

Institute for Apprenticeships & Technical Education

T Level Technical Qualification in Engineering, Manufacturing, Processing and Control

Employer-Set Project (8730-034)

Summer 2024 Marking Grids



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Version control

Version	Updates made
1.0	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:
 - o 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:
 - \circ 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.
 - o 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:
 - o check the descriptor of the level below.
 - decide on a suitable mark either:
 - \circ 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

indicative content. Task 1 Band 3 Band 2 Band 1 ٠ 3 5 6 7 9 1 2 4 8 Indicative Content – Sample version A01 – 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. Research 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 (Planning, to similar problems, similar solutions or ones that relate the provided brief. Detail of health and core safety considerations and risk assessment requirements. knowledge, selecting AO3 – The candidate's selected research techniques and resources to meet the brief and their techniques relevance. The matching of resources and information to the various parts of the research and requirement - use of specifications, diagrams, downloads etc to match the determinations that must resource) be made. Band 1 Band 2 Band 3 2 3 4 6 7 8 9 1 5 Some evidence of a planned Approach to research and Brief requirements are approach to research. (AO1) collation of information shows considered consistently planning and consistency. throughout the research and information collation - clear (AO1) evidence of methodical and thorough approach to research and information gathering. (AO1) Core knowledge applied in Core knowledge applied in all Some elements of core most areas of the brief knowledge referenced but areas of the brief requirements. focus may be imbalanced requirements. (AO2a) (AO2a) and more focused on one area than another. (AO2a) Research techniques and Evidence of a range of Evidence of comprehensive resources clear as part of techniques and resources research techniques, use of evidence submission. (AO3) used and referenced, with resources, and full range of different source types sources. All sources fully detailed considered. (AO3) and presented fully and consistently. (AO3)

Marker familiarises themselves with the marking grid, identifying:

- What candidate evidence is relevant.
- What aspects of the relevant evidence is to be considered from the
- How performance is differentiated across the marking bands.

Marker scans the relevant evidence and makes an initial judgement on the level of performance.

Marker allocates the marking band that the candidate's performance best aligns to. E.g. Band 2.

	4	5	
If the candidate's performance is partially meeting the descriptors within the band, the marker will check the descriptor of the level below.	Meeting the descriptors band, with concerns ar aligning with higher (B3) (B1) bands, appropriate likely to be middle rang	ce is largely e within the only a few nd is not th the or lower the e mark is in the	If the candidate's performance is securely meeting the descriptors in the band, the marker will also check the descriptor for the band above. (e.g. Band 3)
 Marker will decide on mark either: at the bottom of band (B2) as som characteristics sh marks, or top of the lower bit better describe characteristics be characteristics be been been been been been been been	the original e own, i.e. 4 pand (B1) if s the	mark either at the band (charac 7 marl revert (B2) se	bottom of the higher (B3) as some cteristics are shown, i.e.

Worked Example (2)

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

Task 1	Bai	n d 1	Bai	nd 2	Bar	nd 3		indicative content.			
	1	2	3	4	5	6	•	How performance is differe	ntiated across the marking bands.		
Research	Indicative C	ontent – Sam	ple version								
(Core skills)	AO2b – The candidate's demonstration of judgement and reasoning in relation to the review of the requirements from the brief and the content within the notes. Details of research on technology solutions for the drill jig in order to meet the design specification supplied by the client and support the order of the bespoke shoulder screws. The candidate's effectiveness of communication of research conducted to meet requirements outlined in the brief – clarity and conciseness of response. Expression of							aligns to. E.g., Band 3.			
	inclusion of in in terms of co	ideas in associated research analysis and level to which they are supported e.g. through inclusion of images and level of referencing to sources. Evidence of planning in research in terms of consistency and balance of response (time spent consistently on researching different elements).						ndidate's performance	If the candidate's performance is securely		
	Bai	Band 1		Band 2		Band 3		is largely or partially meeting mee			
	1234Some basic elements of core skills drawn on and evidenced within task response - limited use of 		5 6 Core skills applied consistently and comprehensively throughout task completion with - full range of core skills evidenced. (AO2b)			vill also check the or of the level below.	the band, marker selects a mark at the higher end of that mark range. Marker decides to award Band 3 = 6 marks.				
							If the	quality of the	If the quality of the response exceeds		

If there is **no or little** alignment with the descriptor, the marker will reassess the starting band, and begin again. E.g. begin at band 2, with consideration made to band 1. If the quality of the response **fully** aligns with the performance described by the descriptor in the band below (B2), the marker will assign a mark at top of this band.

