

# T Level Technical Qualification in Building Services Engineering for Construction

Protection Systems Engineering (8710–  
37) (357)

**Assessor pack**

**Practical Assignment 2020 – Sample**

Version and date	Change detail	Section
1.1 Jan 2021	Minor amendment to Band 1 descriptor	Marking Grid (Health and Safety)

---

Sample

## **Contents**

<b>Assessment</b>	<b>4</b>
Performance outcomes	5
Grade descriptors	6
<b>Assignment brief</b>	<b>7</b>
Task specific guidance	9
<b>Tasks</b>	<b>11</b>
Task 1 – Planning the installation	11
Task 2 – Installation, commissioning and decommissioning	13
Task 3 – Carrying out maintenance	16
<b>Centre guidance</b>	<b>18</b>
<b>Marking guidance</b>	<b>25</b>
Marking grid	27
<b>Declaration of authenticity</b>	<b>44</b>
<b>Appendix 1</b>	<b>45</b>
<b>Appendix 2</b>	<b>46</b>

## Assessment

The assessment for this component consists of a practical assignment that includes a project brief and then a number of tasks for the candidate to complete. The tasks set produce assessment themes that cover a range of knowledge and skills from the performance outcomes in the qualification specification. They are designed to allow judgement of the candidate to be made across different categories of performance.

The assessment for this component has been allocated a set number of marks against each task, based on weightings recommended by stakeholders of the qualification. This mark allocation remains the same for all versions of the assessments, ensuring consistency across assessment versions and over time.

Sample

## Performance outcomes

The weightings for each performance outcome will remain the same for every version of the practical assignment. This ensures the appropriate depth and breadth of knowledge and skills for each specialism can be reliably assessed in every version and meets the needs of industry while keeping comparability between each assessment over time.

Performance outcome	Typical knowledge and skills	Weighting
Install protection systems	Displays a breadth of knowledge and practical skills that enables them to complete the given installation tasks successfully. Has the technical skills to use tools and materials safely and in logical order in relation to a plan.	29%
Commission protection systems	Working in a safe manner, carrying out testing and interpreting test results, use of tools and equipment, use of diagnostic equipment, working with documentation (manufacturer's instructions, building regulations), carrying out tasks in clear and logical sequence, carrying out clear record keeping of test result	28%
Maintain protection systems	Applying knowledge and understanding through practical skills to solve a particular scenario/problem – justifying decisions/approaches taken e.g. materials, techniques, appropriate protection of customer property and effective use of materials, consideration of costs and impacts to environment	31%
Decommission protection systems	Logical and systematic approach to the task, clear consideration to environmental sustainability and recycling of materials, clear and practiced use of the techniques of making building fabric repairs to restore work area to pre-installation condition, including correct selection of materials and finish products.	12%

## Grade descriptors

### **To achieve a pass (threshold competence), a candidate will be able to:**

Demonstrate an acceptable performance that meets the requirement of the brief and that is required to enter the industry to begin to work in the occupational area.

Demonstrate the adequate technical for installing components that is in line with industry standards.

Interpret information, demonstrate planning, assess risk and follow safe working methods when applying practical skills to an acceptable standard as recognised by industry.

Demonstrate basic knowledge and understanding of the principles and processes required for Protection Systems Engineering.

Work safely showing an understanding in the selection and use of tools and equipment and demonstrate a basic awareness of straightforward preparation and application processes.

Attempt some complex tasks and the level of performance mostly meets an acceptable level.

Identify causes of faults and have some knowledge and skills in how to rectify them.

Mostly use industry terminology accurately in both written and verbal contexts.

### **To achieve a distinction, a candidate will be able to:**

Demonstrate an exemplary performance that fully meets the requirement of the brief and is able to enter the industry to begin to work in the occupational area.

Demonstrate exemplary technical skills for installing components that is in line with industry standards. They will also demonstrate relevant and comprehensive knowledge and understanding of principles and processes through the tasks completed.

Work safely and make informed and appropriate use of tools, materials and equipment within the environments that they are working in. They will competently and independently interpret information and apply the technical skills to practical tasks and procedures to an exemplary standard as recognised by industry, producing an excellent quality of work that meets acceptable tolerances, regulations and standards.

Confidently attempt some complex tasks and the level of performance meets an exemplary level.

Identify causes and diagnose faults and have a thorough understanding and the skills to be able to repair and rectify them.

Consistently use accurate industry terminology in both written and verbal contexts.

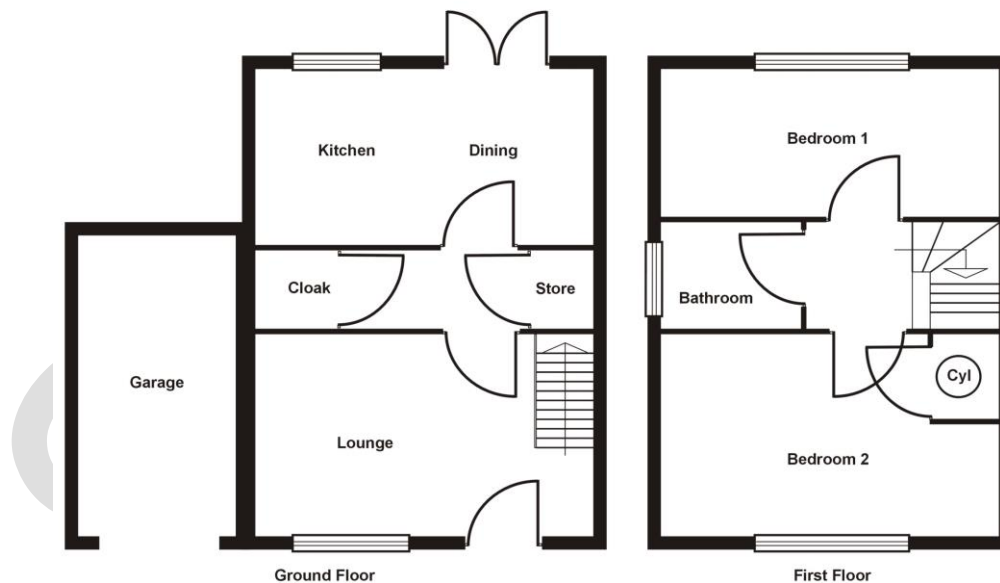
## Assignment brief

You have been called to a detached two storey domestic dwelling to install an intruder and hold up alarm system (I&HAS).

A surveyor from your company has visited the premises and produced the following Grade 1 system specification:

- 6 Zone (minimum) control and indicating equipment (CIE) located in the cloak cupboard
- 1.2AH backup battery fitted in the CIE
- An external audible warning device with strobe located at the front of the premises
- a remote keypad (RKP) located at the front door
- Detector 1: Magnetic door contact protecting the front door
- Detector 2: Passive infrared (PIR) sensor covering the lounge
- Detector 3: Two magnetic door contacts connected in series through a tamper protected junction box protecting the double leaf patio doors
- Detector 4: PIR sensor covering the upper landing area
- Detector 5: Acoustic vibration detector protecting the bathroom window
- A Personal Attack (PA) button in bedroom 2

The plan of the building is shown in **Figure 1** (below).



You will be required to carry out a full survey of the proposed installation, including; planning activities, measurements and calculations.

You will need to produce the following:

- a specification showing the location of each device (using BS4737 component symbols, on the building plan; Appendix 1)
- schematic layout drawing with measurements
- a method statement for the installation, including the use of primary information sources
- a materials list for the installation
- a risk assessment for the proposed installation

A 230 VAC unswitched fused spur outlet is already installed in the cloak cupboard close to the location of the proposed CIE. You are required to complete the final connection between the

unswitched fused spur outlet and the CIE using a 3 core flexible cable, protected by 20 mm PVC conduit. Full safe isolation and lock-off procedure will be carried out during the installation of this circuit, and you must also confirm that the circuit has been previously tested by a competent person and conforms to the requirements of BS 7671.

