T-LEVELS | IfATE Institute for Apprenticeships and Technical Education

T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing

Employer-Set Project (8730-033)

Marking Grids Autumn 2024

City & Guilds | eal

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Version control

Version	Updates made
V1.0	Version used for marking.

General marking approach

The following process details at high level the steps that will be undertaken by the external markers following the submission of candidate's submitted evidence.

Candidate evidence includes work produced by the candidate such as notes, reports, plans or drawings. As well as other generated evidence which demonstrates the candidate's performance such as the video of a presentation or notes of the Q&A session following the presentation. Only certain pieces of evidence should be considered for certain marking grids. The evidence which should be considered for a marking grid will be clearly outlined in the 'Guidance to markers' section.

Process

- Marker reviews the administrative paperwork for the candidate which includes;
    - Evidence checklist
        - **Has this form been completed fully?**
        - **Does it highlight any evidence which has not been uploaded?**
        - **Does the checklist align to the evidence available in the system?** – if no, make a note of this, mark the tasks which do have all evidence, Save, then flag as an Error making clear what is missing.
    - Declaration of Authenticity
        - **Has this been signed by the candidate and the provider?** – if no, make a note of this, mark the evidence, Save, then flag as an Error making clear that the DoA is not signed.
        - **Does it detail any support the candidate was given during the assessment which should be taken into consideration when marking?** – if yes, flag to supervisor and your assessment contact.

- Marker attempts to open/play all evidence files and checks the following:
    - Does the evidence contain a header form where the candidate details align to the candidate details in the marking platform?
    - Does all the evidence open/play?
    - Do the video files have clear sound?
      – if no, make a note of this, mark the tasks where evidence is available, Save, then flag as an Error making clear what is wrong.

- Marker begins 'marking' starting with the first marking grid and working through them in order.

- Marker must consider what the marking grid is trying to assess by:
    - noting what candidate evidence must be taken into consideration for this marking grid.
    - reading through the indicative content and familiarising themselves with the 'lens' they should be evaluating the candidates work through in relation to the prescribed assessment objective(s) the marking grid is assessing.
    - reading the band descriptors, noting how the descriptors differentiates performance between bands.

- Once familiar with the requirements of the marking grid the marker will:
    - scan/read the candidate's evidence that is relevant to that marking grid.

- make an initial judgement on the level of performance the candidate has demonstrated taking all the relevant evidence for that grid into consideration.
- allocate the marking band the candidate's performance best aligns to.

- Once the initial assessment is made, the marker needs to determine how well aligned the candidate's performance is to the band descriptor. The marker will:
  - review the relevant candidate evidence against the initially allocated band descriptor in more detail.
  - determine how well the candidate aligns to the band by placing them into one of the four levels of alignment detailed below:
    A. The candidate is **securely** in the band (i.e. meeting the band descriptor(s) fully).
    B. The candidate is **largely** meeting the band with most of the descriptor(s) met, but some may not be fully met.
    C. The candidate is **partially** meeting the band with some of the descriptor(s) met, but some may not be met.
    D. The candidate **does not align** to the descriptor(s) within the band.

- To help determine how well the candidate aligns to the band, the marker will consider the four levels of alignment in detail, taking into account:

A. If the candidate's performance is **securely** in the band, (i.e. all characteristics described by the band descriptor are seen or it strongly meets the level of performance described by the descriptor holistically.) To confirm the correct band has been assigned the marker will also check the descriptor for the band above:
   - if evidence clearly shows some of the characteristics of the higher band, the marker will select a suitable mark at the bottom of that band.
   - if not showing characteristics of the higher band, the marker will revert to the original band, selecting a mark at the higher end of that mark range.

B. If the candidate's performance is **largely** meeting the band. To confirm the correct band has been assigned the marker will:
   - check the descriptor for the band above
   - check the descriptor for the band below

   If there are only a few concerns with the initially allocated band, and the performance is not showing characteristics aligning with the higher or lower bands, the appropriate mark is likely to be in the middle range.

C. If the candidate's performance is **partially** meeting the band. To confirm the correct band has been assigned the marker will:
   - check the descriptor of the level below.
   - decide on a suitable mark either:
     - at the bottom of the initial band as some characteristics shown, or
     - at the top of the lower band if it better describes the quality of performance being shown.

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

- Once the appropriate band has been identified, where the band covers a range of marks, the marker will determine a final mark awarded from that band. Marks are evenly distributed across the bands.
    - if the quality of candidate performance fully aligns with the descriptor, the marker will assign a high mark within the band.
    - if the quality of the response partially aligns with the performance described by the descriptor, the marker will assign a low to medium mark within the band.

  To support this decision, the marker will consider the quality of a range of similar responses (e.g. responses reviewed during standardisation, or experience as they move through candidates scripts) and choose a mark that would give an appropriate ranking amongst those responses in relation to the full range of marks available in each band.

Follow-through errors

Should a candidate make an error or display a weakness in one task that is further compounded through the inter-dependent nature of the tasks and carry through that error, the marker should penalise the candidate only once.

Evidence should be considered within the constraints of the relevant marking grid, focusing on the knowledge and skills to be demonstrated as outlined in the indicative content. For example, if the candidate does not research suitable options in Task 1, when they get to Task 4 where the solution is presented – the marker should focus on looking at how well the candidate presents the solution they are proposing, i.e. it is the presentation and communication skills that hold the main relevance in this task, rather than further penalising the candidate for a less than optimal research and proposal from the initial Task 1.

Candidates can also use evaluation within later task responses to address issues they have identified.

