice 6. Inspect and check work conforms to the specification 			
Candidate's signature		Date	
Assessor's signature		Date	

Task D Remove and replace an alternator

Candidate name			
Machine Make	Model	Serial No.	Engine No.
	Candidates to record and describe work carried out, tools, equipment and parts used.		
<ol style="list-style-type: none"> 1. Prepare the machine for repair. 2. Ensure machine is immobilised before working on it. 3. Remove battery earth lead. 4. Clean around work area and follow manufacturer's recommended disconnecting and removal procedure for an alternator 5. Check condition of pulleys and drive belt and replace if required. 6. Re-fit or replace alternator, and ensure all fasteners and electrical connections conform to manufacturer's settings and locations. 7. Correctly set drive belt tension. 8. Re – connect battery, run and check alternator is functioning correctly. 9. Stop engine and make final visual check of fasteners, drive belt and connections to ensure they are correct to specification. 10. Follow health & safety requirements and good working practice 			

Candidate's signature	Date
Assessor's signature	Date

Task E Check and replace lighting units

Candidate name			
Machine Make	Model	Serial No.	Engine No.
	Candidates to record and describe, work carried out, tools, equipment and parts used.		
<p>1. Prepare the machine for repair.</p> <p>2. Ensure machine is immobilised before working on it.</p> <p>3. Servicing lighting units:-</p> <p>3.1 Check fuses and replace with correct type.</p> <p>3.2 Check cable continuity and earth connection on a lighting circuit.</p> <p>3.3 Check a switch for correct operation using either a continuity tester or multi-meter and replace as required.</p> <p>4 Re-wire a trailer lighting system plug or socket.</p> <p>5 Check lighting system for correct operation.</p> <p>6 Follow health & safety requirements and good working practice</p>			

Candidate's signature	Date
Assessor's signature	Date

Task F Service and adjust a safety overload device

Candidate name			
Machine Make	Model	Serial No.	Engine No.
Candidates to record and describe, work carried out, tools, equipment and parts used.			
<ol style="list-style-type: none"> 1. Prepare work area. 2. Prepare the implement for repair (clean). 3. Make the implement safe by isolating from power source. 4. Remove guards and drive shaft as appropriate. 5. Shear bolt <ol style="list-style-type: none"> 5.1. Remove old pin or cartridge assembly and bushes as appropriate. 5.2. Re-fit new pin or cartridge assembly, ensuring it meets manufactures specifications. 6. Slip clutch <ol style="list-style-type: none"> 6.1. Slacken clutch springs (ensuring correct sequence) 6.2. Remove all clutch components (ensuring correct sequence) 6.3 Clean all components (ensuring correct dust safety precautions) 6.4 Check serviceability of all components with reference to manufacturer's data 6.5 Replace components as required, re-assemble and set to manufacturer's specification 7. Overrun clutch <ol style="list-style-type: none"> 7.1 Remove all clutch components 7.2 Clean all components 7.3 Check serviceability of all components 7. Remove and set to manufacturer's specification 8. Re-fit drive shaft and guards. 9. Test under load 10. Follow health & safety requirements and good working practice 			

Candidate's signature	Date
Assessor's signature	Date

Task G Calibrate a machine

Candidate name			
Machine Make	Model	Serial No.	Engine No.
Assessment Date			
	Candidates to record and describe, work carried out, tools, equipment and parts used.		
<p>1 Attach machine to suitable tractor.</p> <p>2 Check operation of machine.</p> <p>3 Set machine as specified.</p> <p>4 Fill machine with suitable amount of calibration material.</p> <p>5 Carry out static calibration.</p> <p>6 Check that the machine is distributing material at the correct rate, and evenly over the distribution pattern. Adjust machine as required/clear blockages.</p> <p>7 Adjust machine as required/clear blockages.</p> <p>8 Confirm static results in accordance with manufacture data.</p> <p>9 Follow health & safety requirements and good working practice</p>			

Candidate's signature	Date
Assessor's signature	Date

Task H Sharpen and adjust a cutting device

Candidate name			
Machine Make	Model	Serial No.	Engine No.
Assessment date			
	Candidates to record and describe, work carried out, tools, equipment and parts used.		
<p>1 Prepare work area.</p> <p>2 Prepare the machine for repair.</p> <p>3 Ensure machine is immobilised before working on cutting device.</p> <p>4 Remove knives using a safe approved method.</p> <p>5 Sharpen knives to manufacturer's specification or replace if required.</p> <p>6 Re-fit 2 different types of knives and adjust to manufacturer's specification.</p> <p>7 Re-assemble and test machine. Follow health & safety requirements and good working practice</p>			

Candidate's signature	Date
Assessor's signature	Date

Further information

Further information regarding centre/scheme approval or any aspect of assessment of our qualifications should be referred to the relevant City & Guilds regional/national office:

Region	Telephone	Facsimile
City & Guilds Scotland	0131 226 1556	0131 226 1558
City & Guilds North East	0191 402 5100	0191 402 5101
City & Guilds North West	01925 897900	01925 897925
City & Guilds Yorkshire	0113 380 8500	0113 380 8525
City & Guilds Wales	02920 748600	02920 748625
City & Guilds West Midlands	0121 359 6667	0121 359 7734
City & Guilds East Midlands	01773 842900	01773 833030
City & Guilds South West	01823 722200	01823 444231
City & Guilds London and South East	020 7294 2820	020 7294 2419
City & Guilds Southern	020 7294 2724	020 7294 2412
City & Guilds East	01480 308300	01480 308325
City & Guilds Northern Ireland/ Ireland	028 9032 5689	028 9031 2917
City & Guilds Customer Relations Unit	020 7294 2800	020 7294 2400

Website www.city-and-guilds.co.uk

EN-02-3942