All alarm circuits will employ 0.22 mm<sup>2</sup> multicore intruder alarm cable. All cables for detectors, RKP and sounder will be attached to the surface using cable clips spaced at suitable intervals. The PA button cable will be contained within PVC mini trunking, with one 90° turn in the cable route.

All 24 hr (tamper) circuits must be enabled.

The inputs (zones) used on the CIE for each detection circuit will be determined by the CIE employed. The system must be programmed to meet the following requirements...

- Detector 1 – Entry/Exit. Both timers set to 10 seconds
- Detector 2 – Configured for 'Walkthrough'; Active during Part Set
- Detector 3 – Active during Part Set
- Detector 4 – Omitted during Part Set
- Detector 5 – Active during Part Set
- PA Button – Active 24 hour
- External sounder cut-off after 15mins
- Adjust vibration detector sensitivity to detect only high level impact on the protected surface

Upon completion of the installation and commissioning, you will perform a system handover to the customer, demonstrating system operation and making sure that they are confident in the use of the system.

---

A few months following handover the customer reports that they are unable to set their system. The CIE is showing a fault on one of the zones. You are required to:

- Diagnose the cause of the trouble
- Produce a written report of the maintenance activity, and discuss this with the customer
- Carry out the repair work and test to confirm the system is functioning as per specification

Once all of the above work has been completed and assessed, you are required to decommission the installation in a safe working manner.

The time allocated for the completion of the assignment is 15 hours.



## Task specific guidance

Centres must provide a work area large enough to accommodate the system components in the specification. If they are unable to implement or facilitate this specification, they must contact City & Guilds to discuss appropriate simulations and alterations.

All work carried out should be to industry standards, done in a safe manner and compliant with building regulations. If a candidate fails to carry out the activities in a safe manner, the assignment should be suspended until this aspect is corrected.

Photographs should be used to support the qualitative statements captured on the PO form. Photographs of each component completed must be taken and must have the date and candidate's name attached so that they can be differentiated. The candidate does not need to be in the photograph. The purpose of the photograph is to demonstrate the state of the work throughout various stages of the assignment.

### Time

The following timings are provided to support centre planning.

The time allocated for the completion of the tasks and production of evidence for this assessment is 15 hours. Timings for completion of specific tasks are outlined below.

- Task 1 – 4 hours
- Task 2 – 8 hours
- Task 3 – 3 hours

### Resources

Candidates must have access to a suitable range of resources to carry out the tasks and, where appropriate, to have the opportunity to choose tools and materials demonstrating the ability to select from a range.

Candidates should have access to a range of the following:

- suitable hand and power tools
- materials / I&HAS components
- test equipment (digital multimeter; voltage indicator and proving unit, lock-off kit)
- PPE
- Manufacturer's instructions for the I&HAS components provided

The assessment area must contain a 230 VAC unswitched fused spur outlet which may be isolated and is under the control of the tutor / instructor / assessor

Practical guidance for the preparation of I&HAS components:

Because the domestic installation specified for this assignment would only meet the requirements for a Grade 1 I&HAS, centres are advised to purchase Grade 2 components (not Grades 3 or 4). This will not only reduce material costs, but it will also allow centres to place a card (or similar) cover over the PIR's to enable the system to be set during testing. (A Grade 3 or grade 4 PIR includes anti-masking and will not allow this function.)

The door contact magnet may be fitted using just one screw to enable it to be hinged to simulate opening the door.

External sounders, when operated in a workshop, will exceed safe working sound levels. To resolve this issue:

- For external sounders which use a loudspeaker, these can be modified to produce a very low sound level by adding a resistor in the order of 1 kOhm in series with the speaker.
- For sounders that use a piezo device, it is recommended to replace the piezo device with a small 12 Vdc piezo buzzer.

For the **vibration detector**, the tutor should turn the sensitivity up to maximum before handing it to the candidate. This will make the adjustment imperative, and more realistic.

Sample

## Tasks

### Task 1 – Planning the installation

#### Resources

- Pen
- Pencil
- Straight edge
- Tape measure

Candidates should be provided with the scenario brief and given time to plan the installation.

a) Plan the installation of the I&HAS.

As part of the planning, the candidate will be issued with a copy of the building plan in Appendix 1, on which they will indicate the chosen location of the detection devices. The candidate will explain to their client the reasoning for their choice of location for each device.

As a minimum, it is expected that candidates will produce

- a materials list
- a method statement planning their works
- a risk assessment

Templates for the method statement, materials list and risk assessment have not been included within this assignment pack. Centres should not provide candidates with a template. Part of the assignment is assessing the candidate's ability to understand these documents and their purpose in a practical setting.

b) The actual installation should be completed on a fixed flat surface, i.e. an assessment bay. The area must be sufficient to accommodate all of the system components, with reasonable spacing in between to include cable and containment lengths of at least 0.5 m.

Candidates will produce a dimensioned layout plan showing the location of all components.

Candidates must complete this activity prior to carrying out the installation.

If a candidate provides plans that are not fit for purpose, it is expected that the assessor will intervene and provide necessary feedback and corrections to the plans prior to the candidate carrying out the installation. However this should be commented on in the marking documentation and reflected in marks awarded.

#### Conditions of assessment:

- The time allocated for this task is 4 hours
- Candidate must carry out the task on their own, under controlled conditions

**Required evidence for which marks will be awarded:**

- Risk assessment
- Method statement with justifications
- Building plan with device locations indicated, with justifications
- Dimensioned drawing of proposed installation in the given work area
- Materials list

**Additional evidence of candidate performance that must be captured, for which marks will be awarded:**

- Assessor observation of measurements and marking out of space allocation / work area, checked against their dimensioned drawing
- Assessor observation record should include how well the learner accurately measured the work area, checked against their dimensioned drawing and considered tolerances
- Assessor observation record should include details of any intervention and feedback where a candidate has produced a plan that is not fit for purpose

Sample

## Task 2 – Installation, commissioning and decommissioning

### Resources

#### Tools

- suitable hand and power tools
- test equipment (digital multimeter; voltage indicator and proving unit, lock-off kit)

#### Materials

- materials / I&HAS components required to install the specified system
- PPE
- Manufacturer's instructions for the I&HAS components provided

Candidates must have access to their drawing and plans from Task 1

#### a) Carry out the installation

Candidates are required to carry out the installation in accordance with their drawing and as agreed by the tutor / assessor. All cables must be labelled and connected in accordance with industry standards. Installation techniques and cabling must comply with fire safety requirements.

#### b) Connect the electrical supply

Candidates must connect the electrical supply to the CIE from a suitably supplied unswitched fused spur connection and provide a written account of the safe isolation process.

The isolation and lock off process must be observed and recorded by the assessor.

#### c) Commission the system

Once the installation has been completed, candidates must commission the system and handover to customer.

The assessor must observe the candidate carrying out the following commission checks:

- visual inspection of the system before commissioning
- program the system as per the specification.
- complete the Record of Operational Checks (Appendix 2).
- carry out a walk test of the complete system to confirm that all detection and signalling devices are functioning, and that the system has been programmed as per specification.

Following commissioning, the candidate will perform a system handover to the customer, demonstrating system operation and making sure that they are confident in the use of the system.

The assessor will act as the customer during the handover and will provide feedback on candidate performance.

#### **d) Decommission the system**

When all parts of Task 2 up to a successful handover have been completed, the candidate should complete Task 3 (Maintenance) before completing the final part of Task 2 – Decommissioning.

During decommissioning, the candidate is expected to:

- Pay particular attention to sustainability and recycling
- Ensure that the workspace is made good, including filling, sanding and painting of any holes or damage to the building fabric

#### **Conditions of assessment:**

- The time allocated for this task is 8 hours
- Candidates must carry out the task on their own, under controlled conditions

#### **Required evidence for which marks will be awarded:**

- Written report of safe isolation
- Completed Record of Operational Checks (Appendix 2).