Worked Example (1)

Grid 1 AOs: AO1, AO2a, AO3, Relevant Evidence: research notes, list of references/sources

Task 1	Band 1			Band 2			Band 3		
	1	2	3	4	5	6	7	8	9

Research

(Planning, core knowledge, selecting techniques and resource)

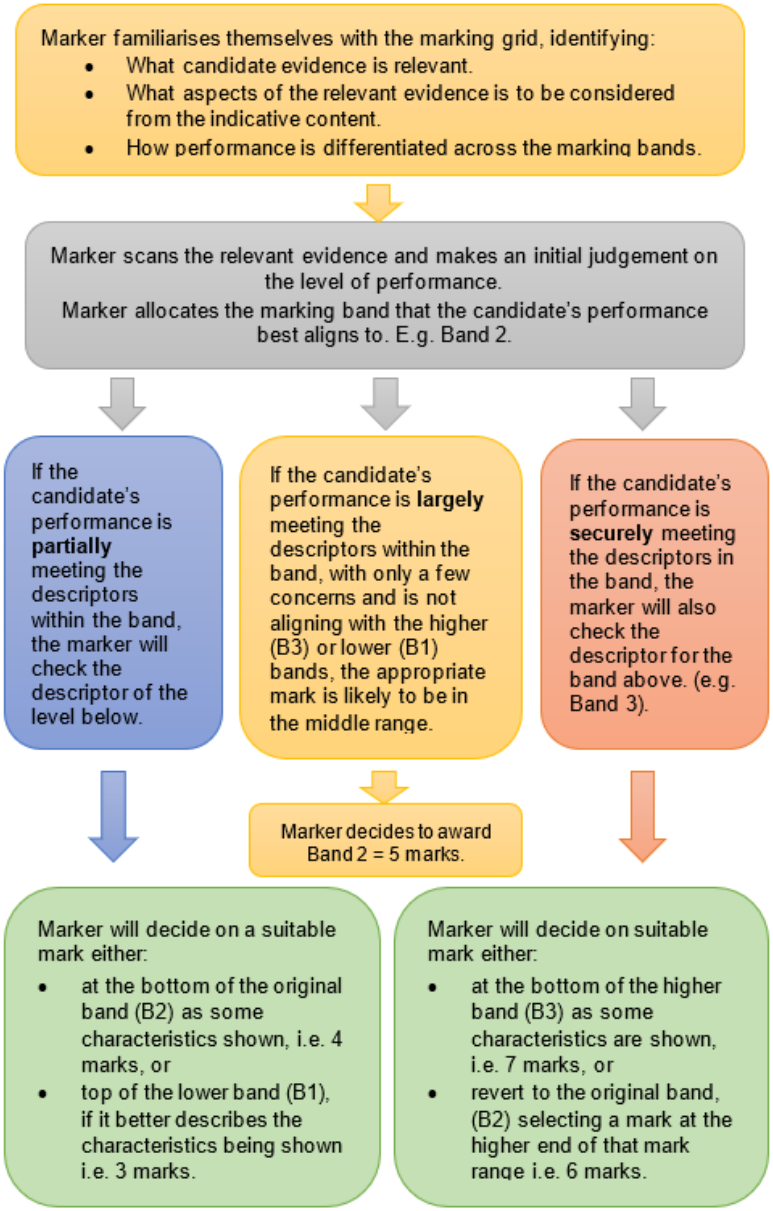
Indicative Content – Sample version

AO1 – The candidate has planned their research. This may be evidenced in the coherence of structure of the research notes, and in the sources/resources listed. The consistency of coverage of research requirements as detailed in the technical brief in relation to required aspects of the task.

AO2a – Evidence of the candidate researching required elements and refining their approach to the problem and considering the jig requirements meet the specification given. Candidates provided details on research of materials, standard parts and relevant specifications. Research on responses to similar problems, similar solutions or ones that relate the provided brief. Detail of health and safety considerations and risk assessment requirements.

AO3 – The candidate's selected research techniques and resources to meet the brief and their relevance. The matching of resources and information to the various parts of the research requirement – use of specifications, diagrams, downloads etc to match the determinations that must be made.

Band 1			Band 2			Band 3		
1	2	3	4	5	6	7	8	9
Some evidence of a planned approach to research. (AO1)			Approach to research and collation of information shows planning and consistency. (AO1)			Brief requirements are considered consistently throughout the research and information collation – clear evidence of methodical and thorough approach to research and information gathering. (AO1)		
Some elements of core knowledge referenced but focus may be imbalanced and more focused on one area than another. (AO2a)			Core knowledge applied in most areas of the brief requirements. (AO2a)			Core knowledge applied in all areas of the brief requirements. (AO2a)		
Research techniques and resources clear as part of evidence submission. (AO3)			Evidence of a range of techniques and resources used and referenced, with different source types considered. (AO3)			Evidence of comprehensive research techniques, use of resources, and full range of sources. All sources fully detailed and presented fully and consistently. (AO3)		

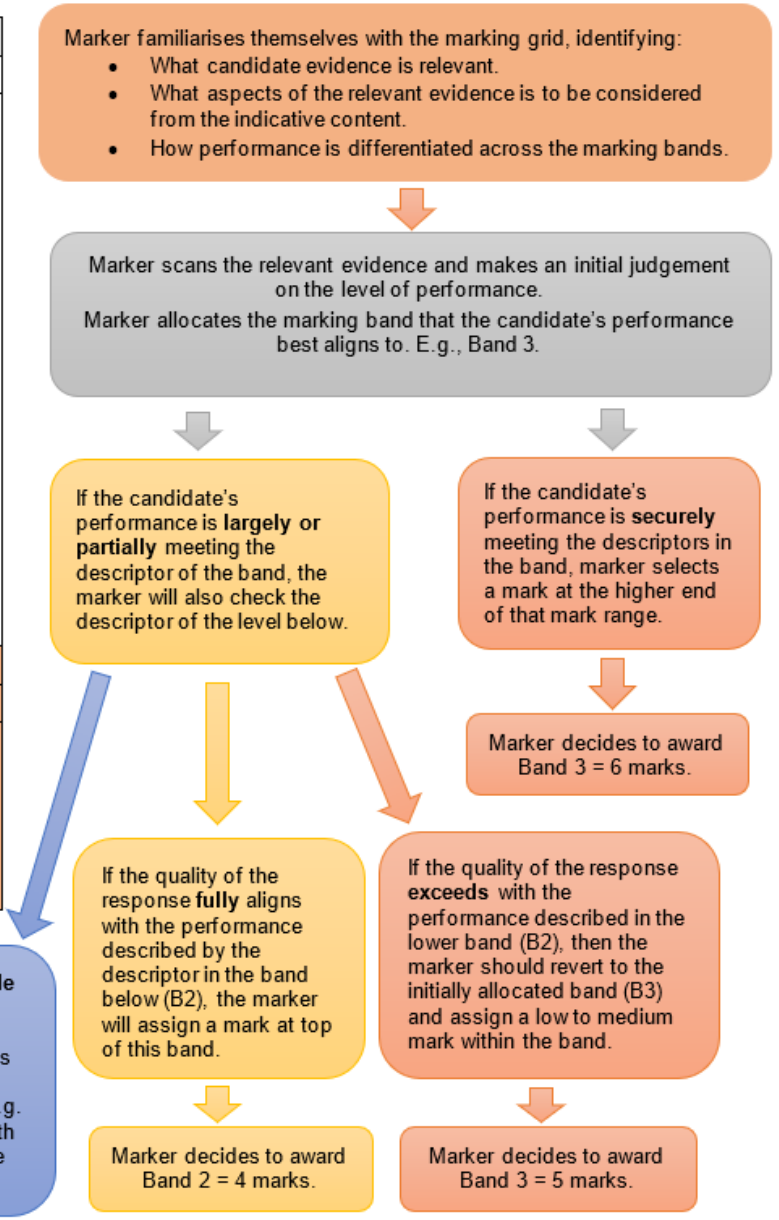


Worked Example (2)

