Level 2 Technical Award in Engineering (1145-20-001)

Synoptic Assignment 2019 – v1.0

PAST ASSIGNMENT (20 DO NOT USE FOR LIVE ASSESSMENT

General guidance for candidates

General guidance

This is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of your practical performance and the written work you produce. It is therefore important that you carry your work out to the highest standard you can. How well you know and understand the subject, and how you have used your knowledge and skills together to complete the tasks must be clear to the marker. This means you will have to explain your thinking and the reasons behind the way you have carried out the tasks and how/why you have made your decisions within your written work eg as part of your planning, reflections, or evaluations.

Plagiarism

This is an assessment of your abilities, so the work must be all your own work and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assessment.

Your tutor is allowed to give you some help understanding the assignment instructions if necessary, but they will record any other guidance you need and this will be taken into account during marking.

Plagiarism is the failure to acknowledge sources properly and/or the submission of another person's work as if it were your own. Plagiarism is not allowed in this assignment.

Where research is allowed, your tutor must be able to identify which work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge all sources and clearly reference any information taken from them.

Timings and planning

Where you have to plan your time, you should take care to make sure you have divided the time available between tasks appropriately. In some assignments, there are specified timings which cannot be changed and which need to be taken into account. You should check your plan is appropriate with your tutor.

If you have a good reason for needing more time, you will need to explain the reasons to your tutor and agree a new deadline date. Changes to dates will be at the discretion of the tutor, and they may not mark work that is handed in after the agreed deadlines.

Health and Safety

You must always work safely, in particular while you are carrying out practical tasks.

You must always follow any relevant Health and Safety regulations and codes of practice.

If your tutor sees you working in a way that is unsafe for yourself or others, they will ask you to stop immediately, and tell you why. Your tutor will not be able to continue the assessment until they are sure you are ready for assessment and can work safely.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task.

You should make sure that each piece of evidence including any forms are clearly labelled with your name and the assignment reference.

All electronic files must be given a clear file name that allows your tutor to identify it as your work.

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Written work eg reports may be word processed or hand written unless stated otherwise.

All sketches and drawings should be neat and tidy, to scale and annotated.

Calculations should be set out clearly, with all working shown, as well as any assumptions made. You should use appropriate units at all times, and answers must be expressed to a degree of accuracy, consistent with the requirements of the task.

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Assignment Brief

Indoor home security lights are used to make it appear as though people are at home when they are away or on holiday. Typically, they will light up when it gets dark so that the room that they are located in appears to be in use.

A local company is developing a home security light. They have asked for your help to:

- interpret the outline design and specification given in Appendix A
- develop a prototype of the product to prove the design works before it is approved for manufacture.

Tasks

Task 1

The company has supplied the electrical circuit schematic for the product and an outline of the design for the two-part casing.

You are required to:

a) produce a block diagram for the circuit
b) create a CAD simulation of the functionality of the electronic circuit.

Conditions of assessment:

You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- completed block diagram for the security light. This can be hand drawn or produced using computer software
- image files of the electronic simulation or suitable screenshots annotated to describe the function of the circuit.

Additional evidence of your performance that must be captured for marking:

- none for this task.

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Task 2

You are required to:

a) use CAD to produce a virtual model of the assembled prototype casing
b) produce third angle projection orthographic drawings of the two parts of the casing. These should include all the relevant information needed to produce a prototype.

Conditions of assessment:
You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- CAD image files of the assembled casing or suitable screenshots
- third angle orthographic drawings of the two parts of the prototype casing.

Additional evidence of your performance that must be captured for marking:

- none for this task.

Task 3

You are required to produce a working physical prototype of the home security light. This **must** include both the circuit and the casing.

You **must** test its performance against the requirements of the design specification in Appendix A.

Conditions of assessment:
You must carry the tasks out on your own, under supervised conditions.

What you must produce for marking:

- assembled prototype of the product
- test results
- photographs or video evidence of your completed work, including the circuit, the parts of the casing and the assembled product.