#### **Additional evidence of candidate performance that must be captured, for which marks will be awarded:**

- Assessor feedback of handover to customer
- Assessor photographs at various stages of the installation detailing candidate progress against the installation task
- Assessor observations:
  - Use of tools
  - Installation of components
  - Measurements of cables and containment are to within a tolerance of +/- 5mm
  - Checking clipping and cabling meet requirements of relevant standards
  - Use of test instruments
  - Decommissioning

To support the comments made in the Practical Observation form, the following photographs should be included, as a minimum, for each candidate:

#### **Installation**

- Candidate clearly marking out the location of key aspects of the installation
- The installation of adequate cable clips and supporting brackets, using hand and power tools
- The candidate cutting and installing PVC trunking and conduit using hand tools.
- The installation of all I&HAS components, in line with current regulations and manufacturer's literature.

#### **Commissioning**

- The candidate visually inspecting cables and connections in the system
- The candidate using a multimeter and voltage indicator to perform safety and functional tests on the system
- Making good of building fabric such as filling of screw holes, painting over marking, etc.

**Decommissioning**

- The candidate safely isolating the electrical supply
- The safe removal of system components, cables, and containment
- The safe storage of components and waste segregation

Sample

## Task 3 – Carrying out maintenance

### Resources

#### Tools

- Suitable hand tools
- Digital multimeter

#### Materials

- PPE
- Manufacturer's instructions for the I&HAS components provided

#### a) Diagnose a single fault in the I&HAS system installed in Task 2.

The centre will implement a fault in one of the detector circuits such that the input will remain open circuit, preventing the system from setting. Examples of faults include (but are not restricted to):

- A detection device with an open circuit contact substituted into the system
- A simulated damaged cable with a zone or power core open circuit (the damage could be concealed underneath a cable clip, or in the trunking)

Candidates may be given different fault conditions to prevent knowledge of the test becoming widely known.

Candidates will be required to carry out appropriate testing to identify the fault, and replace the defective component, performing any necessary adjustments to the component to ensure that is performing as per system specification.

If a candidate does not initially identify the defective component, they are allowed to be prompted but this must be reflected in the marking.

#### b) Produce a written report detailing the maintenance activity and discuss with customer.

Once the candidate has diagnosed the fault they should check with the assessor to ensure this has been done correctly. Adjust marks if the candidate requires additional feedback and guidance.

Once fault diagnosis is confirmed, the candidate must produce a written report detailing the maintenance activity to include:

- Details of the fault
- The action(s) required to repair the fault and restore normal system operation

Candidates must determine and discuss with the assessor appropriate methods to replace the component and must be assessed on their ability to select a suitable solution.

The assessor will act as the customer during the maintenance discussion and record any feedback on the assessor feedback form.



### **c) Rectify the fault**

This task requires candidate to:

- Use the information on the RKP display to identify the defective zone
- Use a multimeter to perform suitable voltage and / or resistance tests to diagnose the cause of the problem.
- Install a replacement component as required
- Test the system by setting the I&HAS and producing an alarm activation via the repaired zone

#### **Conditions of assessment:**

- The time allocated for this task is 3 hours
- Candidates must carry out the task on their own, under controlled conditions.

#### **Required evidence for which marks will be awarded:**

- A written report to the client explaining the cause of the problem, and detailing the work required to affect a repair.

#### **Additional evidence of candidate performance that must be captured, for which marks will be awarded:**

- Assessor feedback of customer handover
- Assessor observations
  - Use of tools and test instrument(s)
  - Fault diagnosis
  - Rectification of fault
- Assessor photographs at various stages of the maintenance task

To support the comments made in the Practical Observation form, the following photographs should be included, as a minimum, for each candidate:

- Candidate using RKP to interrogate the system
- Candidate using a suitable test instrument to diagnose the fault
- Candidate replacing the defective component / cable

## Centre guidance

Guidance provided in this document supports the administration of this project.

The following documents, available on the City & Guilds website, provide essential generic guidance for centres delivering Technical qualifications and **must** be referred to alongside this guidance:

- ***T level technical qualifications – marking***
- ***T level technical qualifications – moderation*** (updated annually)
- ***T level technical qualifications – teaching, learning and assessment***

This synoptic assessment is designed to require the candidate to make use of their core knowledge, understanding and the practical skills they have built up over the course of their learning to tackle tasks/problems/challenges.

This approach to assessment emphasises to candidates the importance and applicability of the full range of their learning to practice in their industry area, and supports them in learning to take responsibility for transferring their knowledge, understanding and skills to the practical situation, fostering independence, autonomy and confidence.

Candidates are provided with an assignment brief. They then have to draw on their knowledge and skills and independently select the correct processes, tools, equipment, materials and approaches to take, to complete the brief.

During the learning programme, it is expected that tutors will have taken the opportunity to set shorter, formative tasks that allow candidates to be supported to independently use the learning they have so far covered, drawing this together in a similar way, so they are familiar with the format, conditions and expectations of the synoptic assessment.

Candidates should be made aware during learning what the assessment themes are and how they are implemented in marking the assignment, so they will understand the level of performance that will achieve them high marks.

Candidates should not be entered for the assessment until the end of the course of learning for the qualification, so they are in a position to complete the assignment successfully.

### **Health and safety**

Candidates must not be entered for assessment without being clear of the importance of working safely and having attended sufficient practical training to be able to work safely. The assessor must immediately stop an assessment if a candidate works unsafely. At the discretion of the assessor, depending on the severity of the incident, the candidate may be given a warning. If they continue to work unsafely, risking the safety of themselves or others however, their assessment must be ended, and they must retake the assessment in a future series after significant further training has taken place.

### **Compliance with timings**

Due to the nature of this assessment, the maximum time allowances provided must be adhered to. They refer directly to assessment time, not any additional setting up or drying times the centre needs to create an appropriate assessment environment.

It is the centre's responsibility to plan sufficient assessment sessions, under the appropriate conditions, within the assignment window, to allow candidates reasonable time to complete the assessment tasks.

Where candidates are required to plan their work, they should have their plans confirmed for appropriateness in relation to the time allocated for each task.

Candidates should be allowed sufficient time to fully demonstrate the range of their skills, however this also needs to be reasonable and practicable. Candidates should be allowed to overrun their planned timings or professional service times (where they exist) in order for evidence of a range of their skills to be captured. If however, the time required exceeds reasonably set assessment periods, or the tolerance suggested for professional service times, the centre may stop the assessment and base the marking on the evidence up to that point, including the tutor's notes of how far over time the task has taken.

### **Assessor student ratios**

The number of candidates a tutor will be able to observe at one time will vary depending on:

- the complexity of evidence collection for the task
- local conditions e.g. layout of the assessment environment,
- amount of additional support available (e.g. to capture image/ video evidence), staggered starts etc.,
- whether there are any peak times where there is a lot of evidence to collect that will need additional support or any that are quieter.

It is advisable to trial the planned arrangements where possible during formative assessment, reviewing the quality of evidence captured and manageability. It is expected that for straight forward observations, (and unless otherwise specified) no more than six candidates will be observed by a single tutor at one time, and the number will usually be fewer than this maximum. The key factor to consider is the logistics of collecting sufficient evidence.

As far as possible, candidates should not be distracted, or their performance affected by the process of observation and evidence collection.

### **Observation evidence**

Observation notes form part of the candidate's evidence and must capture evidence of student performance during the practical tasks describing how well the activity has been carried out, rather than stating the steps / actions, the candidate has taken. The notes must be very descriptive and focus on the quality of the performance that are notable in relation to the quality indicators in the marking grid. They must provide sufficient, appropriate evidence that can be used by the marker (and moderator) to mark the performance using the marking grid. These descriptions will be used, along with eg photographic and video evidence to choose the relevant marking band and mark within the band so that students can be reliably and validly differentiated based on their performance. Observation evidence captured in these forms must give the necessary information to enable the final assessment of the task at a later date. This is to allow a holistic judgement to be carried out after all evidence for the task is available, at which point full consideration of how the student has applied both their skills and their knowledge during the practical can be given.