Grid 2 AOs: AO2b, Relevant Evidence: research notes, list of references/sources

Task 1	Band 1		Band 2		Band 3	
	1	2	3	4	5	6
Research (Core skills)	**Indicative Content – Sample version** **AO2b – Application of core skills** Core skills being assessed: • Analysing and interpreting o the candidate's demonstration of judgement and reasoning in relation to the review of the requirements from the brief and the content within the report o the candidate's effectiveness of communication of the research conducted to meet the requirements outlined in the brief – clarity and conciseness of response o expression of ideas in associated research analysis and level to which they are supported e.g. through inclusion of images and level of referencing to sources. • Planning and preparation o evidence of planning in the research notes in terms of consistency and balance of response (time spent consistently on elements).					

Band 1		Band 2		Band 3	
1	2	3	4	5	6
Some basic elements of core skills drawn on and evidenced within task response - limited use of skills in relation to brief requirements. (AO2b)		A range of core skills applied and evidenced consistently in task response in relation to different elements of the project brief. (AO2b)		Core skills applied consistently and comprehensively throughout task completion with - full range of core skills evidenced. (AO2b)	



Use of ChatGPT (or any other Artificial Intelligence)

What isn't permitted

AI misuse is where a student uses an AI tool in an assessment or fails to appropriately reference it in an assessment where internet use is permitted. Examples include the following:

- Failing to reference use of AI tools when they have been used as a source of information;
- Incomplete or poor referencing of AI tools;
- Copying sections of AI-generated content so that the work is no longer the student's own;
- Copying whole responses of AI-generated content;
- Submitting work with intentionally incomplete or misleading references or bibliographies.

AI misuse constitutes malpractice as defined in the JCQ Suspected Malpractice: Policies and Procedures (**https://www.jcq.org.uk/exams-office/malpractice/**). We encourage markers to read and reference this guidance if they feel the need to flag potential malpractice related to ChatGPT. The malpractice sanctions available for the offences of 'making a false declaration of authenticity' and 'plagiarism' include disqualification and debarment from taking qualifications for a number of years.

What is permitted

AI may have been used by the candidate as a source within their research task (Task 1 only). Where students use AI, they must acknowledge its use and show clearly how they have used it. However, how candidates have decided to use it will impact on the overall mark they are allocated.

The use of AI as a research technique will impact Grid 1. Below details how they will be impacted and what needs to be considered:

<u>Grid 1</u>

- AO1: Planning (Approach to research and information gathering)
  - Has the candidate validated the information given to them by the AI solution?
- AO2a: Application of Core Knowledge
  - Does the candidate's evidence demonstrate how they have taken the research provided by the AI and used this, alongside their own knowledge in response to the brief?
- AO3: Selecting Techniques and Resources
  - Has the candidate considered other approaches to research, or have they just deferred to AI?
  - Is the use of AI appropriate referenced?

Worked Example

Candidate A has referenced ChatGPT along with one other web-address, which has barely been used or referred to within their evidence. They have considered the majority of the prompt given in the brief but not all.

The way the evidence is presented, it's difficult to determine what information is taken directly from the source and what is the learner's interpretation of this information. On this occasion, the learner is likely to be contained to marks within Band 1 because:

- There is some evidence that they carried out some planning – they've considered the majority of the prompts within the brief.
- It's difficult to determine how the candidate has interpreted the information from the research and applied their own knowledge within the evidence given the way it's presented.
- They have used ChatGPT as a primary source and have only followed up with one other website, and the reference to this is limited, therefore, minimal techniques have been used. To add to this the candidate has not made it clear within their reference what is the output from ChatGPT and what is their own work.

What to do if you believe you've identified potential misuse of AI

Any concerns around AI misuse must be treated as potential malpractice. You must flag this by putting the candidate on HOLD in myMarkis. Further guidance relating to this can be found in Section 12 (Page 6) of the 'myMarkis Checklist for Marking' document.

What to do if you're unsure

Your marking supervisor is there to support you through the process, as are the City & Guilds Assessment team. If you have a specific candidate you'd like to talk through in more detail please reach out to them.

Assessment objectives

The Employer-Set Project is assessed against five assessment objectives. The assessment objectives are mapped against each task within the marking grids:

AO Ref	Assessment Objective
AO1	Plan their approach to meeting the project brief
AO2	Apply core knowledge and skills as appropriate
• AO2a	○ core knowledge
• AO2b	○ core skills i) **Analysing and interpreting** – Evaluate and confirm the brief with reference to context, objectives and constraints (e.g. requirements, resources, precedents, technical issues, costs, health and safety, regulations, possibilities) ii) **Planning and preparation** – Propose and plan key activities, stages, methods, processes, techniques, documentation, resources (including types of tools and equipment) and risk assessments iii) **Developing responses** – Propose maintenance, installation and repair processes for achieving specific objectives and quality outcomes, using relevant techniques, and technology, within limits of own authority iv) **Evaluating and quality assuring** – Investigate components and systems, to gather and evaluate relevant evidence and data, and to confirm the suitability of processes, actions and outcomes (including quality control and quality assurance activities) v) **Communication and presentation –** Record, report, communicate and present plans, proposals, processes, issues, risks and outcomes to both technical and non-technical audiences, across a range of suitable formats and media (e.g. diagrams; physical and digital records, presentations).
AO3	Select relevant techniques and resources to meet the brief
AO4	Use maths, English and digital skills as appropriate
• AO4a	○ Maths
• AO4b	○ English
• AO4c	○ digital
AO5	Realise a project outcome and review how well the outcome meets the brief
• AO5a	○ realise a project outcome – was the right outcome achieved
• AO5b	○ review how well the outcome meets the brief, how well was the brief met, the quality of the outcome in relation to the brief

Employer-Set Project mark distribution

This table illustrates how the 90 marks for the Employer-Set Project are distributed against the tasks and mapped to each assessment objective. These have been set by subject matter experts and employers and will support the comparability between versions of the Employer-Set Project over time.