Marker familiarises themselves with the marking grid, identifying:

What aspects of the relevant evidence is to be considered from the

• What candidate evidence is relevant.

If the quality of the response **exceeds** with the performance described in the lower band (B2), then the marker should revert to the initially allocated band (B3) and assign a low to medium mark within the band.



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Marker decides to award Band 2 = 4 marks.

Use of ChatGPT (or any other Artificial Intelligence)

What isn't permitted

Al misuse is where a student uses an Al 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.

Al 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

Al 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 <u>one</u> 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	o 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 - Apply engineering and manufacturing processes to achieve specific objectives and to produce quality outcomes, using relevant techniques and technology, within limits of own authority iv) Evaluating and quality assuring - Carry out investigations, generate proposals and options, identify standard components and systems at relevant stages to gather and evaluate relevant evidence and data, and to confirm the suitability of plans, 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

AO Ref	Assessment Objective
AO4	Use maths, English and digital skills as appropriate
• AO4a	∘ maths
• AO4b	∘ English
AO4c	o 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	o 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	3									
2. Report	3	6	6	3	0	0	18													
3. Design	3	6	6	3	3	3	24					3 3	3	3						
4. Present	3	6	6	3	3	3	24													
Total	12	21	24	12	6	6	81		9	•	ę									
AO marks	12	4	.5	12	1	2	-		9		Q									
AO %	13.3%	50)%	13.3%	13	.3%	-		10%		10									

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

1. Research

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. 								
	AO1 – Plan their approach to meeting the project brief	AOs	Total						
	The candidate's:	(marks)	marks						
	 structure of the research notes and analysis. 	(available						
	 exploration of the requirements and the issues outlined in the task, and how consistent/balanced the consideration of each of these are in comparison to each other. 	AO1 (3)	9						
	AO2a – Apply core knowledge	AO2a (3)							
	The candidate's:	AO3 (3)							
	 confidence and appropriateness of use of terminology. 	AU3 (3)							
	 accuracy of the research notes in relation to sources. 								
Indicative	 refinement of their approach to the problem in relation to the brief given. 								
Content	 selection and definition of key aspects of the task in relation to: 								
	 what is needed, if anything, to make a 1" BSP thread watertight 								
	 thread details of a 2" 7 TPI BSW thread 								
	 the materials to use of a suitable size to allow machining of a 2 " 7 TPI BSW external thread whilst providing a feature to engage a spanner to hold the adaptor whilst tightening the pipework 								
	 the cost of the materials 								
	 how the adaptor will be held whilst tightening up the pipework 								
	 identification of 'O' seals that can be used to provide a seal between the flange of connecting pipes and the adaptor. 								
	AO3 – Select relevant techniques and resources to meet the brief								
	The candidate's:								