Additional evidence of your performance that could be captured for marking:

- your tutor's notes or witness statement of your working practice, the standard and accuracy of the finished work.

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Task 4

You are required to evaluate the success of the prototype against the design specification in Appendix A, including the processes used for its development.

You are required to:

- evaluate the prototyping method used including identifying any limitations
- recommend how the prototype and/or design should be changed, if needed, to meet the design specification
- recommend any changes needed to allow the manufacture of the final product.

Conditions of assessment:

- You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- written evaluation or report.

Additional evidence of your performance that must be captured for marking:

- none for this task.

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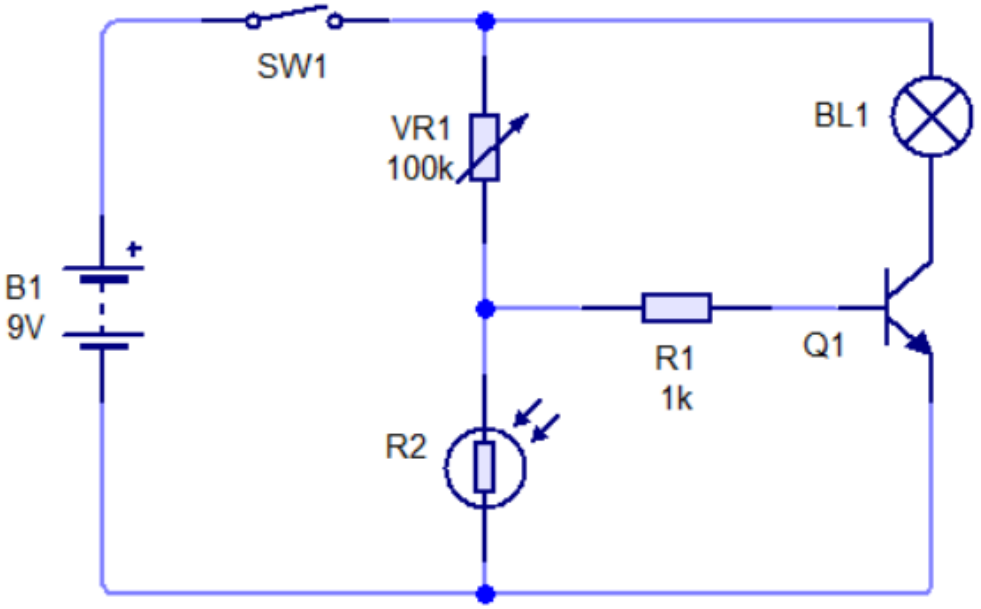
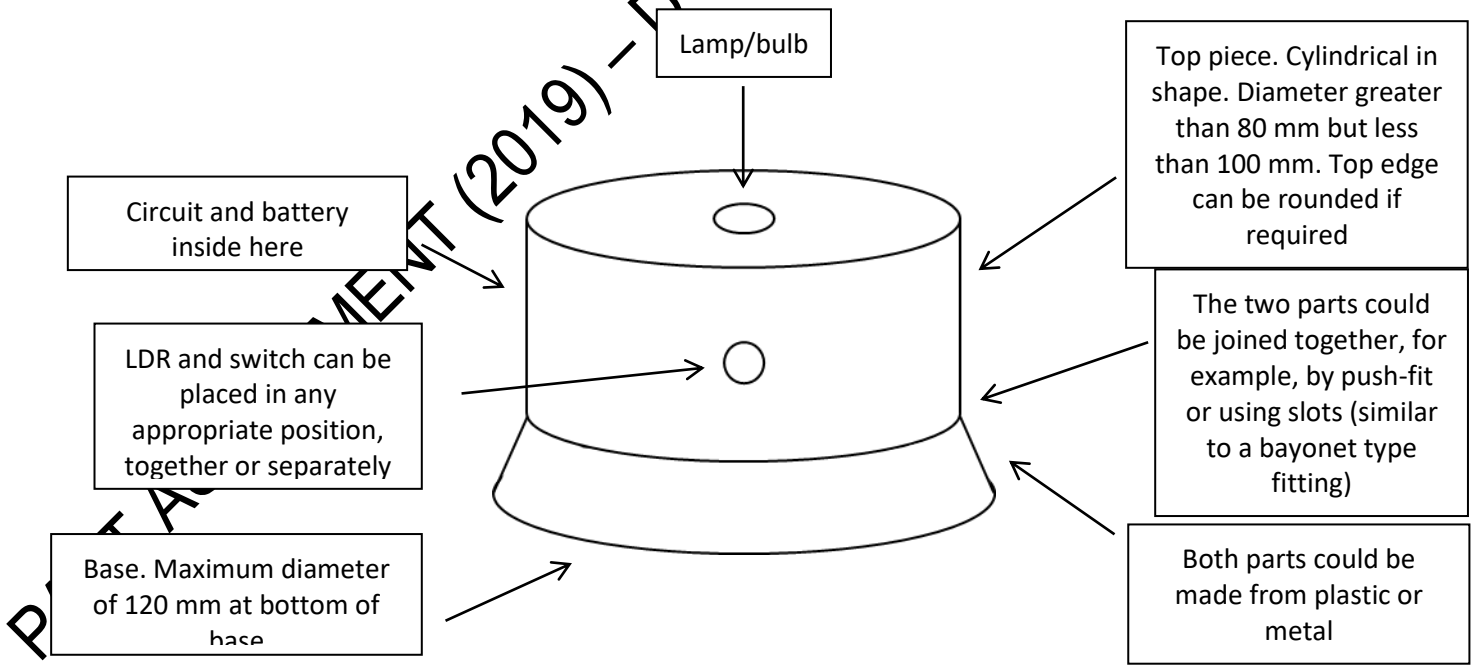
Appendix A