Tasks	AO1	AO2a	AO2b	AO3	AO5a	AO5b	Total	AO4a	AO4b	AO4c
1. Research	3	3	6	3	0	0	15	3	3	3
2. Report	3	6	6	3	3	3	24			
3. Plan	3	6	6	3	0	0	18			
4. Present	3	6	6	3	3	3	24			
Total	**12**	**21**	**24**	**12**	**6**	**6**	**81**	**9**		**90**
AO marks	12	45		12	12		-	9		90
AO %	13.3%	50%		13.3%	13.3%		-	10%		100%

NB - AO2 collectively must be at least 50% (i.e. 45 marks)

1. Research

<table>
<tr><th colspan="4">Grid 1: AO1, AO2a, AO3 Research (Planning, core knowledge, selecting techniques and resource)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
• Research notes which should include a list of sources/references</td></tr>
<tr><td rowspan="2">Indicative Content</td><td>AO1 – Plan their approach to meeting the project brief
The candidate's:
• approach to investigating potential solutions.
• structure of the research notes.
• analysis of the system specification and the issues outlined in the task, and how consistent/balanced the consideration of each of these are in comparison to each other, specifically:
○ minimum of 2 different sensors for each of the following types of sensors:
▪ passive sensors
▪ proximity sensors
▪ laser.
○ tolerances, set points, operating parameters and calibration requirements for the sensors
○ estimated cost of all services covered in the brief
○ the preventative and reactive maintenance requirements of sensors
○ any equipment, materials or resources needed to carry out the reactive maintenance and their cost
○ health and safety regulations and considerations that impact on the system installation and testing
○ laws and regulations that apply to the installation and maintenance of the system on site.
○ potential risks and hazards with the removal and installation of the sensors.
• clarity of references to sources of guidance and industry standards.</td><td>AOs
AO1
AO2a
AO3</td><td>Total marks available
9</td></tr>
</table>

	AO2a – Apply core knowledge
	The candidate's:
	• confidence and appropriateness of use of terminology.
	• interpretation of the information found within research and the accuracy of how this has been applied into addressing the demands of the research task.
	• accuracy of the contents of their research:
	  ○ evidence of the candidate narrowing and refining the component specification given
	  ○ candidates provided details on research of technology to meet the specification supplied by the client - to include devices selected, specifications of devices, pricing, manufacturers and suppliers and installation, commissioning/testing requirements
	  ○ research on current installations within similar environments, installed and commissioned, considering advantages and limitations of the current installations
	  ○ detail of health and safety considerations related to the environment, system and equipment.
	• evaluation of different maintenance options and how this links back to the specifics of the specification and brief from client.
	
	AO3 – Select relevant techniques and resources to meet the brief
	The candidate's:
	• range of techniques/sources used to carry out research (such as the number of websites and the types of websites the candidate has used).
	• consideration of the relevance and reliability of the sources used during research.
	• ability to apply the findings from the research to address the demands of the brief.
	• range of potential solutions/options.
	• clarity of solutions, and how closely, they are derived from brief guidance and researched information.
	• references to sources of from research of guidance and/or industry standards.		

	• use of pictures, drawings, schematics, specifications, and sketches alongside prose to communicate their initial design concepts.		

Marking descriptors – All versions

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		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Some evidence of a planned approach to research. (AO1)			Approach to research and collation of information shows planning and consistency. (AO1)			Requirements of the brief are considered consistently throughout the research and information collation – clear evidence of methodical and thorough approach to research and information gathering. (AO1)		
Some elements of core knowledge referenced but focus may be imbalanced and more focused on one area than another. (AO2a)			Core knowledge applied in most areas of the brief requirements for example in relation to technology, regulations and development of initial ideas. (AO2a)			Core knowledge applied in all areas of the brief requirements including - technology, regulation etc, and idea summation. (AO2a)		
Research techniques and resources clear as part of evidence submission. (AO3)			Evidence of a range of techniques and resources used and referenced, with different source types considered. (AO3)			Evidence of comprehensive research techniques, use of resources, and full range of sources. All sources fully detailed and presented fully and consistently. (AO3)		

Grid 2: AO2b Research (Core Skills)			
Guidance for markers	**Only** the following evidence must be used to assess performance against this marking grid: • **Research notes** which should include a list of **sources/references**		
Indicative Content	**AO2b – Application of core skills** Core skills being assessed: • Analysing and interpreting ○ the candidate's demonstration of judgement and reasoning in relation to the review of the requirements from the brief and the content within the report ○ the candidate's effectiveness of communication of requirements as outlined in the brief – clarity and conciseness of response ○ expression of ideas in written evaluation and level to which they are supported e.g. through inclusion of images and level of referencing to sources • Planning and preparation ○ evidence of planning in the research notes in terms of consistency and balance of response (time spent consistently on elements).	**AOs** **AO2b**	**Total marks available** **6**

Marking descriptors – All versions

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	
1	**2**	**3**	**4**	**5**	**6**
Some basic elements of core skills drawn on and evidenced within task response - limited use of skills in relation to brief requirements. (AO2b)		A range of core skills applied and evidenced consistently in task response in relation to different elements of project brief. (AO2b)		Core skills applied consistently and comprehensively throughout task completion with - full range of core skills evidenced. (AO2b)	

2. Report

<table>
<tr><th colspan="4">Grid 3: AO1, AO3 Report (Planned approach, selecting techniques)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
Written report which includes the preferred maintenance schedule
Engineering Drawing(s)</td></tr>
<tr><td rowspan="2">Indicative Content</td><td rowspan="2">AO1 – Plan their approach to meeting the project brief
The candidate’s
level of detail, annotations and accuracy in the drawing(s).
adherence to industry/best practice when presenting the schedule (i.e. it’s layout).
consistency and balance of coverage of points including the level of detail provided of any assumptions related to the sensors as detailed in the task specifically:
how clearly the candidate has planned and fitted the different elements of the client brief together to produce a believable and realistic response.
the balance to the level/amount of detail included in report/drawings and content/detail and the use of layout, space etc in the submitted evidence.
planning and fitting the different elements of the brief together to produce a correct response.
level of detail provided of any assumptions related to the brief.
AO3 – Select relevant techniques and resources to meet the brief
The candidate’s
layout, use of space and conformance to industry standard with drawing
drawing skill; it’s accuracy, attention to detail and clarity, use of symbols, abbreviations, and annotations clearly and in line with industry standards.</td><td>AOs</td><td>Total marks available</td></tr>
<tr><td>AO1