Grid 1: AO1, A	O2a, AO3 Resea	arch (Planning,	core knowledge	e, selecting tec	hniques and re	source)					
	 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. 										
	 range of potential solutions/options. 										
	• references	to sources from	research of guida	ance and/or indu	stry standards.						
	-	ires, drawings, s ite their findings.	chematics, specil	fications, and sk	etches alongsid	e prose to					
	use of mate	erial supplier dat	a sheets and extr	acts from OEM	catalogues to s	upport research					
			Marking d	escriptors – Al	l versions						
Note: where the	ere is insufficient	evidence to awa	ard a mark, a zero	o mark may be g	iven						
E	and 1 descripto	or	В	and 2 descripte	or	Band 3 descriptor					
1	2	3	4	5	6	7	8	9			
Some evidence of a planned approach to research. (AO1)		Approach to res information sho (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 brief requiremer	•••	t areas of the	Core knowledge applied in all areas of the brie requirements. (AO2a)					
	niques and resou e submission. (Ad		Evidence of a ra resources used different source	and referenced	, with	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 F	Research (Core Skills)						
Guidance for	Only the following evidence n	nust be used to assess pe	rformance against this ma	arking grid:			
markers	Research notes which	h should include a list of s	ources/references.				
	 AO2b – Application of core Core skills being assessed: Analysing and interpreting 		AOs (marks) AO2b	Total marks available 6			
Indicative Content	from the brief o investigation into v task	alves and threads required	gement and reasoning in relation to the review of the requirements res and threads required based on the information provided in the ements set out in the brief and consideration of how this impacts				
	 Planning and preparation evidence of planning the research in terms of consistency and balance of response (time spent consistently on researching different elements). evidence of taking a planned approach to the research by addressing all factors which needs to be considered stated in the task. Developing responses 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. 						
		Marking descript	ors – All versions				
Note: where the	ere is insufficient evidence to aw	vard a mark, a zero mark r	nay be given				
В	and 1 descriptor	Band 2 c	lescriptor	Band 3	descripto	or	
1	2	3	4	5		6	

Grid 2: AO2b Research (Core Skills)							
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)					

2. Report

Guidance for markers	Only the following evidence must be used to assess performance against this marking grid:								
IIIdi kei S	 Report which outlines the proposed design of the adaptor and the manufacturing process that AO1 – Plan their approach to meeting the project brief 								
	The candidate's:planning of their report, in consistency and balance of coverage of points.	AOs (marks) AO1 (3)	Total marks available 6						
Indicative Content	 coverage of the requested elements of the task, specifically: thread types and sizes required at each end of the adaptor to allow connection of a pneumatic valve which has an internal 1" BSP thread to existing 2" 7 TPI BSW external thread connections how a watertight seal will be achieved to prevent leakage through the threads how the required amount of adaptors would be manufactured in one batch efficiently how the pipework would be modified the length of the thread required at each end of the adaptor the materials selected and how they are compatible with food manufacturing and health and safety requirements the approach used to provide a mechanism for holding the adaptor whilst tightening or loosening the connecting pipework nuts including sizing for any materials used. 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 design problem detailed in the task. 	AO3 (3)	U						
	 AO3 - Select relevant techniques and resources to meet the brief The candidate's: ability to apply the findings from the research into their initial proposals. clarity of solutions, and how closely, they are derived from brief guidance and research. references to sources from research of guidance and/or industry standards. use of pictures, drawings, schematics, specifications, and sketches alongside prose to communicate their findings. use of OEM catalogues and standards. 								

Grid 3: AO1, AO3 Rep	ort (Planned approach,	selecting techniques)			
		Marking descripto	rs – All versions		
Note: where there is ins	sufficient evidence to awa	ard a mark, a zero mark ma	ay be given		
Band 1 d	lescriptor	Band 2 de	scriptor	Band 3 de	escriptor
1	2	3	4	5	6
Some evidence of a planned approach to task, response may lack detail and required information. (AO1)		Approach to report and required information is planned, organised and complete. (AO1)		Approach to report and required information fully comprehensive and in line with standard industry practices. (AO1)	
Some relevant techniques used in the preparation and presentation of report and associated information. (AO3)		Relevant techniques and used throughout the prep presentation of report. (A	paration and	Preparation and presentation of report an associated information is fully in line with industry conventions. (AO3)	

Guidance for markers	Only the following evidence r	nust be used to assess pe the proposed design of th	•	••	vill be used.	
	 AO2a – Apply core knowled The candidate's: accuracy of using of technology 	lge			AOs (marks)	Total marks available
Indicative Content	 appropriate mater the technical valid the viability of the context of the brie the waterti methodolo how the pi interpretation of the informapplied. exploration of different op to the specifics of the brie 	ghtness of the threads gy of using a tool to hold th bework would be modified. nation found within researc tions and reasoning for ref	sed manufacturing proce ether they would realistic he adaptor when tightenin h and the accuracy of he ining/selecting solutions,	ally work within the ng ow this has been	AO2a (6)	6
Note: where the	ere is insufficient evidence to av	• .	ors – All versions nav be given			
	and 1 descriptor		lescriptor	Band 3	descriptor	
1	2	3	4	5		6
and evidenced	of core knowledge drawn on – limited comprehension of elation to brief requirements e.g	Knowledge from across evident in relation to dif project brief. (AO2a)		Core knowledge appl throughout response inaccuracies. (AO2a)	with minimal	

