



NCFE Level 1/2 Technical Award in Engineering (603/2963/4)

P001396

March 2022

Unit 01 Understanding the engineering world

Mark Scheme

This mark scheme has been written by the Assessment Writer and refined alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

- examples and criteria of the types of response expected from a learner
- information on how individual marks are to be awarded
- the allocated assessment objective(s) and total mark for each question.

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all learners, who must receive the same treatment. You must mark the first learner in exactly the same way as you mark the last.

- The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward learners, positively giving credit for what they have shown, rather than penalising them for what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the learner's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the front of the question paper.
- If you are in any doubt about the application of the mark scheme, you must consult with your Team Leader or the Chief Examiner.

Guidelines for using extended response marking grids

Extended response marking grids have been designed to award a learner's response holistically and should follow a best-fit approach. The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

When determining a level, you should use a bottom-up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward learners positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. You must also consider the relative weightings of the assessment objectives, so as not to over/under credit a response. Standardisation

materials, marked by the Chief Examiner, will help you with determining a mark. You will be able to use exemplar learner responses to compare to live responses, to decide if it is the same, better, or worse.

You are reminded that the indicative content provided under the marking grid is there as a guide, and therefore you must credit any other suitable responses a learner may produce. It is not a requirement either, that learners must cover all of the indicative content to be awarded full marks.

Assessment objectives

This unit requires learners to:

AO1	Recall knowledge and show understanding.
AO2	Apply knowledge and understanding.
AO3	Analyse and evaluate knowledge and understanding.

The weightings of each assessment objective can be found in the qualification specification.

Qn	Mark scheme	Total marks
----	-------------	-------------

Total: 80 marks

1	<p>Commercial companies have successfully launched manned rockets into orbit.</p> <p>Which discipline of engineering is this?</p> <p>Answer: B Aerospace</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">AO1=1</p>
---	--	---

2	<p>Employers must protect workers from harm by putting controls in place to protect them.</p> <p>Identify one other employer responsibility under the Health and Safety at Work Act and explain how this responsibility protects employees.</p> <p>Award one mark (AO1) for identification of an employer responsibility:</p> <ul style="list-style-type: none"> • assess risks / risk assessment (1) • give information (1) • consult employees. (1) • Training <p>Accept any other suitable response.</p> <p>Award up to two marks (AO2) for an explanation of how the employer responsibility protects employees:</p> <ul style="list-style-type: none"> • assess risks: risk assessments should be used (1) to address all risks that might cause harm in the workplace (1) • give information: relating to risks in the workplace (1) and how you are protected (1) • give information: to instruct or train workers (1) on how to deal with risks (1) • consult employees: over health and safety issues (1) directly or through a safety representative. (1) • Provide PPE: PPE should be provided to keep people safe (1) to reduce injuries to workers. • Provide equipment: specialist equipment may be required for a process to keep workers safe (1) such as a trolley or lifting equipment. <p>Accept any other suitable response.</p>	<p style="text-align: center;">3</p> <p style="text-align: center;">AO1=1</p> <p style="text-align: center;">AO2=2</p>
---	--	---

3	<p>Which one of the following hazards might be prevented by using a full-face respirator?</p> <p>Answer: B Inhalation of harmful fumes</p>	<p>1</p> <p>AO1=1</p>
----------	---	-------------------------------------

4	<p>A solvent is used to remove paint from metal.</p> <p>Identify two hazards of using a solvent.</p> <p>Award one mark for each identified hazard of using a solvent:</p> <ul style="list-style-type: none"> • fire (1) • explosion (1) • reaction from contact with skin (1) • inhaling fumes. (1) • corrosive. (1) • harmful to the environment (1) • death if consumed by accident. (1) <p>Accept any other suitable response.</p>	<p>2</p> <p>AO1=2</p>
----------	--	-------------------------------------