AO3</td><td>6</td></tr>
</table>

Marking descriptors – All versions 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**	
1	**2**	**3**	**4**	**5**	**6**
Some evidence of a planned approach to task, response may lack detail and drawing information. (AO1) Some relevant techniques used in the preparation and presentation of drawings and associated information. (AO3)		Approach to report and drawings is planned, organised and complete. (AO1) Relevant techniques used throughout the preparation and presentation of drawings and associated information. (AO3)		Approach to report and drawing is fully comprehensive and in line with standard industry practices/best practice. (AO1) Preparation and presentation of drawings and associated information is fully in line with industry conventions showing the use of all correct techniques. (AO3)	

<table>
<tr><th colspan="4">Grid 4: AO2a Report (Core Knowledge)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
Written report which includes the preferred maintenance schedule
Engineering Drawing(s)</td></tr>
<tr><td rowspan="2">Indicative Content</td><td>AO2a – Apply core knowledge

The candidate’s
accuracy of using of technical terminology.
technical accuracy and soundness of their proposed solution for the maintenance schedule:
how it aligns to industry guidance
have the potential to be implemented and their technical sense and level of consideration of safety.
contextualisation of the removal and installation of the sensors and preventive maintenance to the specific needs of the client and specification outlined in the project brief. This should include:
removal and installation requirements. Including the access to the site, installing the sensors safely without inconvenience to the jewellery shop
calculations of the resistance of each of the 3 preferred sensors
advantages and limitations of preferred sensors selected
technical and commercial justification for preferred sensors
how your preferred sensors meet the brief requirements
how your preferred sensors enable preventative maintenance schedules
relevant health and safety regulations, and risk assessments.
connection and link between knowledge and understanding of the task requirements.
technical accuracy of the annotated installation drawing for the sensors, the layout, the inclusion, and use of relevant information such as symbols, conforming to recognised industrial standards.</td><td>AOs

AO2a</td><td>Total marks available

6</td></tr>
<tr><td colspan="3">Marking descriptors – All versions

Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
</table>

Band 1 descriptor		Band 2 descriptor		Band 3 descriptor	
1	**2**	**3**	**4**	**5**	**6**
Some elements of core knowledge drawn on and evidenced - limited comprehension of knowledge in relation to brief requirements e.g., brief requirements omitted indicating lack of knowledge of that area. (AO2a) Some links to the application of core knowledge to support judgements, but connections are not always clear and accurate. (AO2a)		Knowledge from across the core applied and evident in relation to different elements of project brief. (AO2a) Links to the application of core knowledge to justify and support judgements, but with some gaps or inaccuracies. Concepts explained/ referenced clearly and correctly. (AO2a)		Core knowledge applied consistently throughout response with minimal technical inaccuracies. (AO2a) Connections between elements of core knowledge exploited to strengthen arguments and demonstrate understanding. (AO2a)	

Grid 5: AO2b Report (Core skills)		
Only the following evidence must be used to assess performance against this marking grid: • **Written report** which includes the preferred maintenance schedule • **Engineering Drawing(s)**		

AO2b – Application of core skills
Core skills being assessed:
• Analysing and interpreting
  ○ judgement and reasoning in relation to the installation requirements from the brief and the content within the report.
  ○ interpretation of the requirements set out in the brief and the specification and consideration of how this impacts the schedule (i.e. busy city-based jewellery shop)
• Planning and preparation
  ○ how well the report has been planned out to respond to the demands of the task
  ○ inclusion of the removal and installation requirements within the report
	AOs
	
	AO2b
		Total marks available
		
		6

○ the inclusion of drawings to support written content. • Developing responses ○ incorporation of the required aspects in the response – use of logical and synergised approach to requirements ○ evidence of proposed ideas developing to show why they selected the sensors from the given list of types of sensors. • Communication and presentation ○ effectiveness of communication of refined technical requirements for the system- clarity and conciseness of delivery ○ expression of ideas in a written report and drawing.		

Marking descriptors – All versions

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**	
1	**2**	**3**	**4**	**5**	**6**
Some elements of core skills drawn on and evidenced within task response - limited use of skills in relation to brief requirements. (AO2b) Response has limited logic and shows superficial coherence between different aspects of the brief. (AO2b)		A range of core skills applied and evident in task response in relation to different elements of project brief. (AO2b) Response is logical and shows some coherence between different aspects of the brief. (AO2b)		Core skills applied consistently throughout task completion - full range of core skills evidenced. (AO2b) Response is logical and demonstrates detailed coherence between different aspects of the brief. (AO2b)	

<table>
<tr><th colspan="6">Grid 6: AO5a, AO5b Report (Realise outcome, review outcome)</th></tr>
<tr><td>Guidance for markers</td><td colspan="5">Only the following evidence must be used to assess performance against this marking grid:
• Written report which includes the preferred maintenance schedule
• Engineering Drawing(s)</td></tr>
<tr><td rowspan="2">Indicative Content</td><td colspan="3">AO5a - realise a project outcome – was the right outcome achieved
The candidate’s consideration of
• the effectiveness of the solution in relation to the context given in the project brief
• the extent to which the evidence addresses the key requirements of the task
• how ‘believable’ the solution is to meet client requirements
• the feasibility of the schedule presented, and the levels of amendments required.