Grid 4: AO2a Report (Core Knowledge)		
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)	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)	Connections between elements of core knowledge exploited to strengthen arguments and demonstrate understanding. (AO2a)

Guidance for markers	 Only the following evidence must be used to assess performance against this marking grid: Report which outlines the proposed design of the adaptor and the manufacturing process that we have a set of the set of the	vill be used.	
Indicative Content	 AO2b - Application of core skills Core skills being assessed: Analysing and interpreting judgement and reasoning in relation to the refinement of the requirements from the brief and the content within the report. interpretation of the requirements set out in the brief and consideration of how this impacts the solution. Developing responses incorporation of the required aspects in the response – use of logical and synergised approach to requirements. development of relevant evidence and data, to confirm the suitability of solution consideration of health and safety requirements in relation to the intended use of materials and methods to design and manufacture the adaptor Planning and preparation evidence of planning, this is demonstrated through the structure of the report, by providing a logical and coherent response. Communication and presentation effectiveness of communication of refined technical requirements for the solution - clarity and conciseness of delivery. expression of ideas in a written report. 	AOs (marks) AO2b (6)	Total marks available 6
	Marking descriptors – All versions		

Grid 5: AO2b Report (Core skills)				
Note: where there is ins	ufficient evidence to awa	rd a mark, a zero mark ma	ay be given		
Band 1 descriptor		Band 2 de	scriptor	or 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)		A range of core skills applied and evident in task response in relation to different elements of the project brief. (AO2b)		Core skills applied consistently throughout tas completion with - full range of core skills evidenced. (AO2b)	
Response has limited logic and shows superficial coherence between different aspects of the brief. (AO2b)		Response is logical and s coherence between diffe brief. (AO2b)			

3. Design

Guidance for	Only the following evidence must be used to assess performance against this marking grid:						
markers	 Dimensioned adaptor drawing for a valve adaptor and a drawing showing pipework modifications. 						
	 Supporting calculations 						
	 Reflective notes around how the design has evolved throughout the task. 						
	AO1 – Plan their approach to meeting the project brief	400					
	The candidate's:	AOs	Total marks available				
	 layout of drawings and the conformance to industry standards/best practice 	(marks)	available				
	 inclusion of required coverage of the requested elements within the drawings: 						
	 the overall length when the adaptors are screwed into each end of the pneumatic valve 	AO1 (3)	6				
	and the difference in length between the pneumatic valve assembly and the previous						
	manual valve assembly	AO3 (3)					
	 the width of material provided to engage a tool to support the valve assembly 						
	 the method of ensuring that the connections between the adaptor and any pipe or valve 						
Indicative	fitting are watertight						
Content	 the amount that adjacent pipework will need to be shortened to 						
	 the size of the hole through the centre of the adaptor to allow for unimpeded flow of liquids through the adaptor. 						
	coherence of structure and clarity of assumptions in relation to the calculations						
	AO3 – Select relevant techniques and resources to meet the brief						
	The candidate's						
	 presentation of drawings, use of recognised techniques, adherence to drawing conventions and annotations, clarity, quality, and accuracy. 						
	use of a drawing frame for drawings, and inclusion of titling block.						
	 consideration of industry practices and use of adopted scale when creating the sketches and drawings. 						

Grid 6: AO1, AO3 Desi	gn (Planned approach	, selecting techniques)			
		calculations e.g. use of e n design standards) and r		eets; including a	
		Marking descript	ors – All versions		
Note: where there is ins	ufficient evidence to awa	ard a mark, a zero mark n	nay be given		
Band 1 descriptor		Band 2 d	lescriptor	Band 3 descriptor	
1	2	3	4	5	6
Some evidence of a pla design task, response n calculation information.	nay lack detail and	Approach to design and is planned, organised a	d calculation information nd complete. (AO1)	Approach to design and comprehensive and in I industry practices. (AO	ine with standard
Some relevant techniqu preparation and present drawings/sketches and calculations. (AO3)	tation of	Relevant techniques an conventions used throu and presentation of dra associated calculations	ghout the preparation wings/sketches and	9	associated calculations stry drawing conventions