Identifying what it is about the performances that is different between candidates can clarify the qualities that are important to record. Each candidate is likely to carry out the same steps, so a checklist of this information would not help differentiate between them. However, qualitative comments on how well they do it, and quantitative records of accuracy and tolerances would.

The tutor should refer to the marking grid to ensure appropriate aspects of performance are recorded. These notes will be used for marking and moderation purposes and so must be detailed, accurate and differentiating.

Tutors should ensure that any required additional supporting evidence including e.g. photographs or video can be easily matched to the correct candidate, are clear, well-lit and showing the areas of particular interest in sufficient detail and clarity for assessment (i.e. taken at appropriate points in production, showing accuracy of measurements where appropriate).

If candidates are required to work as a team, each candidate's contribution must be noted separately. The tutor may intervene if any individual candidate's contribution is unclear or to ensure fair access (see below).

Assessor marking and justification is completed on a separate form (CRF) to differentiate this evidence from the judgement, since in some cases the observation form will, in some cases, provide evidence relating to the judgement for more than one assessment theme.

The **Technical qualifications guides on marking and moderation** are essential guidance documents and are available on the City & Guilds website. These provide further information on preparing for assessment, evidence gathering, standardisation, marking and moderation, and must be referred to when planning and carrying out assessment.

### **Video and photograph evidence in T Level Technical qualifications**

The assessment materials for each synoptic assignment identify the minimum candidate and assessor evidence requirements to support marking and moderation. Where ephemeral evidence (e.g. areas of candidate performance that may be hard to capture with photographs and assessor notes alone) plays a significant part of the synoptic practical assessment. If this is the case City & Guilds will prescribe the type/capture where the use of video is necessary for practical assessment components (e.g. specifying exactly which elements of the practical must be videoed, or photographed), and any technical specifications for these forms of evidence e.g. length of videos, maximum file sizes etc will also be supplied. Photographic and video evidence will be submitted along with the written candidate evidence and tutor evidence (Practical Observation forms) as described in the additional evidence section of the task

Video evidence must meet these minimum requirements, in order to be considered by moderators:

- As per the guidance in section 2.3.2 of *The Marking and Moderation Guide for Centres*, tutors must ensure that this evidence can be easily matched to the correct candidate and task, is clearly shot, well-lit and shows the areas of particular interest in sufficient detail and clarity for assessment (i.e. filmed at appropriate points in production, showing accuracy of measurements where appropriate).
- The qualitative written evidence provided by tutors must
  - clearly identify the parts of the video that are being referred to, when used as supporting evidence. Using a timecode for this is recommended.
  - include their judgement on the performance being demonstrated
- Section 6.5 of the *Centre Manual* also contains general information about the requirements for video evidence submission, however for Technical Qualifications videos must be no longer, than 5 minutes long.

Please note that where video evidence is unclear, or does not meet these minimum requirements, moderators will disregard it.

## Minimum evidence requirements for marking and moderation

The sections in the assignment:

- ***What you must produce for marking***, and
- ***Additional evidence of your performance that must be captured for marking***

These list the minimum requirements of evidence to be submitted for marking and the moderation sample.

Evidence produced during assessment above and beyond this may be submitted, as long as it provides useful information for marking and moderation and has been produced under appropriate conditions.

While technological methods which support the capturing or creating of evidence can be helpful, e.g. pin board style websites for creating mood boards, the final evidence must be converted to a suitable format for marking and moderation which cannot be lost/ deleted or amended after the end of the assessment period (e.g. screen prints, pdf files). Considerations around tracking authenticity and potential loss of material hosted on such platforms during assessment is the centre's responsibility.

*Note: Combining candidates' individual pieces of evidence into single files or zip files may make evidence management during internal marking more efficient and will greatly simplify the uploading of the moderation sample.*

Where the minimum requirements have not been submitted for the moderation sample by the final moderation deadline, or the quality of evidence is insufficient to make a judgement, the moderation, and therefore any subsequent adjustment, will be based on the evidence that *has* been submitted. **Where this is insufficient to provide a mark on moderation, a mark of zero may be given.**

## Preparation of candidates

Candidates should be aware of which aspects of their performance will give them good marks in assessment. This is best carried out through routinely pointing out good or poor performance during the learning period, and through formative assessment.

During the learning programme, direct tutor instruction in how to approach tasks through modelling, support, guidance and feedback are critical. However, gradual removal of this support is necessary in preparation for summative assessment. This, supported approach is not valid for summative assessment.

The purpose of summative assessment is to confirm the standard the candidate has reached as a result of participating in the learning process. Candidates should be encouraged to do the best they can and be made aware of the difference between these summative assessments and any formative assessments they have been subject to. Candidates may not have access to the full marking grids. Refer to the ***T Level Technical qualifications – teaching, learning and assessment*** centre guidance document, available on the City & Guilds website for further information on preparing candidates for Technical qualification assessment.

## Guidance on assessment conditions

The assessment conditions that are in place for this synoptic assignment are to:

- ensure the rigour of the assessment process
- provide fairness for candidates
- give confidence in the outcome.

They can be thought of as the rules that ensure that all candidates who take an assessment are being treated fairly, equally and in a manner that ensures their result reflects their true ability.

The conditions outlined below relate to this synoptic assignment. These do not affect any formative assessment work that takes place, although it is advised that candidates are prepared for the conditions they will need to work under during summative assessment.

The evidence for the tasks that make up this synoptic assignment must be completed under the specified conditions. This is to ensure authenticity and prevent malpractice as well as to assess and record candidate performance for assessment in the practical tasks. Any aspect that may be undertaken in unsupervised conditions is specified. It is the centre's responsibility to ensure that local administration and oversight gives the tutor sufficient confidence to be able to confirm the authenticity of the candidate's work.

### **Security and authentication of candidate work**

Candidate evidence must be kept secure to prevent unsupervised access by the candidate or others. Where evidence is produced over a number of sessions, the tutor must ensure learners and others cannot access the evidence without supervision. This might include storing written work or artefacts in locked cupboards and collecting memory sticks of evidence produced electronically at the end of each session.

Candidates are required to sign declarations of authenticity, as is the tutor. The relevant form is included in this assignment pack and must be signed after the production of all evidence.

**Where the candidate or tutor is unable to or does not confirm authenticity through signing the declaration form, the work will not be accepted at moderation and a mark of zero will be given. If any question of authenticity arises eg at moderation, the centre may be contacted for justification of authentication.**

### **Accessibility and fairness**

Where a candidate has special requirements, tutors should refer to the *Access arrangements and reasonable adjustments* section of the City & Guilds website.

Tutors can support access where necessary by providing clarification to any candidate on the requirements or timings of any aspect of this synoptic assignment. Tutors should not provide more guidance than the candidate needs as this may impact on the candidate's grade, see the guidance and feedback section below.

All candidates must be provided with an environment, time frame and resources that allows them reasonable access to the full range of marks available.

Where candidates have worked in groups to complete one or more tasks for this synoptic assessment, the tutor must ensure that no candidate is disadvantaged as a result of the performance of any other team member. If a team member is distracting or preventing another team member from fully demonstrating their skills or knowledge, the tutor must intervene.

### **Guidance and feedback**

To support centre file management, tutors may specify a suitable file format and referencing format for evidence (unless otherwise specified eg if file naming is an assessment point for the assignment). Guidance must only support access to the assignment brief and must not provide feedback for improvement. The level and frequency of clarification & guidance must be

- recorded fully on the candidate record form (CRF),
- taken into account along with the candidate's final evidence during marking
- made available for moderation.

Tutors must not provide feedback on the quality of the performance or how the quality of evidence can be improved. This would be classed as malpractice. However, this does not apply if the tutor asks questions as part of the assessment process. Such requirements will be specifically stated within task centre guidance.

Tutors should however provide general reminders to candidates throughout the assessment period to check their work thoroughly before submitting it, and to be sure that they are happy with their final evidence as it may not be worked on further after submission.