AO5b – review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief
The candidate’s
• justification on how task elements have been met in the written report
• evaluation of how the 3 preferred sensors meets the brief requirements
• evaluation of how the preferred installation of the sensors enables preventative maintenance systems/reactive maintenance programmes.</td><td>AOs

AO5a

AO5b</td><td>Total marks available

6</td></tr>
<tr><td colspan="6">Marking descriptors – All versions

Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
<tr><td colspan="2">Band 1 descriptor</td><td colspan="2">Band 2 descriptor</td><td colspan="2">Band 3 descriptor</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td colspan="2">Response partially addresses some of the task requirements. (AO5a)</td><td colspan="2">Response addresses most aspects of the task requirements. (AO5a)</td><td colspan="2">Response fully addresses all aspects of all elements of the task requirements. (AO5a)</td></tr>
</table>

Justification and review do not clearly address how well the task outcome met the brief and lacks clarity and reasoning in places. (AO5b)	Justification and review address how well the task outcome was achieved. (AO5b)	Justification and review are comprehensive and specifically addresses how well the task outcome was achieved. (AO5b)

3. Plan

<table>
<tr><th colspan="4">Grid 7: AO1, AO3 Plan (Planned approach, selecting techniques)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
A planning chart including the purchasing of the equipment and components, the order of installation and setting up of components, main equipment and tools required for the installation, commissioning/testing and calibrations on site, duration and sequence of the project including a critical path analysis.
A supporting statement including job roles and responsibilities, health and safety considerations, tools, equipment and resources, cost considerations and implications, environmental factors.</td></tr>
<tr><td>Indicative Content</td><td>AO1 – Plan their approach to meeting the project brief.
The candidate’s
planning of activities, the duration given to each activity and the sequence presented
adherence to the constraints set within the brief (Installation cannot take place within the shop opening hours, budget of £5,000)
achievability and realism of their plan
inclusions of relevant information to facilitate delivery of the plan
consideration of dependences between the different activities, clarity and accuracy of connections, identification of critical path analysis.
AO3 – Select relevant techniques and resources to meet the brief.
The candidate’s
demonstration of judgements in the sequencing of the required servicing elements
choice of tools, equipment and resources
consideration of safe working practices within their plan.</td><td>AOs

AO1

AO3</td><td>Total marks available

6</td></tr>
<tr><td colspan="4">Marking descriptors – All versions
Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
<tr><th>Band 1 descriptor</th><th>Band 2 descriptor</th><th colspan="2">Band 3 descriptor</th></tr>
</table>

1	2	3	4	5	6
Limited approach to planning, response contains evidence of some of the required elements. (AO1) There is limited justification for the selection of resources (e.g., equipment, tools), safety considerations etc. The choices made are not always the most effective or appropriate for the project brief. (AO3)		Response contains required elements in logical order with consideration of those involved and layout. (AO1) Sequencing of activity and/or resources (e.g. equipment, tools), methods, and materials selected from those available to respond to the brief requirements with justification. The choices made are mostly accurate and appropriate for the project brief. (AO3)		Logical and clear approach used with evidence of a detailed plan and methodology in line with standard engineering industry practices / best practice and effective prioritisation. (AO1) There is a detailed and justified approach to the proposed resources (e.g. equipment, tools), sequence of activities, safety considerations etc. The choices made are accurate and appropriate for the project brief. (AO3)	

<table>
<tr><th colspan="7">Grid 8: AO2a Plan (Core Knowledge)</th></tr>
<tr><td>Guidance for markers</td><td colspan="6">Only the following evidence must be used to assess performance against this marking grid:
A planning chart including e purchasing of the equipment and components, the order of installation and setting up of components, main equipment and tools required for the installation, commissioning/testing and calibrations on site, duration and sequence of the project including a critical path analysis.
A supporting statement including job roles and responsibilities, health and safety considerations, tools, equipment and resources, cost considerations and implications, environmental factors.</td></tr>
<tr><td rowspan="2">Indicative Content</td><td colspan="4">AO2a – Apply core knowledge
The candidate’s
use of technical terminology with the supporting statement, its consistency and appropriateness for the intended audience
knowledge of costs and purchasing considerations, potential sources and supply chain considerations
knowledge of different type formats for planning charts to display the plan i.e. use of a Gantt chart.
consideration of health and safety and environmental considerations linked to the use of tools, live systems etc.
inclusion of detailed required elements testing/commissioning, and calibration time and sequence linked or allocated to job role
consideration and selection of equipment
calculations of cost in relation to the budget and timescale
consideration of tolerances and specifications
collation of appropriate activities and the logic in the sequence in which they are presented.</td><td>AOs</td><td>Total marks available</td></tr>
<tr><td>AO2a</td><td>6</td></tr>
<tr><td colspan="7">Marking descriptors – All versions
Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
<tr><td colspan="2">Band 1 descriptor</td><td colspan="2">Band 2 descriptor</td><td colspan="2">Band 3 descriptor</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
</table>

Some elements of core knowledge referenced within plan - limited comprehension of knowledge in relation to brief requirements. (AO2a) Supporting information details some links to the application of core knowledge to support judgements, but connections are not always clear and accurate. (AO2a)	Elements of core knowledge directly highlighted in brief referenced within plan – knowledge evidenced may have gaps or show some misunderstanding. (AO2a) Supporting information details links to the application of core knowledge to justify and support judgements, but with some gaps or inaccuracies. (AO2a)	Knowledge from across the core applied and evident in plan in relation to different elements of project brief. (AO2a) Connections between elements of core knowledge fully explained within the supporting information to strengthen arguments and demonstrate understanding. (AO2a)

Grid 9: AO2b Plan (Core skills)			
Guidance for markers	**Only** the following evidence must be used to assess performance against this marking grid: • **A planning chart** including e purchasing of the equipment and components, the order of installation and setting up of components, main equipment and tools required for the installation, commissioning/testing and calibrations on site, duration and sequence of the project including a critical path analysis. • **A supporting statement** including job roles and responsibilities, health and safety considerations, tools, equipment and resources, cost considerations and implications, environmental factors.		
Indicative Content	**AO2b – Application of core skills** Core skills being assessed: • Planning and preparation ○ professionalism of the presentation of the planning chart and to what extent it is conveyed using industry standard notation and features. ○ use of recognised methods of presentation for the programme (e.g., Gantt Chart) and comprehensiveness of completion (e.g., tasks, milestones, resources, and identification of critical path). • Developing responses ○ proposal of sensors removal and installation process	**AOs** **AO2b**	**Total marks available** **6**

	○ incorporation of the required aspects in the response – use of logical and synergised approach to requirements. ○ coverage of the required considerations. • Communication and presentation. ○ structure, logic and coherence of the supporting statement. ○ clarity of plan. • Evaluation and quality assurance ○ justification of the plan, to include: ▪ health and safety considerations ▪ tools, equipment and resources ▪ cost, timescale considerations and implications.		