Electronic circuit schematic:



Sketch of product:



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Suggested specification for home security light

- A power on/off switch must be used (SW1)
- The lamp (BL1) should light when the power switch is on and the LDR (R2) senses that it is dark. Otherwise it should be off
- The lamp must produce a light that can be seen from a distance of 10 m away
- The casing for the lamp should include two parts, a base section and a top section. These may be the same material or different material if required
- The diameter of the bottom of the base section should be no more than 120 mm
- The diameter of the top section should be greater than 80 mm but less than 100 mm
- The product must weigh no more than a mass of 1 kg when fully assembled
- The light must be powered by one 9 V battery
- There must be no sharp edges on the final product
- All electronic circuitry should be enclosed within the casing.

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Task instructions for centres

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 materials demonstrating the ability to select from a range of appropriate materials.

- CAD software (design and simulation)
- Equipment and components to manufacture and test the electrical circuit
- Equipment and materials to manufacture and test the prototype casing
- Component data sheets
- A camera (video/still) for recording prototype function.

Task specific guidance

Centres must provide suitable document templates for supporting documentation such as templates for orthographic drawings and test report forms.

Task 3

Where a printed circuit board (PCB) is used for circuit assembly, candidates are not required to design or produce this themselves. The tutor will need to provide a PCB with the correct track layout. This can be etched or produced using a CAM/CNC engraving machine. Alternatively, stripboard can be used.

Time

The following timings are provided to support centre planning.

Total – 13 hours (recommended)
Task 1 – 2 hours
Task 2 – 3 hours
Task 3 – 6 hours
Task 4 – 2 hours

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Centre guidance

Guidance provided in this document supports the administration of this assignment. 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:

- ***Technical qualifications – marking***
- ***Technical qualifications – moderation*** (updated annually)
- ***Technical qualifications – teaching, learning and assessment***

This synoptic assessment is designed to require the candidate to make use of their knowledge, understanding and skills they have built up over the course of their learning to tackle problems/tasks/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, skills, materials, and approaches to take to provide the evidence specified by 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 Objectives 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 should not be entered for assessment without being clear of the importance of working safely, and practice of doing so. The tutor must immediately stop an assessment if a candidate works unsafely. At the discretion of the tutor, depending on the severity of the incident, the candidate may be given a warning. If they continue to work unsafely however, their assessment must be ended and they must retake the assessment at a later date.