Candidates can rework any evidence that has been produced for this synoptic assignment during the time allowed. However, this must be as a result of their own review and identification of weaknesses and not as a result of tutor feedback. Once the evidence has been submitted for assessment, no further amendments to evidence can be made.

Tutors should check and be aware of the candidates' plans and designs to ensure management of time and resources is appropriate, and so any allowed intervention can take place at an appropriate time.

Tutors should ensure that candidates' plans for completion of the tasks distribute the time available appropriately and may guide candidates on where they should be up to at any point in a general way. Any excessive time taken for any task should be recorded and should be taken into account during marking if appropriate.

It is up to the marker to decide if the guidance the candidate has required suggests they are lacking in any performance outcome, the severity of the issue, and how to award marks on the basis of this full range of evidence. The marker must record where and how guidance has had an impact on the marks given, so this is available should queries arise at moderation or appeal.

### **What is, and is not, an appropriate level of guidance**

- A tutor should intervene with caution if a candidate has taken a course of action that will result in them not being able to submit the full range of evidence for assessment. However, this should only take place once the tutor has prompted the candidate to check that they have covered all the requirements. Where the tutor has to be explicit as to what the issue is, this is likely to demonstrate a lack of understanding on the part of the candidate rather than a simple error, and full details should be recorded on the CRF.
- The tutor should not provide guidance if the candidate is thought to be able to correct the issue without it, and a prompt would suffice. In other words, only the minimum support the candidate actually needs should be given, since the more tutor guidance provided, the less of the candidate's own performance is being demonstrated and therefore the larger the impact on the marks awarded.
- A tutor must not provide guidance that the candidate's work is not at the required standard or how to improve their work. In this way, candidates are given the chance to identify and correct any errors on their own, providing valid evidence of knowledge and skills that will be credited during marking.
- The tutor must not produce any templates, pro-formas, work logs etc unless instructed to in the assignment guidance. Where instructed to do so, these materials must be produced as specified and contain no additional guidance. Templates provided, as part of the assignment should be used as provided, and not adapted.

All specific prompts and details of the nature of any further guidance must be recorded on the relevant form and reviewed during marking and moderation.

### **Guidance on marking**

Please refer to the ***T Level Technical qualifications – marking, and - moderation*** centre guidance documents for further information on gathering evidence suitable for marking and moderation, and on using the marking grid and forms.

The candidate record form (CRF) is used to record:

- Details of any guidance or the level of prompting the candidate has received during the assessment period

- Rough notes bringing together relevant evidence from across tasks during marking.
- Summary justifications when holistically coming to an overall judgement of the mark for each performance objective and overall

The practical observation form (PO) is used to record:

- Descriptive information and evidence of candidate performance during an observation.

Sample



## Marking guidance

### Carrying out marking using assessment themes

The process of marking each assessment theme is iterative and should follow the process below which will become more spontaneous over time as the descriptors become familiar. It is recommended to refer back to these frequently however, so the standard does not unintentionally drift over the marking period.

The indicative content gives an indication of the expected content parameters the responses are likely to cover, and which aspects of the evidence are relevant. It is not exhaustive, and an acceptable answer may concentrate more on depth rather than fully cover the range indicated, or deviate into relevant topics not listed.

The specific task evidence listed within the assessor guide and marking grid must be used to make a judgement on performance in relation the specific assessment theme.

The assessment tasks guide the production of valid evidence under appropriate conditions for assessment. Candidate evidence from a range of tasks may contribute to the marking of a single assessment theme, or from a single task to more than one assessment theme. In this case different aspects of the evidence are being considered for each theme, and need to be judged against the marking descriptors specified in the assessment themes independently of each other.

In some cases, the quality indicators looked for in the judgement may naturally be more strongly evidenced in one piece of evidence than another. For instance, more formulaic/prescriptive forms of evidence may not be able to generate evidence of higher levels of performance, so this evidence would need to be looked for in the other forms of evidence. This means that where a range of evidence is to be assessed, it should be treated as a single package of evidence for the purposes of marking even if generated through different tasks.

### Timing of marking

As some assessment themes require the triangulation of a number of pieces of evidence, marking cannot take place until after all of these are available. This does not however mean that all marking needs to take place after all candidates have completed the whole assessment.

Also it is possible to begin recording the notes that will justify the marking for some assessment themes as evidence is produced, with the final mark only being decided once the complete array of evidence is available. This is particularly the case if later evidence is more confirmatory, and the earlier evidence is sufficiently informative for the qualities being assessed to make this a useful exercise.

Through planning, it should be possible to identify any evidence that can start being reviewed earlier, and the assessment themes which could be scheduled for earlier completion of marking eg while observation evidence is fresh in the mind should this be helpful. Care must of course be taken to ensure any evidence required by candidates to progress with another task are available for that task to take place. In addition, it is recommended that a sense check across marking for each assessment theme, and across assessors, is carried out at the end to ensure marking has not drifted during the period. This may take the form of comparing candidate work to check that the ranking of quality of evidence matches the ranking of marks – where there are discrepancies marking should be checked for accuracy.

### Process for each assessment theme:

- Select the range of evidence relevant for making the judgement – this is indicated in the mark scheme for each assessment theme.

- Scan / read the candidate evidence, evidence captured by the assessor and the indicative content & band descriptors in the mark scheme.
- Make an initial assessment of the required evidence as a whole, considering each band in turn to make a balanced judgement of the best band to use it as a starting point.
- Read the evidence and review it against the band descriptor in more detail, deciding if the response is securely sitting within the band; ie all quality characteristics described by the band descriptor are seen, and strongly meets the level of performance described by the descriptor holistically (ie across the range of relevant evidence).
  - Check the descriptor for the level above
  - If the evidence clearly shows some of the characteristics of the higher band, select a suitable mark at the bottom of that band
  - If *not* showing characteristics of the higher band revert to the original band, select a mark at the higher end of that mark range

If the response is not securely in the band, but *is partially* showing the characteristics of the band,

- check the descriptor of the level below.
- decide on a suitable mark either at the bottom of the original band as some characteristics shown, or top of the lower band if it better describes the quality of the characteristics being shown.

If the response is largely meeting the band, with only a few concerns, and is not showing characteristics aligning with the higher or lower bands, the appropriate mark is likely to be in the middle range.

If there is no alignment with the descriptor, reassess the starting band, and begin again.

- Based on the level of alignment with the descriptor, confirm the final mark within the band, bearing in mind that the available marks form an *evenly distributed scale*:
  - If the quality of response *fully* aligns with the performance described by the descriptor – assign a high mark within the band
  - If the quality of the response *partially* aligns with the performance described by the descriptor – assign a low to medium mark within the band
  - Consider the quality compared to a range of similar responses (e.g. relevant annotated training material exemplars, responses reviewed during standardisation, and through experience) choose a mark on the point on the scale that would give an appropriate ranking for the assessed piece of evidence in relation to this information and in comparison with that of the rest of the cohort for that assessment theme.

## Marking grid

There is a marking grid for each assessment theme that must be assessed as part of this occupational specialism assessment.