Guidance for	0	nly the following evidence mu	•	U	00			
markers	Dimensioned adaptor drawing for a value adaptor and a drawing showing pipework modifications							
		 Supporting calculation 						
			d how the design has even	olved throughout the tas	k.			
		O2a – Apply core knowledg	9			AOs	Total	
	Th	ne candidate's				(marks)	marks	
	•	choice of language used in intended audience.	any text on the drawings	, its technical level and c	consistency with the	• •	available	
	 proposed solutions for the design, how well the solutions comply with industry guidance, have th potential to be implemented (it's viability) and the technical sense of the solution specifically: 					AO2a (6)	6	
Indicative Content	 thread size details (Major, Minor and Effective diameters for a 2" 7 TPI BSW thread and 1" BSP thread 							
Content			ngth of thread dimension					
			rooves or sealing faces in s used for engagement o		ign			
			the centre of the adaptor					
	•	accuracy of technical princip						
	•	ability to make links betwee this to the given scenario.	•	•	rinciples and apply			
	•	approach to determining ca	culations, selected meth	od used to determine thi	S.			
	<u> </u>		Marking descript	ors – All versions				
Note: where the	ere i	s insufficient evidence to awa	rd a mark, a zero mark n	nay be given				
В	and	I 1 descriptor	Band 2 d	lescriptor	Band 3	descriptor		
1		2	3	4	5		6	

Grid 7: AO2a Design (Core Knowledge)		
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)	Knowledge from across the core applied and evident in relation to different elements of the project brief. (AO2a)	Core knowledge applied consistently throughout response with minimal technical inaccuracies. (AO2a)
Supporting information details some links to the application of core knowledge to support judgements, but connections are not always clear and accurate. (AO2a)	Supporting information details links to the application of core knowledge to justify and support judgements, but with some gaps or inaccuracies. (AO2a)	Connections between elements of core knowledge exploited to strengthen arguments and demonstrate understanding. (AO2a)

Guidance for	Only the following evidence must be used to assess performance against this marking grid:								
markers	Dimensioned adaptor drawing for a value adaptor and a drawing showing pipework modifications								
	Supporting calculations								
	 Reflective notes around how the design has evolved throughout the task. 								
	AO2b – Application of core skills		Total						
	Core skills being assessed:	AOs	marks						
	Planning and preparation	(marks)	available						
	 evidence of planning, this is demonstrated through the completion of the drawings, supporting calculations and the reflective notes. 	AO2b (6)	6						
	Developing responses								
	 use of draft iterations of the design to show how the design idea has developed during the completion of the tasks 								
	 demonstration of judgement and reasoning in relation to the preparation of the solution 								
Indicative Content	 incorporation of the required aspects in the design- use of logical and synergised approach. 								
	Evaluating and quality assuring								
	 refinement of design ideas to present one final design, reflection on how the design meets the requirements. 								
	 consideration of the solution and its functionality, by performing relevant calculation to consider the viability 								
	 use of reflective notes to evaluate design and how well it meets the outlined requirements 								
	Communication and presentation								
	 effectiveness in communicating idea/information through drawings and associated annotations so the key features of the designs can be interpreted. 								
	 use of proportion, dimension and annotations on drawings. 								

Grid 8: AO2b Design ((Core skills)				
		Marking descript	ors – All versions		
Note: where there is ins	sufficient evidence to awa	urd a mark, a zero mark n	nay be given		
Band 1 d	lescriptor	Band 2 d	lescriptor	Band 3 descriptor	
1	2	3	4	5	6
Some elements of core evidenced within task re skills in relation to brief	esponse - limited use of	A range of core skills an task response in relatio of the project brief. (AO	n to different elements	Core skills applied consistently throughout t completion with - full range of core skills evidenced. (AO2b)	