Compliance with timings

The timings provided are estimates to support centre planning. They refer to assessment time, not any additional setting up the centre needs to carry out 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.

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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.

Observation evidence

Where the tutor is required to carry out observation of performance, detailed, descriptive notes must be recorded on the practical observation (PO) form provided. The centre has the flexibility to adapt the form, to suit local requirements (eg to use tablet, hand-written formats, or to ease local administration) as long as this does not change or restrict the type of evidence collected.

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 eg layout of the assessment environment,
- amount of additional support available (eg 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 eight 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 notes form part of the candidate's evidence and must describe **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 in such a way that comparisons between performances can be made. They must provide sufficient, appropriate evidence that can be used by the marker (and moderator) to mark the performance using the marking grid.

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 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 (ie taken at appropriate points in production, showing accuracy of measurements where appropriate).

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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.

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.

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***

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, eg pinboard 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 (eg screen prints, pdf files). Considerations around tracking authenticity and potential loss of material hosted on such platforms during assessment is the centre's responsibility.

Where candidates have carried out some work as a group, the contribution of each candidate must be clear. It is not appropriate to submit identical information for each candidate without some way for the marker and moderator to mark the candidates individually.

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 (across the AOs) 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 tackle practical 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, as these may be misinterpreted

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as pass, merit or distinction descriptors. Refer to the ***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 summative 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.

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

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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 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.

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 AO, 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

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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 ***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.

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

- Descriptive information and evidence of candidate performance during an observation. Although descriptions of the quality of performance should support decisions against the AOs, the notes should follow the flow of the observation, rather than attempting to assign evidence against the AOs at this point.

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Marking grid

For any category, 0 marks may be awarded where there is no evidence of achievement

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
0	**AO1 Recall of knowledge relating to the qualification LOs**	N/A: This AO is assessed through the theory test.		
25	**AO2 Understanding of concepts theories and processes relating to the LOs** • Does the candidate make connections and show causal links and explain why? • How well theories and concepts are applied to new situations/the assignment? • How well chosen are exemplars – how well do they illustrate the concept?	**(1-5 marks)** **Some evidence of being able to give explanations of concepts and theories. Explanations appear to be recalled, simplistic or incomplete.** Misunderstanding, illogical connections, guessing.	**(6-10 marks)** **Explanations are logical. Showing comprehension and generally free from misunderstanding, but may lack depth or connections are incompletely explored.** Logical, slightly disjointed, plausible.	**(11-15 marks)** **Consistently strong evidence of clear causal links in explanations generated by the candidate. Candidate uses concepts and theories confidently in explaining decisions taken and application to new situations.** Logical reasoning, thoughtful decisions, causal links, justified.
		Examples of understanding expected: Relationship between the parts in the virtual model, relationship between the physical and electrical components used in the physical model, diagrams and drawings, selection of measuring devices, parameters for testing, properties of materials and components, manufacturing processes.		
		Bottom of band: Candidate has shown a basic understanding of some key concepts. **Top of band:** Candidate has shown basic understanding of concepts from across the qualification. Some points were covered in detail.	**Bottom of band:** Candidate has shown understanding of a range of concepts from across the qualification, which were sound and often detailed. **Top of band:** Candidate has shown a broad range of understanding of concepts, making links to practice. Understanding is consistent with reasoning coherent and well explained.	**Bottom of band:** Candidate has shown in-depth and detailed understanding of concepts across the whole qualification range, showing a high degree of confidence and accuracy. **Top of band:** Candidate explanations are clear and strong links have been made between concepts and links to practice. Concepts and understanding were applied consistently and effectively with recommendations.

