



National
Qualifications
2025

2025 Practical Metalworking

National 5

Question Paper Finalised Marking Instructions

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General marking principles for Practical Metalworking N5

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

- (a)** Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.
- (b)** If a candidate response does not seem to be covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.

Marking Instructions for each question

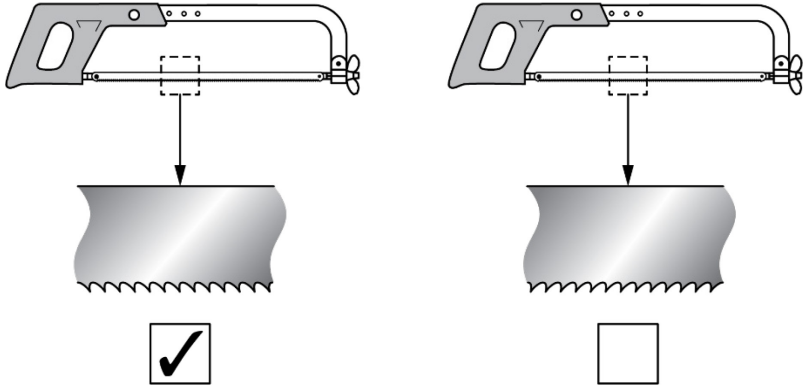
Question			Expected response	Max mark	Additional guidance
1.	(a)		Tin Snips (1 mark)	1	
	(b)		- to ensure hands/fingers are not cut on sharp edges (1 mark) - easier to remove at this stage before folding (1 mark)	2	
	(c)		a hide mallet will not damage the metal (1 mark)	1	
	(d)		Any one of the following: - the line was not drawn straight (1 mark) - the metal was not lined up in the folding bars/box folder correctly (1 mark) - the metal was not secure enough (and moved during the folding process) (1 mark) - the metal was not hit at the base of the folding bar (1 mark)	1	
	(e)		Any two of the following: - does not rust/corrosion resistant (1 mark) - lightweight (1 mark) - good strength to weight ratio (1 mark) - easy to turn (on a centre lathe)/easily machined/easy to bend or fold (1 mark) - durable (1 mark) - requires no finish (1 mark)	2	Accept; - light - malleable Do not accept; - conducts heat and electricity well - aesthetic properties - any reference to aluminium being a non-ferrous metal - it's not magnetic - responses relating to cost
	(f)		Any one of the following: - apply lacquer (1 mark) - apply paint (1 mark) - apply powder/dip coating (1 mark) - apply anodising (1 mark)	1	Do not accept; oil based finish

Question			Expected response	Max mark	Additional guidance
1.	(g)	(i)	METHOD 1: • set oddleg callipers to half width/length of square (1 mark) • mark lines parallel from edges to create cross (1 mark) • centre punch midpoint (1 mark) OR METHOD 2: • use steel rule/straight edge and mark a cross from corner to corner (1 mark) with a scribe (1 mark) • centre punch midpoint (1 mark) OR METHOD 3: • use steel rule and measure half of length/breadth (only one of length or breadth required) (1 mark) • mark perpendicular lines with engineer's square and scribe (1 mark) • centre punch mid-point (1 mark)	3	Any other valid method accepted.
		(ii)	• 5mm drill bit (1 mark)	1	
		(iii)	• plug tap (1 mark)	1	
		(iv)	Any one of the following: • to help ensure the tap does not break (in the hole) (1 mark) • to ensure no breaks/damage to the thread (1 mark) • stops the tap from jamming in the hole (1 mark) • stops the tap from reaching the bottom of hole (thread will not be correct length) (1 mark)	1	Candidates must explain the effect of the hole becoming clogged eg the tap will jam in the hole/thread length is affected.
	(h)	(i)	• 10mm (1 mark)	1	
		(ii)	Any one of the following: • to give a realistic representation of the component (1 mark) • easier to visualise/understand (1 mark)	1	Do not accept; • to show the drawing/component in 3D • to show the drawing/component in more detail • to show what the end cap looks like

Question			Expected response	Max mark	Additional guidance
1.	(h)	(iii)	parting off (1 mark)	1	Accept; parting
	(i)		to show the layout of the drawing (1 mark)	1	
	(j)		Any two of the following: - the tool was not sharp enough or the tool was blunt/dull (1 mark) - the speed was not set correctly (too high or too low) (1 mark) - the feed was not constant or the feed was too high/low (1 mark) - the component was not secured enough (1 mark) - the tool was not tightened properly (1 mark) - too much material protruding from chuck (1 mark) - the compound slide wasn't tight enough (1 mark) - tool height is incorrect, resulting in contact with material being inconsistent (1 mark)	2	
	(k)		17.94mm (1 mark)	1	