5 (a)	<p>There is an accident in an engineering workshop.</p> <p>Identify the document that must be completed and give one piece of information that must be written in this document.</p> <p>Award one mark (AO1) for identification:</p> <ul style="list-style-type: none"> • report form/accident book. (1) <p>Accept 'accident book entry'.</p> <p>Award one mark (AO2) for a piece of information:</p> <ul style="list-style-type: none"> • casualty name (1) • address (1) • what happened (1) • date of accident (1) • any witnesses (1) • cause of accident. (1) • equipment accident happened on. (1) <p>Accept any other suitable response.</p>	<p>2</p> <p>AO1=1</p> <p>AO2=1</p>
--------------	---	---

5 (b)	<p>Who must complete the document identified in 5(a) and when must this happen?</p> <p>Award one mark for identifying who completes the document entry:</p> <ul style="list-style-type: none"> the injured person/responsible person/employer/person in control of the work premises. (1) <p>Accept casualty/supervisor/ Health and Safety manager or any other suitable response. Do not accept “employee” unless it is in context.</p> <p>Award one mark for when the entry must be completed:</p> <ul style="list-style-type: none"> within 10 days of the accident occurring (or 15 days after the incident occurs if the casualty is off work for seven days). (1) <p>Accept any other suitable response.</p>	<p>2</p> <p>AO1=2</p>
--------------	---	-------------------------------------

6 (a)	<p>Which one of the following units is one thousandth of an amp?</p> <p>Answer: C Milliamp</p>	<p>1</p> <p>AO1=1</p>
--------------	---	-------------------------------------

6 (b)	<p>Which one of the following is a unit of measurement for luminous intensity?</p> <p>Answer: B Millicandela</p>	<p>1</p> <p>AO1=1</p>
--------------	---	-------------------------------------

6 (c)	<p>State two scales used in engineering to measure temperature.</p> <p>Award one mark each to a maximum of two marks:</p> <ul style="list-style-type: none"> kelvin (1) degrees Celsius. (1) Fahrenheit. (1) <p>Accept ‘Celsius’ or any other suitable response. Do not accept “degrees” on its own.</p>	<p>2</p> <p>AO1=2</p>
--------------	--	-------------------------------------

6 (d)	<p>Complete Table 1 by answering the questions below.</p> <p>i. How many millimetres are in one metre?</p> <p>ii. How many millimetres are in 50 centimetres?</p>	<p>2</p> <p>AO1=1</p> <p>AO2=1</p>
--------------	--	---

	<p>Award one mark (AO1) for identifying number of millimetres in one metre:</p> <p>i. 1000 (one thousand/a thousand) (1 mark)</p> <p>Award one mark (AO2) for calculating number of millimetres in 50 centimetres.</p> <p>ii. 500 (five hundred) (1 mark)</p> <p>Accept with or without millimetres in answers.</p>	
--	---	--

7	<p>A train uses 100 000 joules of energy to move in one hour.</p> <p>Calculate the average power used by the train in one second.</p> <p>Use the equations on pages 2 and 3.</p> <p>Show your working.</p> <p>Award one mark for converting into seconds, to a maximum of two marks for a correct answer:</p> <p>$P = E \div t$ (power = energy \div time)</p> <p>$P = 60 \times 60 = 3600$ (1 mark)</p> <p>$P = 100\,000 \div 3600$</p> <p>$P = 27.77$ (accept 27.7 or 27.8) (1 mark)</p> <p>Accept answers with or without units (watts/ joules) included.</p>	<p>2</p> <p>AO2=2</p>
----------	---	-------------------------------------

8	<p>Discuss the general responsibilities that employees have in protecting the safety of other workers in an engineering workshop.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Marks</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">7–9</td> <td> <p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context. Analysis and evaluation are present and very effective.</p> </td> </tr> </tbody> </table>	Level	Marks	Description	3	7–9	<p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context. Analysis and evaluation are present and very effective.</p>	<p>9</p> <p>AO1=3</p> <p>AO2=3</p> <p>AO3=3</p>
Level	Marks	Description						
3	7–9	<p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context. Analysis and evaluation are present and very effective.</p>						