### Assessment theme - Health and safety

<p><b>Note: where there is insufficient evidence to award a mark, a zero mark may be given</b></p>	<p><b>Band 1 descriptor</b></p>	<p><b>Band 2 descriptor</b></p>	<p><b>Band 3 descriptor</b></p>	<p><b>Total marks per assessment theme</b></p>
<p><b>Indicative content</b></p>	<p><b>Typical knowledge, understanding and skills:</b>            Identification of main hazards which include major danger of death or major injury hazards.            Analysis of risk and appropriate mitigation against hazards for planned tasks.            Knowledge and understanding of minor injury or delay hazards and provide appropriate mitigation for such risks.            Demonstration of the ability to correctly prepare tools and materials lists for the proposed task.            Assessment of risk as part of commissioning and installation.            Safe isolation procedures completed accurately and safely (Failure to complete safe isolation as specified below leading to an unsafe situation the assessment will be stopped immediately).</p> <ul style="list-style-type: none"> <li>• Obtain permission to start work</li> <li>• Prove that the approved voltage indicator is functioning correctly</li> <li>• Identify the source(s) of supply using an approved voltage indicator</li> <li>• Isolate the supply, lock off and retain the key</li> <li>• Prove the system/equipment is DEAD using an approved voltage indicator</li> <li>• Prove that the approved voltage indicator is functioning correctly</li> <li>• Put up warning signs to tell other people that the electrical installation has been isolated</li> <li>• Once the system/equipment is proved DEAD, work can begin</li> </ul>			

Marks per band	1-4	5-8	9-12	12
	<p>Risks assessed partially with consideration of a limited range of risk factors.</p> <p>Risk mitigation methods are limited. Likelihood against probability has been attempted but lacks reasoning.</p> <p>Health and safety is followed during preparation and throughout tasks so that all work is completed safely but when working some low risk hazards were missed.</p>	<p>Risks assessed with consideration of a good range of risk factors.</p> <p>Risk mitigation methods have been identified for some of the potential risks, but not all. Consideration is given to potential for harm and probability factors.</p> <p>Health and safety is followed during preparation and throughout tasks and all work completed safely.</p>	<p>Assessment of risk completed in full, clearly identifies all associated risk factors.</p> <p>Risk mitigation methods are detailed and have been clearly identified for all potential risks. Potential for harm and probability factors have been identified throughout.</p> <p>Health and safety is followed during preparation and throughout tasks and all work completed safely. Risks and hazards that occur during the tasks are correctly mitigated against as they are arise.</p>	

**Guidance for markers**

Evidence from Task 1, Task 2 and Task 3 should be used to assess performance against this assessment theme.

**Task 1**

Risk assessment

**Task 2**

Safe isolation report

Assessor observation

- Installation work – inc. use of tools, installation of components, measurements, clipping
- Connecting the supply

### **Task 3**

Assessor observation

- Fault diagnosis
- Fault rectification

### **Additional supporting evidence**

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

Sample

## Assessment theme – Design and planning

<b>Note: where there is insufficient evidence to award a mark, a zero mark may be given</b>	<b>Band 1 descriptor</b>	<b>Band 2 descriptor</b>	<b>Band 3 descriptor</b>	<b>Total marks per sub assessment themes.</b>	<b>Total marks for assessment theme</b>
<b>Indicative document</b>	<p><b>Typical knowledge, understanding and skills:</b>            Taking measurements from an allocated space/ work area.            Use of information gathered in the development of diagrams and drawings.            Detailed method statement of how the task will be carried out in a safe and logical manner with reasoning to support methods given.            Correct selection of components and tools, materials and equipment for different aspects of the assignment.            Consideration of the type, size and quantity to complete the task in a timely manner and to ensure the highest quality of finish.</p>				
<b>Marks per band</b>	<b>1-3</b>	<b>4-6</b>	<b>7-9</b>	<b>9</b>	<b>18</b>
<b>Documentation</b>	<p>Documents have limited detail and is mainly bullet points.</p> <p>Documents contain some limited detail in how to carry out tasks logical sequencing is limited.</p>	<p>Documents are clear and set out in a logical order.</p> <p>Documents provide some details of how to perform tasks to correct standards but sequencing lacks clarity.</p> <p>Justifications and reasoning are given to some elements, but not all.</p>	<p>Documents are thorough and detailed and set out in a logical order.</p> <p>Documents are easy to follow and accurate in processes providing clear details of how to perform tasks with good sequencing.</p>		

	<p>Any justifications are given in isolation and do not clearly link to the task.</p> <p>Documents identify key components or tools and equipment to perform the tasks.</p> <p>Little attempt to quantify materials required to complete tasks.</p> <p>Minor errors in terminology.</p>	<p>Documents are clear and logical and identifies most of the tools and equipment required to perform the tasks.</p> <p>Documents detail consideration of quantities of both materials and equipment required to perform tasks to industry standards.</p> <p>Terminology is used correctly throughout.</p>	<p>Clear justifications and reasoning are provided throughout.</p> <p>Documents are detailed and includes all key components, tools and equipment required to perform the tasks.</p> <p>Documents detail consideration of quantities of both materials and equipment, and protection of customer property, including safety and PPE.</p> <p>Full consideration of language, abbreviations, terminology etc audience and ensuring documentation is completed in line with recording and industry standards.</p>		
	<b>1-3</b>	<b>4-6</b>	<b>7-9</b>	<b>9</b>	
<b>Drawings and diagrams</b>	<p>Drawings complete but with some inaccuracies that do not meet the installation specification.</p> <p>Marking out has been attempted with some</p>	<p>Drawings meet most of the design specification, with only some components out of tolerance.</p> <p>Marking out is mostly accurate and clear attempts at ensuring</p>	<p>Drawings are accurate and meet the installation specification.</p> <p>Marking out is evident and within all tolerances.</p>		

	inaccuracies and little consideration to tolerances.	installation is within tolerances are made.			
--	--	---	--	--	--

**Guidance for markers**

Evidence from Task 1 must be used to assess performance against the assessment theme.

**Task 1**

Method statement with justifications

Building plan with device locations indicated, with justifications

Dimensioned drawing of proposed installation in the given work area

Materials list

Assessor observation

- Measurements and marking out

**Additional supporting evidence**

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

Sample



## Assessment theme – Systems and components

<b>Note: where there is insufficient evidence to award a mark, a zero mark may be given</b>	<b>Band 1 descriptor</b>	<b>Band 2 descriptor</b>	<b>Band 3 descriptor</b>	<b>Total marks per sub assessment theme</b>	<b>Total marks for assessment theme</b>
<b>Indicative content</b>	<p><b>Typical knowledge, understanding and skills:</b>            Correct use of components and tools, equipment and materials to meet the requirements of the assignment brief and tasks.            Completion of the installation of wiring and components following manufacturer's guidance as appropriate.            Completion of tasks safely and with consideration to customer/client property.</p>				
<b>Marks per band</b>	<b>1-5</b>	<b>6-10</b>	<b>11-15</b>	<b>15</b>	<b>27</b>
<b>Installation</b>	<p>Installation lacks clarity and does not follow logical sequencing.</p> <p>Component selection and installation is mostly appropriate but some gaps in completing processes.</p> <p>Selection and use of tools is mostly appropriate but requires reassurance.</p> <p>Minimal reference made to manufacturer's</p>	<p>Installation is to a good standard and does follow some logic in process.</p> <p>Component selection is mostly appropriate. Installation mostly meets plan with minor errors.</p> <p>Selection of tools appropriate throughout. Use of tools is good but some tasks require numerous attempts.</p> <p>Reference made to manufacturer's instructions during the installation.</p>	<p>Installation is to industry standards and is completed in a timely manner.</p> <p>Component selection is appropriate and clearly links to the quality of finished installation.</p> <p>Highly competent in installation skills which is demonstrated in the quality of the finished installation.</p> <p>.</p>		

	<p>instructions during the installation.</p> <p>Considers some implications of sequence for disposal minimising damage to parts that could be recycled.</p> <p>Some removed materials and equipment suitably designated and categorised for disposal as required.</p> <p>Measurement of wiring and associated components for installation may have inaccuracies that has results in inefficiencies and unnecessary waste of materials.</p>	<p>Considers implications of sequence for dismantling minimising damage to parts that could be recycled.</p> <p>All removed materials and equipment suitably designated and categorised for disposal as required.</p> <p>Measurement wiring and associated components is to a sound standard with clear attempts to meet industry levels, resulting in an install that has few errors from the proposed installation plan.</p>	<p>Use of tools is excellent resulting in a high-quality installation.</p> <p>Reference was made to manufacturer's instructions at all appropriate stages during the installation.</p> <p>Measurement of wiring and associated component installation is accurate and meets the design specification and is within tolerance without undue waste.</p>		
<b>Marks per band</b>	<b>1-3</b>	<b>4-6</b>	<b>7-9</b>	<b>12</b>	
<b>Decommissioning</b>	<p>Considers some implications of sequence for dismantling minimising damage to parts that could be recycled.</p>	<p>Considers most implications of sequence for dismantling minimising damage to parts that could be recycled.</p> <p>Some use of removal techniques to salvage as</p>	<p>Considers implications of sequence for dismantling minimising damage to parts that could be recycled.</p> <p>Use of removal techniques to salvage as</p>		

	<p>Minimal use of removal techniques to salvage as much materials as possible for recycling.</p> <p>Some removed materials and equipment suitably designated and categorised for disposal as required.</p>	<p>much materials as possible for recycling.</p> <p>Majority of removed materials and equipment suitably designated and categorised for disposal as required.</p>	<p>much materials as possible for recycling.</p> <p>All removed materials and equipment suitably designated and categorised for disposal as required.</p>		
--	--	---	---	--	--

### Guidance for markers

Evidence from Task 1, Task 2 and Task 3 must be used to assess performance against the assessment theme.