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%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
35	**AO3 Application of practical/ technical skills** • How practiced/fluid does hand eye coordination and dexterity seem? • How confidently does the candidate use the breadth of practical skills open to them? • How accurately/ successfully has the candidate been able to use skills/achieve practical outcomes?	**(1-7 marks)** **Some evidence of familiarity with practical skills. Some awkwardness in implementation, may show frustration out of inability rather than lack of care.** Unable to adapt, frustrated, flaws, out of tolerance, imperfect, clumsy.	**(8-14 marks)** **Generally successful application of skills, although areas of complexity may present a challenge. Skills are not yet second nature.** Somewhat successful, some inconsistencies, fairly adept/ capable.	**(15-21 marks)** **Consistently high levels of skill and/or dexterity, showing ability to successfully make adjustments to practice; able to deal successfully with complexity.** Dextrous, fluid, comes naturally, skilled, practiced.
		Examples of skills expected: Degree of accuracy, features of CAD software used effectively, manual dexterity, quality of finish, electrical and mechanical integrity, measuring, testing, health and safety.		
		Bottom of band: Candidate created outputs some of which were incomplete. May not show full range of skills to complete tasks but was able to work safely at all times. **Top of band:** Candidate demonstrated basic application of technical skills. Created outputs with limited accuracy and interrelationships. Able to obtain some data from tests and to work safely at all times.	**Bottom of band:** Candidate demonstrated application of technical skills to create required outputs which were generally accurate and some interrelationships evident. Able to obtain accurate data from tests and work safely at all times. Demonstrated manual dexterity in the use of tools and materials. **Top of band:** Candidate demonstrated application of technical skills when completing tasks with some inconsistency. Outputs were generally accurate and there was a clear relationship between them. Obtained some valid, reliable and accurate data. Technology and software were used effectively. Able to work safely at all times. Demonstrated manual dexterity in the use of tools and materials and outputs were functional.	**Bottom of band:** Candidate demonstrated consistent application of technical skills. Outputs were accurate, functional and finished to a high standard with clear relationships between them. Obtained valid, reliable and accurate data through appropriate methodologies. Technology and software were used effectively. Showed a high degree of manual dexterity in the use of tools and materials. Able to work safely at all times. **Top of band:** Candidate demonstrated consistent, confident application of technical skills. Outputs were accurate, functional and finished to a professional standard with clear relationships between them. There was effective use of technology and advanced software features. Obtained valid, reliable and accurate data through appropriate methodologies. Showed a high a high degree of manual dexterity in the use of tools and materials. Able to work safely at all times.

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<table>
<tr><th>%</th><th>Assessment Objective</th><th>Band 1 descriptor
Poor to limited</th><th>Band 2 descriptor
Fair to good</th><th>Band 3 descriptor
Strong to excellent</th></tr>
<tr><td rowspan="4">25</td><td rowspan="4">AO4 Bringing it all together - coherence of the whole subject
Does the candidate draw from the breadth of their knowledge and skills?
Does the candidate remember to reflect on theory when solving practical problems?
How well can the candidate work out solutions to new contexts/ problems on their own?</td><td>(1-5 marks)
Some evidence of consideration of theory when attempting tasks. Tends to attend to single aspects at a time without considering implication of contextual information.
Some random trial and error, new situations are challenging, expects guidance, narrow. May need prompting.</td><td>(6-10 marks)
Shows good application of theory to practice and new context, some inconsistencies.
Remembers to apply theory, somewhat successful at achieving fitness for purpose. Some consolidation of theory and practice.</td><td>(11-15 marks)
Strong evidence of thorough consideration of the context and use of theory and skills to achieve fitness for purpose.
Purposeful experimentation, plausible ideas, guided by theory and experience, fit for purpose, integrated, uses whole toolkit of theory and skills.</td></tr>
<tr><td colspan="3">Examples of bringing it all together: Applying knowledge and understanding across all tasks, justifying recommendations/approaches taken, understanding of electrical and physical components in virtual modelling, representation of features using virtual modelling, interpreting drawings and diagrams to produce physical prototypes, application of understanding of measurement to testing of manufactured and assembled parts, application of understanding of material properties and manufacturing processes to the development from a prototype.</td></tr>
<tr><td>Bottom of band:
Candidate presented some evidence of using their knowledge, understanding and skills to make straightforward links between limited topics across the qualification.