markers			
	Dimensioned adaptor drawing for a valve adaptor and a drawing showing pipework modification	tions	
	Supporting calculations		
	Reflective notes around how the design has evolved throughout the task.		
	AO5a – realise a project outcome – was the right outcome achieved	AOs	Total
	Considering the candidate's preferred chosen design and;	(marka)	marks
	the effectiveness of the solution in relation to the context given in the project brief	(marks)	available
	the extent the solution meets the requirements of the brief.	AO5a (3)	6
	how 'fit for purpose' the design is	AU5a (5)	0
	 how 'believable' the solution is to meet client requirements. 	AO5b (3)	
	the feasibility of the solution presented, and the levels of amendments required.	AC30 (3)	
Indicative	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		
Content	The candidate's		
	 evaluation and review of requirements of the brief and recognition of how these have been met with proposed design. 		
	 development of ideas, rationale for the selected design option, clarity on which has been taken forward. 		
	evaluation of how the final design has met the client requirements given in the brief		
	 development of ideas throughout the task, refining, improving and building upon potential solutions as they progress. 		
	Marking descriptors – All versions		

Grid 9: AO5a, AO5b Design (Realise/Review)						
Band 1 d	escriptor	Band 2 descriptor		Band 3 descriptor		
1	2	3	4	5	6	
Response partially addresses some of the task requirements. (AO5a)		Response addresses all aspects of the task requirements. (AO5a)		Response fully addresses all aspects of all the elements of the task requirements. (AO5a)		
Evaluation and review do not clearly address how well the task outcome met the brief and lacks clarity and reasoning in places. (AO5b)		Evaluation and review address how well the task outcome was achieved. (AO5b) Evaluation and review are specifically addresses how outcome was achieved. (A		how well the task		

4. Present

Guidance for	Only the following evidence must be used to assess performance against this marking grid:					
markers	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; consideration of how your design has met the specific issues and adapt in the project brief, a summary of your proposed design which outlines the key features, challenges prohow these have been overcome, how well your design proposal addresses the requirements of the brinnake if repeating the project.	esented by	the brief and			
	Audience: non-technical background					
	AO1 – Plan their approach to meeting the project brief	AOs Total ma				
	The candidate's:	(marks)	available			
	logic, order and coherence, of the presentation	(marks)				
	 consideration of all aspects of the project, Task 1 – task 4. 	AO1 (3)	6			
	planning of the presentation to consider its target audience.		-			
Indicative Content	AO3 – Select relevant techniques and resources to meet the brief The candidate's:	AO3 (3)				
	• 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).					
	• 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 d	escriptor	Band 2 d	escriptor	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)		The presentation is structured and follows a logical approach in response to the task with evidence of planning. (AO1)		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)		
Technique used to deliver the presentation is sometimes effective. However technical information is not always complete and accurate. (AO3)		Techniques used to deliver the presentation are mostly effective. The technical information provided is accurate most of the time with valid reasoning. (AO3)		Techniques used to deliver the presentation are effective with well justified reasoning behind the information provided. (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; consideration of how your design has met the specific issues and adap in the project brief, a summary of your proposed design which outlines the key features, challenges prehow these have been overcome, how well your design proposal addresses the requirements of the brief make if repeating the project.	sented by the	brief and
	Audience: non-technical 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 adaptor interpretation of the challenges within the brief and explanations as to how these have been overcome in the design presented. understanding of engineering principles which has influenced the solution and with reasoning of why these suitably meet the brief from the client for the following features: how the design is watertight how the adaptor is being held whilst being tightened material used and its cost the length of adaptor valve assembly has increased by confidence and accuracy when responding to question from the client (tutor/assessor) use of technical language (with consideration of both technical and non-technical audience) 	AOs (marks) AO2a (6)	Total marks available 6
Note: where the	Marking descriptors – All versions ere is insufficient evidence to award a mark, a zero mark may be given	1	
	se is insumment evidence to award a mark, a zero mark may be given		