		The conclusions drawn are fully supported by judgements.
2	4–6	<p>A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used, but not always consistently.</p> <p>Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors.</p> <p>Analysis and evaluation are present and effective but may be lacking appropriate development. There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant.</p>
1	1–3	<p>A limited range of relevant knowledge and understanding is shown but is often fragmented. Subject specific terminology, if used, is often inappropriate and a lack of understanding is evident.</p> <p>Application of knowledge and understanding is inappropriate, with any attempt showing fundamental errors.</p> <p>Analysis and evaluation, if present, are of limited effectiveness. Attempts to draw conclusions are seldom successful and likely to be irrelevant.</p>
	0	No creditworthy material

Indicative content:

Content to include any of the following:

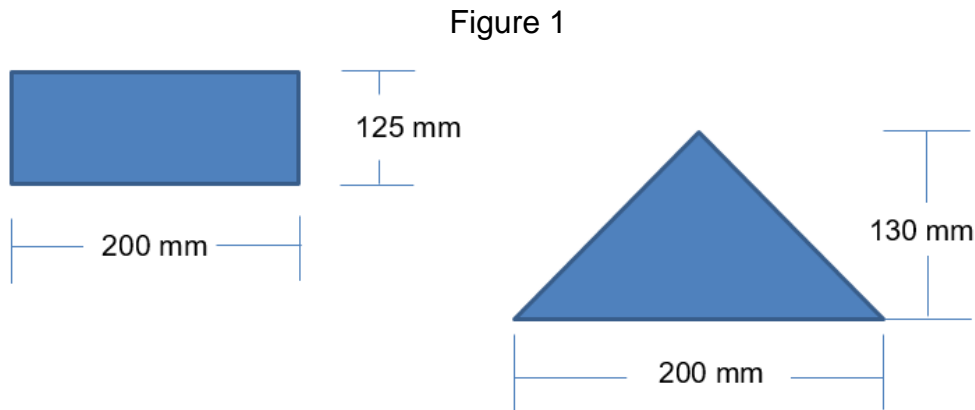
- health and safety legislation
- personal protective equipment (PPE)
- safe systems of working
- employee responsibilities
- Control of Substances Hazardous to Health (COSHH)
- manual handling
- duty of care to themselves and others
- reporting of accidents and incidents.

<p>Employee responsibilities could include:</p> <ul style="list-style-type: none"> • following the training you have received when using any work items your employer has given you • taking reasonable care of your own and other people’s health and safety • co-operating with your employer on health and safety • telling someone (your employer, supervisor, or health and safety representative) if you think the work or inadequate precautions are putting anyone’s health and safety at serious risk. <p>3: Justification or evaluative statements to include the following:</p> <ul style="list-style-type: none"> • a range of responsibilities has been fully identified • each responsibility/control would work correctly within an engineering workshop environment • hazards have been described and each responsibility/control reduces the risk from these hazards • explanations demonstrate how a responsibility/control reduces risk of injury. <p>2: Reasoned statements with some justification to include the following:</p> <ul style="list-style-type: none"> • some responsibilities/controls have been identified • descriptions contain some reference to reduction of risks to operatives within the workshop environment • some associated hazards have been described • some reference to controlling risks from hazards. <p>1: Brief statements with no justification:</p> <ul style="list-style-type: none"> • at least one responsibility/control has been described • brief statements not linked to how they control hazards • limited explanation • no descriptions on the reduction of risks. <p>0: No written material that has any reference to the context of safety of workers in a workshop and the responsibility of employees.</p>	
---	--

9

Figure 1 shows two components to be cut from the same square sheet of material, which has an area of 40 000 mm².

3
AO2=3



Calculate if both shapes in Figure 1 can be cut from the same square sheet.