Question			Expected response	Max mark	Additional guidance																								
2.	(a)		Any two of the following: - to draw lines perpendicular to a face/edge (1 mark) - to check 90° angles on material (1 mark) - to check 90° alignment (1 mark)	2																									
	(b)		Any one of the following: - steel (mild or stainless) (1 mark) - high carbon steel (1 mark) - iron (cast iron) (1 mark)	1	Accept; tool steel																								
	(c)	<table><tr><th>Part</th><th>Quantity</th><th>Length</th><th>Breadth</th><th>Thickness</th></tr><tr><td>Stock</td><td></td><td>75</td><td>25</td><td>5</td></tr><tr><td>Blade</td><td>1</td><td>125</td><td>25</td><td>2</td></tr><tr><td>Spacer</td><td>1</td><td>52</td><td>25</td><td>2</td></tr><tr><td>Rivet</td><td>7</td><td>12</td><td>Ø3</td><td>Ø3</td></tr></table>	Part	Quantity	Length	Breadth	Thickness	Stock		75	25	5	Blade	1	125	25	2	Spacer	1	52	25	2	Rivet	7	12	Ø3	Ø3	3	
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	(d)	(i)	to adjust the height of the table (1 mark)	1	Accept; to secure/lock the table in place																								
		(ii)	Any one of the following: - to avoid injury from moving components (1 mark) - to ensure accuracy when drilling (1 mark) - to ensure the workpiece does not move when drilling (1 mark)	1																									
		(iii)	Any two of the following: - always tie long hair back (1 mark) - always ensure that the user has no loose clothing (wearing an apron) (1 mark) - remove all jewellery (1 mark)	2																									
	(e)		Any one of the following: - to tighten the jaws of the (Jacob's) chuck (1 mark) - to loosen the jaws of the (Jacob's) chuck (1 mark)	1	Accept; to secure the drill in the (Jacob's) chuck																								

Question			Expected response	Max mark	Additional guidance
2.	(f)		Any one of the following: - the drill bit was blunt/dull (1 mark) - the speed of the drill was set too fast (1 mark) - no coolant/cutting fluid was used (1 mark)	1	Accept; - too much feed pressure Do not accept; - the speed of the drill was set too slow - the speed of the drill was set incorrectly
	(g)		Any two of the following: - drill all components at the same time/during the same process (1 mark) - use a template(s) OR - drill one component and use this as a template (1 mark) - use a jig on the pedestal/pillar drill (1 mark)	2	Accept; use a CNC milling machine
	(h)		rivet will sit flush with component (1 mark)	1	
	(i)		Ball Pein hammer (1 mark)	1	
	(j)		- produces a flat finish (1 mark) - produces an accurate size/finish (1 mark)	2	Accept; - produces a smooth finish - produces an aesthetic finish Do not accept; - clean

Question			Expected response	Max mark	Additional guidance
3.	(a)		Any one of the following: - causes climate change due to polluting gases (1 mark) - mining causes damage to the environment (1 mark) - loss of biodiversity (1 mark) - noise pollution (1 mark) - it drains the earth's resources (1 mark) - uses a lot of energy (1 mark)	1	
	(b)	(i)	Hacksaw (1 mark)	1	
		(ii)	Feature A Any one of the following: - to adjust the length of the hacksaw (1 mark) - to allow different lengths of blade to be used (1 mark) Part B Any one of the following: - to tension/tighten the blade (1 mark) - to remove/replace the blade (1 mark)	2	
		(iii)		1	
	(c)		Any two of the following: - reducing pollution from mining (1 mark) - recycling is energy efficient reducing pollution (1 mark) - reducing pollution from transportation (1 mark) - reduces waste going to landfill (1 mark) - saves finite resources (1 mark)	2	Do not accept; reduced/less mining

Question			Expected response	Max mark	Additional guidance
3.	(d)		Any two of the following: • repeatability of accurate parts (1 mark) • minimises human error (1 mark) OR • CNC operators do not need the same skill level as operators of manual machines (1 mark) • CNC machine can run continuously (with little manual input) (1 mark) • speed of production (1 mark) • CNC Machines can be linked with 3D CAD modelling software (1 mark)	2	
	(e)	(i)	• facing off (1 mark) • parallel turning (1 mark) • chamfering/taper turning (1 mark) • threading (1 mark)	4	Processes can be in any order.
		(ii)	• Tool Post (1 mark)	1	
		(iii)	Any one of the following: • to house the gears/motor (1 mark) • holds the chuck in place (1 mark) • set the speed/feed of machine (1 mark) • controls start/stop of machine (1 mark)	1	
	(f)		Any two of the following: • diameter of material (1 mark) • hardness of material used (1 mark) • type/material of cutting tool used (1 mark) • type of process being undertaken (1 mark) • depth of cut (1 mark)	2	
	(g)	(i)	• Pedestal/Pillar Drill (1 mark)	1	Order of responses can be opposite in Q(g) i or Q(g) ii Accept; • Milling Machine
		(ii)	• Centre Lathe (1 mark)	1	

Question			Expected response	Max mark	Additional guidance
3.	(h)	(i)	Any one of the following: • use flux (1 mark) • properly clean and degrease the area before brazing (1 mark)	1	
		(ii)	Any one of the following: • soldering (hard or soft) (1 mark) • welding (any type: TIG/MIG/electric arc) (1 mark) • spot welding (1 mark)	1	

[END OF MARKING INSTRUCTIONS]