#### Task 1

Materials list

Dimensioned drawings

Assessor observation

- Measurements and marking out

#### Task 2

Assessor observation

- Installation work – inc. use of tools, installation of components, measurements, clipping
- Commissioning
- Decommissioning

#### Task 3

Assessor observation

- Fault diagnosis
- Fault rectification

### Additional supporting evidence

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

## Assessment theme – Reports and information

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor	Band 2 descriptor	Band 3 descriptor	Total marks for assessment theme
<b>Indicative content</b>	<p><b>Typical knowledge, understanding and skills:</b>            Documentation/recording with consideration of customer requirements and completing form templates correctly where relevant.            Consideration of language used in reports for audience/client.            Completed maintenance activity report in relation to the requirements of the task aspects as detailed in the assignment brief.            Complete and detailed reports/checklists for the following activities</p> <ul style="list-style-type: none"> <li>• Safe isolation report</li> <li>• Record of operational checks</li> <li>• Report to the client explaining the cause of the problem, and detailing the work required to affect a repair.</li> </ul> <p>Information and terminology accurate throughout and presented clearly.</p>			
<b>Marks per band</b>	<b>1-2</b>	<b>3-4</b>	<b>5-6</b>	<b>6</b>
<b>Reporting and information</b>	<p>Documentation completed with the minimum detail required with little or no evidence of checking for accuracy and consistency.</p> <p>Information is recorded but wording, symbols, abbreviations etc used inconsistently and with limited consideration for</p>	<p>Provides a high level of accuracy in reports and written detail consistently ensuring and checking for accuracies with reference made to manufacturers' instructions and regulations.</p> <p>Consideration of language, abbreviations and audience and throughout documentation.</p>	<p>Provides a high level of accuracy in reports and written detail consistently ensuring and checking for accuracies with reference made to manufacturers' instructions and regulations.</p> <p>Full consideration of language, abbreviations</p>	

	<p>accuracy, legibility, audience etc.</p> <p>Reports and documentation include high level detail that would be required by client. May not be fully considered from client perspective or laid out/detailed enough for a user to interpret.</p> <p>Information in reports and documentation covers key equipment but does not consider the full requirements of the assignment brief.</p>	<p>Reports and documentation are comprehensive in coverage but would benefit from better planning and clarity of presentation / ordering of information – Clear effort to consider client perspective.</p> <p>Information in reports and documentation covers all equipment within installation in full.</p>	<p>audience etc and ensuring documentation is completed in line with recording and industry standards.</p> <p>Information in reports and documentation is clear and logically presented with all elements required by the client with consideration beyond basic instructions that may be required. Fully considers client perspective in relation to clarity of information – level of detail provided and terminology</p>	
--	--	--	---	--

### Guidance for markers

Evidence from Task 1, Task 2, and task 3 must be used to assess performance against the assessment theme.

#### Task 1

Method statement

Assessor observation

- Measurements and marking out

#### Task 2

Safe isolation report

Record of operational checks

#### Task 3

Written customer report

### Additional supporting evidence

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

## Assessment theme – Inspecting and testing of systems and components

<b>Note: where there is insufficient evidence to award a mark, a zero mark may be given</b>	<b>Band 1 descriptor</b>	<b>Band 2 descriptor</b>	<b>Band 3 descriptor</b>	<b>Total marks for assessment theme</b>
<b>Indicative content</b>	<b>Typical knowledge, understanding and skills:</b> Required tests and checks as part of system installation and commissioning. Selection and use of testing equipment. Interpretation and analysis of testing results. Adaptation of process in relation to test outcomes where necessary.			
<b>Marks per band</b>	<b>1-3</b>	<b>4-6</b>	<b>7-9</b>	<b>9</b>
<b>Inspecting and testing</b>	Inspection and testing for installation lacks clarity and does not follow logical sequencing.  Component selection and installation is mostly appropriate but some gaps in completing processes.  Selection and use of tools is mostly appropriate.  Minimal reference made to manufacturer's instructions during the installation.	Inspection and testing is to a good standard and does follow some logic in process.  Component selection is mostly appropriate. Installation mostly meets plan with minor errors.  Selection of tools appropriate throughout. Use of tools is good but some tasks require numerous attempts.  Reference made to manufacturer's instructions during the installation.	Inspection and testing is to industry standards and is completed in a timely manner.  Component selection is appropriate and clearly links to the quality of finished installation.  Competence displayed in the installation process with high levels of skills shown in the quality of the finished installation.	

			<p>Use of tools is excellent resulting in a high-quality installation.</p> <p>Reference was made to manufacturer's instructions at all appropriate stages during the installation.</p>	
--	--	--	--	--

### Guidance for markers

Evidence from Task 2 must be used to assess performance against this assessment theme.

### Task 2

Completed record of operational checks

Assessor observation

- Installation work – inc. use of tools, installation of components, measurements, clipping
- Commissioning
- Decommissioning

### Additional supporting evidence

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

## Assessment theme – Handover and communication

Note: where there is insufficient evidence to award a mark, a zero mark may be given	Band 1 descriptor	Band 2 descriptor	Band 3 descriptor	Total marks for assessment theme
<b>Indicative content</b>	<b>Typical knowledge, understanding and skills:</b> Clear and detailed handover to customer. Demonstration of system including all operating principles and maintenance requirements. Providing detail to the customer/client on causes of faults and details of work required, when rectification or replacement is possible and reasons why.			
<b>Marks per band</b>	<b>1-2</b>	<b>3-4</b>	<b>5-6</b>	<b>6</b>
<b>Handover and Communication</b>	Technical language minimal and explanations on reports /documentation provide minimal detail.  Interaction with customer demonstrated basic customer care skills and did not confirm customer understanding.  Demonstration of system provided basic functions; some information was unclear resulting in the customer having to ask questions.	Reports /documentation contain technical language and reasoned rectification solutions.  Interaction with customer demonstrated some good customer care skills, through using appropriate language and checking the customer understood.  Demonstration of system was clear and provided all functions of the system.  Discussions with customer mostly clear and questions asked were relevant to the task.	Consistently use industry terminology appropriately in both written and verbal contexts.  Interaction with customer demonstrated strong customer care skill, adapting to type of customer and through using appropriate language and checking the customer understood.  Demonstration of system was thorough and provided all functions and information. Candidate proactively checks	



	Discussion with customer brief and some questions were not relevant to the task.		and confirmed customer understanding. Discussion with customer was clear and direct, all questions asked were relevant to the task.	
--	--	--	---	--

### Guidance for markers

Evidence from Task 2 and Task 3 must be used to assess performance against this assessment theme.