Use the equations on pages 2 and 3.

Show your working.

Square root of 40 000 mm² = 200 mm (side of square sheet) (1 mark)

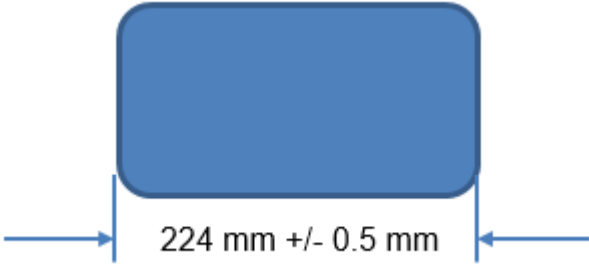
Height of each shape added together = 125 + 130 = 255 (1 mark)

Accept any other suitable response.

Can both shapes be cut from the same square sheet? (Yes/No)

No (1 mark)

(The square sheet is not big enough for the rectangle and triangle to be cut from it, either side by side or one on top of the other.)

<p>10 (a)</p>	<p>Figure 2 shows the tolerance of a component in an engineering drawing.</p> <p style="text-align: center;">Figure 2</p> <div style="text-align: center;">  <p>224 mm +/- 0.5 mm</p> </div> <p>Calculate the minimum and maximum dimensions for the component shown in Figure 2.</p> <p>Award one mark for each correct answer, up to a maximum of two marks.</p> <ul style="list-style-type: none"> • 224 – 0.5 = 223.5 mm (1) • 224 + 0.5 = 224.5 mm (1) <p>Award marks for answers without units of measurement (mm).</p>	<p style="text-align: center;">2</p> <p style="text-align: center;">AO2=2</p>
----------------------	---	---

<p>10 (b)</p>	<p>A ratio of 1:50 has been used on an engineering drawing with units in millimetres.</p> <p>Briefly describe what the ratio 1:50 means.</p> <p>Award one mark for a simple description or example.</p> <ul style="list-style-type: none"> • 1:50 means that every 50 units of measurement in the real world represents one unit on the drawing. (1) • 1 mm on the drawing is 50 mm in real life. (1) • 500 mm would be represented as a 10 mm line on a drawing. (1) <p>Accept any other suitable response.</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">AO2=1</p>
----------------------	---	---

<p>10 (c)</p>	<p>Which one of the following would be written in a drawing title block?</p> <p>Answer: D Material</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">AO1=1</p>
----------------------	--	---

11	<p>Which one of the following is the resistance of a material to impact?</p> <p>Answer: D Toughness</p>	<p>1 AO1=1</p>
12	<p>Identify three ways British Standard 8888 (BS 8888) is applied to an engineering drawing.</p> <p>Award one mark for each identification, to a maximum of three marks:</p> <ul style="list-style-type: none"> • position of title block (1) • contents of title block (1) • dimensioning (1) • tolerances (1) • information. (1) <p>Accept any other suitable response or feature that would be found on a BS8888 drawing.</p>	<p>3 AO1=3</p>

13	<p>Explain how water in a copper pipe conducts heat to a radiator.</p> <p>Award up to three marks for an explanation of how water in a copper pipe conducts heat to a radiator.</p> <p>Conductive metal (e.g. copper) is a very good conductor of heat (1) and transfers this heat via the water which is able to heat up and hold this heat (1) moving it to different parts of a building/house, transferring this energy to radiators. (1)</p> <p>The learner needs to demonstrate that the water is the conductor of heat, along with the copper pipe, and that this transfers the heat into a radiator.</p> <p>Award any other reasonable, applied explanation of conductivity.</p>	<p>3 AO3=3</p>
----	---	----------------------------------

14 (a)	<p>Which one of the following is an optical property of a metal?</p> <p>Answer: D Reflectivity</p>	<p>1 AO1=1</p>
--------	---	----------------------------------