Grid 11: AO2a Present	Grid 11: AO2a Present (Core Knowledge)					
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 presentation - these may not always be accurate or be directly linked to the brief requirements. (AO2a)		Engineering concepts relating to the core knowledge are coherent throughout the presentation to meet the requirements of the brief set. (AO2a)		Engineering concepts relating to the core knowledge are coherent with clear justifica on how these are applied in response to th brief requirement. (AO2a)		
Terminology used may content provided may in and not clear to the targ	nclude inconsistencies	Terminology used is mo minor errors. The conter correct but does not alw audience/ may be imbal to either technical or nor (AO2a)	nt provided is mostly yays consider the target anced or biased (e.g.	Terminology used is accurate and error further content provided is clear and easily understood by the target audience, with rubias in tone/ imbalance across audience (where appropriate). (AO2a)		

Grid 12: AO2b F	Present (Core skills)		
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; consideration of how your design has met the specific issues and ada in the project brief, a summary of your proposed design which outlines the key features, challenges p how these have been overcome, how well your design proposal addresses the requirements of the b make if repeating the project. 	presented by th	e brief and
Indicative Content	 Audience: non-technical background AO2b - Application of core skills Core skills being assessed: Developing responses explanation of how the design has developed throughout the tasks incorporation of the required aspects in the response – use of logical and synergised approach to requirements Communication and presentation professionalism of presentation resources (slides/presentation methods.) effectiveness in communicating the key features of the design – including fluency, accuracy, clarity and conciseness. clarity and size of images and figures, inclusion of labels, font size. communicated information accurately to the appropriate target audience. Evaluation and quality assurance justification for final design proposal how well your design meets the requirements of the brief. what challenges were overcome. improvements that could be made if the project was repeated. 	AOs (marks) AO2b (6)	Total marks available 6

Grid 12: AO2b Present (C	Grid 12: AO2b Present (Core skills)					
		Marking descript	tors – All versions			
Note: where there is insuff	icient evidence to award a	mark, a zero mark may be	given			
Band 1 de	Band 1 descriptor Band 2 descriptor Band 3 descriptor					
1	2	3	4	5	6	
sometimes effective. The delivery of technical information may lack accuracy and clarity for manner for the target audience. There are Technical information may lack accuracy and clarity for manner for the target audience.				concepts is appropriate	unication of engineering e for the target audience. s presented accurately ity. (AO2b)	

Grid 13: AO5a	, AO5b Present (Realise outcome, review outcome)		
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; consideration of how your design has met the specific issues and adapte in the project brief, a summary of your proposed design which outlines the key features, challenges present the specific issues and adapted in the project brief, a summary of your proposed design proposal addresses the requirements of the brief make if repeating the project.	sented by the l	orief and
	Audience: non-technical background AO5a - realise a project outcome – was the right outcome achieved The candidate's:	AOs	Total marks
la dia stira	 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/design process they could have done, any rework of that would improve / enhance a future project outcome. 	(marks) AO5a (3) AO5b (3)	available 6
Indicative Content	 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 of the brief, and indications within the presentation on how these have been overcome. clarity of explanation of how the final design addresses 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. 		

Grid 13: AO5a, AO5b Present (Realise outcome, review outcome) Marking descriptors – All versions						
Note: where there is insu	ufficient evidence to awa	ard a mark, a zero mark ma	ay be given			
Band 1 de	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)		Project outcome as a whole address all aspects of the brief requirements. Articulates all challenges encountered and attempts to overcome them. (AO5a)		Project outcome as a whole fully addresses aspects of the brief requirements and considers alternative options where appropriate. Articulates fully all challenges encountered and comprehensively covers ho they were overcome. (AO5a)		
No or minimal reasons and justification in how effectively the brief was met across project tasks. (AO5b)		There is reason and justification in how effectively some areas of the brief were met across project tasks. (AO5b)		Detailed reasoning behind how successfully the project brief was met across project tasks (AO5b)		

Maths, English and Digital skills

Grid 14: AO4a	(Maths)		
Guidance for markers	 Only the following evidence must be used to assess performance against this marking grid: Research Notes – the cost of the materials (Task 1) Relevant design calculations - the increase in the length of the valve and adaptor assembly con and the cost of the materials (Task 3) 	mpared to th	ne manual valve
	Task 1: Research The candidate conducts research into potential approaches to designing an adaptor that takes into consideration: • the cost of the materials This assesses the following maths competencies: • MC3. Working with proportion • MC5: Processing data.	AOs (marks) AO4a (3)	Total marks available 3
Indicative Content	 Task 3: Design – Part B The candidate must include any relevant design calculations related to their assembly drawing with consideration of: identifying the increase in the length of the valve and adaptor assembly compared to the manual valve the cost of materials. This assesses the following maths competencies: MC3. Working with proportion MC4. Using rules and formulae MC5: Processing data MC7. Interpreting and representing with mathematical diagrams. 		