Marking descriptors – All versions

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	
1	**2**	**3**	**4**	**5**	**6**
Some elements of each core skill applied - limited application of skills in practice in relation to brief requirements. (AO2b)		Elements of most core skills directly highlighted in brief used efficiently and consistency throughout. (AO2b)		All aspects of all core skills applied effectively throughout plan creation with clear focus on required outcomes and linking of skills to task elements is fully considered. (AO2b)	

4. Present

<table>
<tr><th colspan="4">Grid 10: AO1, AO3 Present (Planned approach, selecting techniques)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
Video recording of presentation
Presentation materials (slides, handouts, notes etc)
Presentation Q&A Record (if this cannot be heard on the video)
The presentation should cover: justification for the chosen sensors, planning of the activity, health and safety considerations, proposed costings, challenges presented by the brief and how these have been overcome, how well your proposal addresses the requirements in the brief.

Audience: manager from the train station operator with a non-technical engineering background.</td></tr>
<tr><td rowspan="2">Indicative Content</td><td>AO1 – Plan their approach to meeting the project brief
The candidate’s
logic and order of the presentation.
completeness in the coverage of points stated within the task;
justification for the 3 sensors you have chosen
planning of the activity
health and safety considerations
proposed costings
challenges presented by the brief and how these have been overcome
how well your proposal addresses the requirements of the brief.
consideration of the presentation content in terms of its audience.
AO3 – Select relevant techniques and resources to meet the brief
The candidate’s
selection and application of techniques for delivering the presentation, how appropriate and effective they are (e.g., use of slide deck, reference to notes, provision of handouts, use of other reference material).</td><td>AOs

AO1

AO3</td><td>Total marks available

6</td></tr>
</table>

	• use of positive non-verbal communication during delivery (e.g., maintaining eye contact with the audience) and the clarity of speaking/delivery, and the level of which distraction behaviour is displayed (e.g. rocking, tapping, pausing).		

Marking descriptors – All versions

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	
1	**2**	**3**	**4**	**5**	**6**
The presentation lacks structure and does not always follow a logical approach due to ineffective planning. (AO1) Technique used to deliver the presentation is sometimes effective. However technical information is not always complete and accurate. (AO3)		The presentation is structured and follows a logical approach in response to the task with evidence of planning. (AO1) Techniques used to deliver the presentation are mostly effective. The technical information provided is accurate most of the time with valid reasoning. (AO3)		The presentation is organised, structured and logical in its approach. It is clear that the presentation content has been considered in terms of its audience. (AO1) Techniques used to deliver the presentation are effective with well justified reasoning behind the information provided. Technical information is fully accurate and reasoned. (AO3)	

Grid 11: AO2a Present (Core Knowledge)			
Guidance for markers	**Only** the following evidence must be used to assess performance against this marking grid: • **Video recording** of presentation • **Presentation materials** (slides, handouts, notes etc) • **Presentation Q&A Record** (if this cannot be heard on the video) The presentation should cover: justification for the chosen sensors, planning of the activity, health and safety considerations, proposed costings, challenges presented by the brief and how these have been overcome, how well your proposal addresses the requirements in the brief. Audience: manager from the train station operator with a **non-technical** engineering background.		
Indicative Content	**AO2a – Apply core knowledge** The candidate's • judgements in the preparation of the presentation, how well they are reasoned and cover the key features of the task requirements. • interpretation and definition of the challenges posed within the brief and explanation of how these have been overcome by the proposed modifications presented. • coverage of technology, components selected with relevant and considered justifications. • application of core knowledge when responding to the requirements of the task. • confidence and accuracy when responding to question from the client (tutor/assessor) • use of technical language (with consideration of a non-technical audience)	**AOs** **AO2a**	**Total marks available** **6**

Marking descriptors – All versions 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**	
1	**2**	**3**	**4**	**5**	**6**
Engineering concepts relating to the core knowledge conveyed through the		Engineering concepts relating to the core knowledge are coherent throughout the		Engineering concepts relating to the core knowledge are coherent with clear justifications	

presentation - these may not always be accurate or be directly linked to the brief requirements. (AO2a) Terminology used may have inaccuracies and content provided may include inconsistencies and not clear to the target audience. (AO2a)	presentation to meet the requirements of the brief set. (AO2a) Terminology used is mostly accurate with minor errors. The content provided is mostly correct but does not always consider the target audience / may be imbalanced or biased (e.g., to either technical or non-technical focus). (AO2a)	on how these are applied in response to the brief requirements. (AO2a) Terminology used is accurate and error free. The content provided is clear and easily understood by the target audience, with no bias in tone / imbalance across audience type (where appropriate). (AO2a)

<table>
<tr><th colspan="5">Grid 12: AO2b Present (Core skills)</th></tr>
<tr><td>Guidance for markers</td><td colspan="4">Only the following evidence must be used to assess performance against this marking grid:
Video recording of presentation
Presentation materials (slides, handouts, notes etc)
Presentation Q&A Record (if this cannot be heard on the video)
The presentation should cover: justification for the chosen sensors, planning of the activity, health and safety considerations, proposed costings, challenges presented by the brief and how these have been overcome, how well your proposal addresses the requirements in the brief.

Audience: manager from the train station operator with a non-technical engineering background.</td></tr>
<tr><td rowspan="2">Indicative Content</td><td colspan="2">AO2b – Application of core skills
Core skills being assessed:
Communication and presentation.
professionalism of presentation resources (slides/presentation methods).
effectiveness in communicating the sensors choices and their considerations – including fluency, accuracy, clarity and conciseness.
clarity and size of images and figures, inclusion of labels, font size.
Evaluation and quality assurance
how the sensors removal and installation meet the client’s requirements outlined in the brief.
challenges presented by the brief and how these have been overcome including future improvements.</td><td>AOs</td><td>Total marks available</td></tr>
<tr><td colspan="2"></td><td>AO2b</td><td>6</td></tr>
<tr><td colspan="5">Marking descriptors – All versions
Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
<tr><td colspan="2">Band 1 descriptor</td><td colspan="2">Band 2 descriptor</td><td colspan="2">Band 3 descriptor</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
</table>

Communication of engineering concepts is sometimes effective. The delivery of technical information may lack accuracy and clarity for the audience. (AO2b)	Engineering concepts are communicated effectively most of the time in an appropriate manner for the target audience. There are minor inaccuracies in the delivery of information which causes a lack of clarity in some instances. (AO2b)	Highly effective communication of engineering concepts is appropriate for the target audience. Technical information is presented accurately and delivered with clarity. (AO2b)

<table>
<tr><th colspan="4">Grid 13: AO5a, AO5b Present (Realise outcome, review outcome)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
Video recording of presentation
Presentation materials (slides, handouts, notes etc)
Presentation Q&A Record (if this cannot be heard on the video)
The presentation should cover: justification for the chosen sensors, planning of the activity, health and safety considerations, proposed costings, challenges presented by the brief and how these have been overcome, how well your proposal addresses the requirements in the brief.