14 (b)	<p>Which one of the following identifies an engineering product's ability to burn?</p> <p>Answer: C Flammability</p>	<p>1 AO1=1</p>
--------	---	----------------------------------

14 (c)	Which one of the following is an aesthetic characteristic used in traffic signs? Answer: A Colour	1 AO1=1
---------------	---	--------------------------

14 (d)	Which one of the following is a characteristic of brushed stainless steel? Answer: A Finish effect	1 AO1=1
---------------	--	--------------------------

15	<p>Give one example where hand-sanding should be used and explain why it would be used instead of electric disc-sanding.</p> <p>Award one mark (AO2) for an example:</p> <ul style="list-style-type: none"> • Small, intricate or delicate object (1) • a car (for example, on the uneven parts of a car requiring extra care) (1) • antique furniture (1) • fragile products (for example, a violin) (1) • high value items (for example, an ornament). (1) <p>Accept any other suitable response.</p> <p>Award up to two marks (AO2) for an explanation of using hand-sanding instead of electric disc-sanding.</p> <ul style="list-style-type: none"> • Sanding by hand allows more control (1) as you are using manual techniques to sand away material more slowly than a disc sander. (1) • A disc sander rotates at a fast speed (1) which does not allow as much control as manual sanding. (1) • For delicate work sanding a variety of surfaces (1) that might be easily damaged with excessive sanding. (1) • A hand sander is a cheaper alternative (for example, using sandpaper) (1) to using power tools like an electric sander. (1) • Manual power is used for hand-sanding where electricity is not available (1) unlike power tools which depend on electricity. (1) <p>Accept any other suitable response.</p>	3 AO2=3
-----------	---	--------------------------

16	Discuss the benefits of using cement in civil engineering.		9
	Level	Marks	Description
	3	7–9	<p>A coherent explanation with reference to the benefits of cement and their uses in modern civil engineering.</p> <p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context.</p> <p>Analysis and evaluation are present and very effective. The conclusions drawn are fully supported by judgements.</p>
	2	4–6	<p>A clear explanation with reference to some of the benefits of cement but without reference to their uses in modern civil engineering.</p> <p>A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used, but not always consistently.</p> <p>Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors.</p> <p>Analysis and evaluation are present and effective but may be lacking appropriate development. There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant.</p>
1	1–3	A basic explanation of cement, which may not be fully accurate. Doesn't mention uses at all.	
			AO1=3 AO2=3 AO3=3

			<p>A limited range of relevant knowledge and understanding is shown but is often fragmented. Subject specific terminology, if used, is often inappropriate and a lack of understanding is evident.</p> <p>Application of knowledge and understanding is inappropriate, with any attempt showing fundamental errors.</p> <p>Analysis and evaluation, if present, are of limited effectiveness. Attempts to draw conclusions are seldom successful and likely to be irrelevant.</p>	
	0		No creditworthy material	
<p>Indicative content:</p> <p>Benefits could include:</p> <ul style="list-style-type: none"> • consistent with little variation in quality • produces high strength-to-weight ratios • long-lasting • resilience • durability • can be recycled. <p>3: Justification or evaluative statements to include the following:</p> <ul style="list-style-type: none"> • a range of benefits stated • cement is used within concrete • cement sets to form a hard, strong, concrete structure • cement is fire-proof and will not burn down • long-lasting product • can be used in concrete, plastering, mortar • can be precast into different structures • strong links to civil engineering stated with use of examples (for example, bridges). <p>2: Reasoned statements with some justification to include the following:</p> <ul style="list-style-type: none"> • some benefits of using cement stated • some explanation detailed • little evaluative statements on cement • some links to concrete • some links to civil engineering • at least one example stated. 				