Top of band:
Candidate showed evidence of using their knowledge, understanding and skills to make key links between limited topics across the qualification.</td><td>Bottom of band:
Candidate consistently brought together their knowledge, understanding and skills when developing the prototype. Key links were made between a range of topics from across the qualification.

Top of band:
Candidate used a range of knowledge, understanding and skills from across the qualification when developing and evaluating the prototype. Integration of knowledge, understanding and skills informs development of prototype to commercial manufacture.</td><td>Bottom of band:
Candidates used a wide range of knowledge, understanding and skills from across the qualification when developing and evaluating the prototype. Integration of knowledge, understanding and skills informs recommendations for development of prototype to commercial manufacture.

Top of band:
Candidate used a wide range of knowledge, understanding and skills from across the qualification to develop and evaluate the prototype. Integration of knowledge, understanding and skills informed justified recommendations for development of prototype to commercial manufacture.</td></tr>
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PAST ASSIGNMENT

<table>
<tr><th>%</th><th>Assessment Objective</th><th>Band 1 descriptor
Poor to limited</th><th>Band 2 descriptor
Fair to good</th><th>Band 3 descriptor
Strong to excellent</th></tr>
<tr><td rowspan="3">15</td><td rowspan="3">AO5 Attending to detail/ perfecting
Does the candidate routinely check on quality, finish etc and attend to imperfections/ omissions
How much is accuracy a result of persistent care and attention (eg measure twice cut once)?
Would you describe the candidate as a perfectionist and wholly engaged in the subject?</td><td>(1-3 marks)
Easily distracted or lack of checking. Insufficiently concerned by poor result; little attempt to improve. Gives up too early; focus may be on completion rather than quality of outcome.
Careless, imprecise, flawed, uncaring, unfocussed, unobservant, unmotivated.</td><td>(4-6 marks)
Aims for satisfactory result but may not persist beyond this. Uses feedback methods but perhaps not fully or consistently.
Variable/intermittent attention, reasonably conscientious, some imperfections, unremarkable.</td><td>(7-9 marks)
Alert, focussed on task. Attentive and persistently pursuing excellence. Using feedback to identify problems for correction.
Noticing, checking, persistent, perfecting, refining, accurate, focus on quality, precision, refinement, faultless, meticulous.</td></tr>
<tr><td colspan="3">Examples of attending to detail: Meeting specific requirements of the task, attention to detail when completing drawings and modelling (accuracy, neatness, annotation, orientation of components, quality of fit and finish).</td></tr>
<tr><td>Bottom of band:
Candidate showed very limited attention to detail. Evidence provided showed many inaccuracies or gaps in assessment tasks.

Top of band:
Candidate showed limited attention to detail. Evidence provided showed inaccuracies or gaps in assessment tasks.</td><td>Bottom of band:
Candidate showed fairly good levels of attention to detail at most stages. Evidence provided was generally accurate and related to specific tasks.

Top of band:
Candidate showed very good levels of attention to detail at most stages. Evidence provided was generally accurate and related to specific tasks.</td><td>Bottom of band:
Candidate was highly focused on the tasks, showing high levels of care and attention to detail at most stages. Minimal errors were evident.

Top of band:
Candidate was highly focused on the tasks, showing high levels of care and attention to detail at all stages. No errors were evident.</td></tr>
</table>

PAST ASSIGNMENT