Audience: manager from the train station operator with a non-technical engineering background.</td></tr>
<tr><td rowspan="2">Indicative Content</td><td>AO5a - realise a project outcome – was the right outcome achieved
The candidate’s
effectiveness in evaluating the challenges presented by the brief and how these have been overcome.
identification of which areas of the brief were/were not satisfied.
reflections on additional aspects of research they could have done, any rework that would improve / enhance a future project outcome.</td><td>AOs</td><td>Total marks available</td></tr>
<tr><td>AO5a

AO5b</td><td>6</td></tr>
</table>

	AO5b – review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief The candidate's • clarity within their evaluation and review of the challenges presented in the brief, and indications within the presentation on how these have been overcome. • clarity of explanation of how the proposed modifications address the requirements of the brief, including any featured considered by the candidate to be improved. • evaluation on ideas relating to how earlier tasks could be built on and indications of reasons why this has happened.		

Marking descriptors – All versions

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**	
1	**2**	**3**	**4**	**5**	**6**
Project outcome as a whole partially addresses some of the brief requirements. Articulates some challenges encountered. (AO5a) No or minimal reasons and justification in how effectively the brief was met across project tasks. (AO5b)		Project outcome as a whole address all aspects of the brief requirements. Articulates all challenges encountered and attempts to overcome them. (AO5a) There is reason and justification in how effectively some areas of the brief were met across project tasks. (AO5b)		Project outcome as a whole fully addresses all aspects of the brief requirements and considers alternative options where appropriate. Articulates fully all challenges encountered and comprehensively covers how they were overcome. (AO5a) Detailed reasoning behind how successfully the project brief was met across project tasks. (AO5b)	

Maths, English and Digital skills (AO4)

Grid 14: AO4a (Maths)		
Only the following evidence must be used to assess performance against this marking grid: • Research notes - calculations relating to costings (and consideration of estimations) (Task 1) • Calculation of the resistance (Task 2) • Calculation of cost, timescales and critical path within the planning (Task 3) • Any calculations within the supporting statement (Task 3)		
The candidate's: • calculation considerations of the resistance, accuracy of method. • accuracy in calculation of budgets, timings and critical path analysis as part of completion of planning.	**AOs**	**Total marks available**
	AO4a	**3**

Marking descriptors – All versions 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**
1	**2**	**3**
Limited mathematical concepts and calculations applied. (AO4a) Workings or techniques omitted as part of calculations, assumptions lack detail and full definition. Workings shown but calculation errors made / inaccurate execution. (AO4a)	A range of mathematical concepts and calculations shown and applied appropriately. (AO4a) Working contains inaccuracies or could be more efficient (i.e., expressed in shorthand). Workings inconsistently shown. (AO4a)	Mathematical approaches and concepts applied fully and consistently. (AO4a) Calculations presented accurately and in correct format, workings shown and evidence of checking to ensure correct results (e.g., estimation workings, reverse calculation checks). (AO4a)

Grid 15: AO4b (English)			
Guidance for markers	**Only** the following evidence must be used to assess performance against this marking grid: • Research notes (Task 1) • Report (Task 2) • Supporting statement for the plan of work (Task 3) • Presentation delivery (orally) and materials to support presentation (e.g. slides etc) (Task 4)		
Indicative Content	The candidate's: • use of appropriate and accurate English • clarity and articulateness of use of English to present information and ideas • accuracy of grammar, spelling and punctuation • use of terminology, which is technical and consistent with the intended audience • confidence in the use of language during verbal presentations, level of articulation and clarity in the delivery of information to summarise information/ideas.	**AOs** **AO4b**	**Total marks available** **3**

Marking descriptors – All versions 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**
1	**2**	**3**
Evidence within task responses lacks structure where outcome is partially understandable. Communication style is generally appropriate to the outcome but has some inconsistencies across tasks. (AO4b)	Evidence within task responses uses conventional structure which is understandable. Communication style is appropriate to the outcome across most tasks. (AO4b)	Evidence within task responses uses a structure which makes it easy to fully understand. Communication style is appropriate to the outcome across all tasks. (AO4b)

Meaning is clear, but the language is not always fluent. Grammar and/or spelling contain errors or inconsistencies. Audibility of oral presentation is inconsistent. (AO4b)	Meaning is clear, language is fluent, although the response may contain colloquialisms or jargon etc. Grammar and spelling are mainly accurate. Audibility of oral presentation is good. (AO4b)	Meaning is clear, language is fluent and consistent across tasks. Grammar and spelling are consistently accurate across tasks. Deploys a range of grammatical constructions. Audibility of oral presentation is excellent. (AO4b)

<table>
<tr><th colspan="4">Grid 16: AO4c (Digital)</th></tr>
<tr><td>Guidance for markers</td><td colspan="3">Only the following evidence must be used to assess performance against this marking grid:
Types of sources used for Research (Task 1)
Presentation of the planning chart (Task 3)
Presentation materials (slides, handouts, notes etc) (Task 4)</td></tr>
<tr><td rowspan="2">Indicative Content</td><td rowspan="2">The candidate’s:
selection of digital resources and the effective of the resource in meeting task requirements
application of features available within digital resources (e.g. formatting, layout, presentation modes, animations / transitions in presentation, application of software package features).
selection and use of software to support delivery of the presentation.
use of a range of digital options used across tasks, the extent to which they have been used to add value and their effectiveness of use.
use of current digital techniques, resources, and sources in adherence with industry practice, convention, and trends.</td><td>AOs</td><td>Total marks available</td></tr>
<tr><td>AO4c</td><td>3</td></tr>
<tr><td colspan="4">Marking descriptors – All versions
Note: where there is insufficient evidence to award a mark, a zero mark may be given</td></tr>
</table>

Band 1 descriptor	Band 2 descriptor	Band 3 descriptor
1	**2**	**3**
Digital technology attempted as part of task responses. (AO4c)	Consideration and use of basic digital options/features to strengthen task responses throughout project across tasks. (AO4c)	Digital options applied effectively in line with industry practices/ best practice, demonstrating use of range of technology features. Digital techniques used effectively to add value to task responses. (AO4c)

Get in touch

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We are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

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