### Task 2

Assessor observations

- Handover to client

### Task 3

Written customer report

Assessor observations

- Fault diagnosis

### Additional supporting evidence

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

## Assessment theme – Working with faults

<p><b>Note: where there is insufficient evidence to award a mark, a zero mark may be given</b></p>	<p><b>Band 1 descriptor</b></p>	<p><b>Band 2 descriptor</b></p>	<p><b>Band 3 descriptor</b></p>	<p><b>Total marks for assessment theme</b></p>
<p><b>Indicative content</b></p>	<p><b>Typical knowledge, understanding and skills:</b>            Fault finding tests to ensure correct diagnosis of faults.            Use of different techniques including speaking to the customer.            Systematic and logical approach to fault finding.</p>			
<p><b>Marks per band</b></p>	<p><b>1-4</b></p>	<p><b>5-8</b></p>	<p><b>9-12</b></p>	<p><b>12</b></p>
<p><b>Working with faults</b></p>	<p>Tasks are completed but support required to test. Hesitancy with data and uncertainty with validity of data.</p> <p>Investigation and analysis of fault does not always follow a logical sequence.</p> <p>Minimal reference made to manufacturer's instructions.</p>	<p>Faults diagnosed and rectified following a systematic if hesitant approach.</p> <p>Candidate are successful in meeting an acceptable level of performance reaching a suitable conclusion.</p> <p>Demonstration of research to identify causes of problems and ways of rectifying issues both collaboratively and independently.</p> <p>Investigation and analysis of fault clear and followed some logic.</p>	<p>Confident diagnosis of complex task/faults and success in meeting an exceptionally good performance.</p> <p>Confident in testing procedure and choice of test needed.</p> <p>Demonstration of independent research and identification of causes of problems, providing rectification solutions with ease.</p>	

		Reference made to manufacturer's instructions at some points during the fault diagnosis.	Investigation and analysis of fault detailed and logical.  Reference made to manufacturer's instructions at all appropriate stages during the fault diagnosis.	
--	--	--	--	--

**Guidance for markers**

Evidence from Task 3 must be used to assess performance against this assessment theme.

**Task 3**

Written customer report

Assessor observations

- Fault diagnosis
- Fault rectification

**Additional supporting evidence**

Photographic and/or video evidence requirements are stated in the specific task guidance for each task within this assessor pack.

## Declaration of authenticity

<b>Assessment ID</b>	<b>Qualification number</b>
<b>Candidate name</b>	<b>Candidate number</b>
<b>Centre name</b>	<b>Centre number</b>

### Additional Support

Has the candidate received any additional support in the production of this work?

**No**  **Yes**  (Please tick appropriate)

If yes, give details below (and on a separate sheet if necessary).

--

### Candidate:

*I confirm that all work submitted is my own, and that I have acknowledged all sources I have used.*

<b>Candidate signature</b>	<b>Date</b>

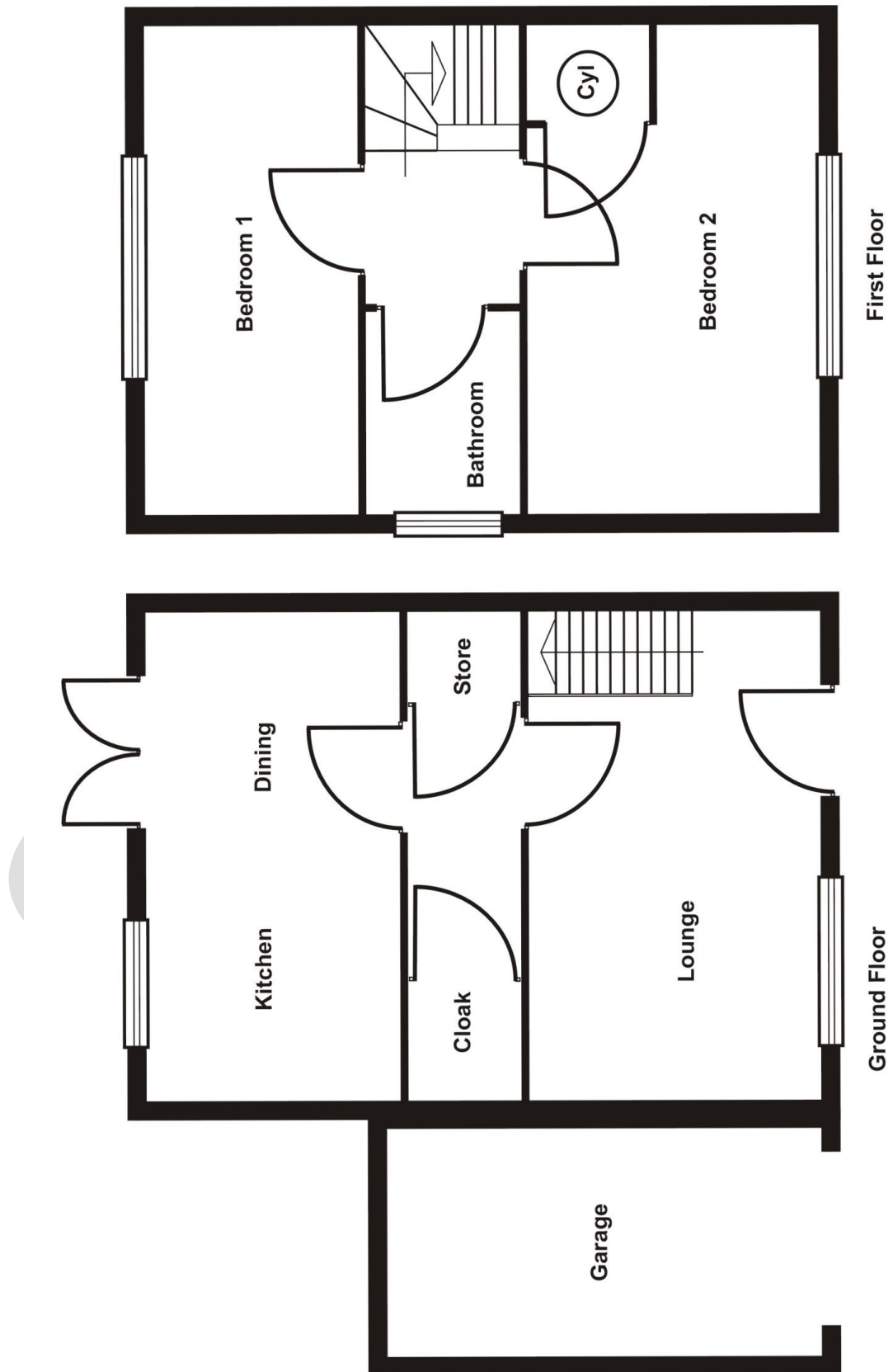
### Tutor:

*I confirm that all work was conducted under conditions designed to assure the authenticity of the candidate's work, and am satisfied that, to the best of my knowledge, the work produced is solely that of the candidate.*

<b>Tutor signature</b>	<b>Date</b>

**Note:** Where the candidate and/or tutor is unable to or does not confirm authenticity through signing this declaration form, the work will be returned to the centre and this will delay the moderation process. If any question of authenticity arises, the tutor may be contacted for justification of authentication

## Appendix 1



## Appendix 2

### RECORD OF OPERATIONAL CHECKS

Ref BS 9263:2016 Annex A

Customer .....

Address .....

Test Instrument: Make / Model ..... S/No .....

Zone or Circuit	Location of Detector	Detector loop resistance ( $\Omega$ )	Tamper loop resistance ( $\Omega$ )	Voltage at detector (V)

Battery charging voltage (mains supply on)	V dc	
Battery current supplied to system (mains disconnected)	mA dc	
Battery capacity	Ah	
Battery dated	(✓)	
Input voltage to external sounder	V dc	
Entry/exit times	Entry      Secs	Exit      Secs
Bell delay	Mins	
Bell duration	Mins	
Personal attack (PA) (circle which)	SILENT AUD N/A	At customer request
All cables identified / labelled	(✓)	

Signed ..... (Engineer)

Date .....

Sample

Copyright in this document belongs to, and is used under licence from, the Institute for Apprenticeships and Technical Education, © 2020.

'T-LEVELS' is a registered trade mark of the Department for Education.

'T Level' is a registered trade mark of the Institute for Apprenticeships and Technical Education.

'Institute for Apprenticeships & Technical Education' and logo are registered trade marks of the Institute for Apprenticeships and Technical Education.