Grid 14: AO4a (Maths)

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)	A range of mathematical concepts and calculations shown and applied appropriately. (AO4a)	Mathematical approaches and concepts applied fully and consistently. (AO4a)
Workings or techniques omitted as part of calculations, assumptions lack detail and full definition. Workings shown but calculation errors made/ inaccurate execution. (AO4a)	Working contains inaccuracies or could be more efficient (i.e. expressed in shorthand). Workings inconsistently shown. (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	Only the following evidence must be used to assess performance against this marking grid:			
markers	Research notes (Task 1)			
	Report (Task 2)			
	Reflective notes (Task 3)			
	 Video of presentation (Task 4) 			
	 Presentation materials to support presentation (e.g. slides etc) (Task 4) 			
	The candidate's:	AOs	Total marks	
Indicative Content	use of appropriate and accurate English.clarity and articulateness of use of English to present information and ideas.	(marks)	available	
	 accuracy of grammar, spelling and punctuation. 	AO4b	3	
	 use of terminology, which is technical and consistent with the intended audience (people from a technical background) 	(3)		

Grid 15: AO4b	(English)			
	 confidence in the use of language during verbal presentations, level of articulation and clarity in the delivery of information to summarise information/ideas. 			
	Task 1: Research			
	This assesses the following English competencies:			
	EC5: Synthesise information			
	Task 2: Report			
	This assesses the following English competencies:			
	EC1. Convey technical information to different audiences			
	EC2: Present information and ideas			
	EC4: Summarise information/ideas			
	EC5: Synthesise information.			
	Task 3: Design			
	This assesses the following English competencies:			
	EC1: Convey technical information to different audiences			
	EC2: Present information and ideas			
	EC3: Create texts for different purposes and audiences.			
	Task 4: Presentation			
	This assesses the following English competencies:			
	EC1: Convey technical information to different audiences			
	EC2: Present information and ideas			
	EC3: Create texts for different purposes and audiences			
	EC4: Summarise information/ideas			
	EC6: Take part in/lead discussions.			
Marking descriptors – All versions				

Grid 15: AO4b (English) Note: where there is insufficient evidence to award a mark, a zero mark may be given							
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)					

Grid 16: AO4c						
Guidance for markers	 Only the following evidence must be used to assess performance against this marking grid: Types of sources used for Research (Task 1) Report (Task 2) Drawings (Task 3) 					
	The candidate's:	AOs	Total marks			
	 use of appropriate digital resources to meet task requirements (e.g. presentation, internet research). 	(marks)	available			
	 application of features available within digital resources where appropriate (e.g. formatting, layout, presentation modes, animations/transitions in presentation etc). 	AO4c (3)	3			
	 delivery of the presentation for task four using appropriate software. 					
	 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. 					
Indicative Content	Task 1: Research					
	This assesses the following digital competencies:					
	DC1: Use of digital technology and media effectively					
	DC5: Be safe and responsible online.					
	Task 2: Report					
	This assesses the following digital competencies:					
	DC2: Design, create and edit documents and digital media					
	DC5: Be safe and responsible online.					
	Task 3: Design					
	This assesses the following digital competencies:					
	DC1: Use of digital technology and media effectively					

Grid 16: AO4c (Digital)							
DC2: Design, create an	d edit documents and digital media						
DC3. Communicate and	DC3. Communicate and collaborate						
 DC4: Process and anal 							
Task 4: Presentation							
This assesses the following digital competencies:							
DC1: Use of digital technology and media effectively							
DC2: Design, create and edit documents and digital media							
DC3 Communicate and collaborate							
DC6: Controlling digital functions.							
	Marking descriptors – All versions						
Note: where there is insufficient evidence to awa	ard a mark, a zero mark may be given						
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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