	<p>1: Brief statements with no justification:</p> <ul style="list-style-type: none"> • at least one benefit has been described • brief statements not linked to civil engineering • limited explanation • no examples referenced. <p>0: No written material that has any reference to the context of cement and the benefits of cement.</p>	
--	---	--

<p>17</p>	<p>Identify one example of environmental damage caused by extracting raw material and explain how this type of damage can be reduced.</p> <p>Award one mark (AO1) for an example of environmental damage.</p> <ul style="list-style-type: none"> • Deforestation (1) • Loss of habitat (1) • Open pit excavation takes up large areas of land. (1) • Extraction can destroy biodiversity or animals' habitat. (1) • Transportation of materials extracted causes pollution. (1) <p>Award up to two marks (AO3) for an explanation of how damage from the example given can be reduced.</p> <ul style="list-style-type: none"> • Damage reduced by the use of landfill (1) where the existing levels can be made back up. (1) • Topsoil can be reinstated along with trees (1) to improve appearance/replace habitats. (1) • Methane gas pollution can be reduced (1) through extraction and use in electricity generation. (1) <p>Accept any other suitable response.</p>	<p>3</p> <p>AO1=1</p> <p>AO3=2</p>
------------------	--	---

<p>18 (a)</p>	<p>Identify the type of material that high-impact polystyrene is and give one example of how it could be used.</p> <p>Award one mark (AO1) for identification:</p> <ul style="list-style-type: none"> • a thermoplastic (1) • thermopolymer (1) • compressible man-made material that deforms under load then returns to its original shape. (1) <p>Award one mark (AO2) for an example of its use:</p> <ul style="list-style-type: none"> • packaging material for high-cost engineering products (1) • packing for a machine base to prevent vibration transmission (1) • yoghurt pots (1) 	<p>2</p> <p>AO1=1</p> <p>AO2=1</p>
----------------------	---	---

	<ul style="list-style-type: none"> • refrigerator linings (1) • vending cups (1) • toilet seats and tanks (1) • instrument control knobs. (1) <p>Accept any other specific suitable response.</p>	
--	---	--

<p>18 (b)</p>	<p>Identify the type of material that cast iron is and give two examples of how it could be used.</p> <p>Award one mark (AO1) for identification:</p> <ul style="list-style-type: none"> • Ferrous metal, metal. (1) Do not accept “alloy” <p>Award up to two marks (AO2) for each example of an appropriate use of cast iron:</p> <ul style="list-style-type: none"> • engineering component for machining (1) • kitchen pan (1) • bathtub (1) • radiator. (1) • drainpipe (1) • Chiminea (1) <p>Accept any other suitable example relating to cast iron.</p>	<p>3</p> <p>AO1=1</p> <p>AO2=2</p>
----------------------	--	---

<p>19 (a)</p>	<p>Figure 3 shows a tool.</p> <p>Identify the tool in Figure 3 and give one reason why this size of tool would be used instead of a larger version.</p> <p>Award one mark (AO1) for identification.</p> <ul style="list-style-type: none"> • Junior hacksaw (must state junior). (1 mark) <p>Award one mark (AO3) for a reason given for using this tool instead of a larger version.</p> <ul style="list-style-type: none"> • It is used for cutting smaller items where a larger hacksaw may damage the metal that is cut. (1) • A larger saw would fail to cut because of the bigger teeth interval on the blade. (1) • A junior hacksaw enables some fine accurate cutting to be undertaken. (1) 	<p>2</p> <p>AO1=1</p> <p>AO3=1</p>
----------------------	--	---

	Accept any other suitable response.	
--	-------------------------------------	--

19 (b)	<p>Figure 4 shows a joining tool.</p> <p>Identify the joining tool in Figure 4 and give one example of a product this tool can join.</p> <p>Award one mark (AO1) for identification.</p> <ul style="list-style-type: none"> • Riveting gun. (1) • Pop Rivet gun (1) <p>Accept 'rivet gun' or any other suitable response.</p> <p>Award one mark (AO2) for a suitable product it can join:</p> <ul style="list-style-type: none"> • flight cases (1) • toolboxes (1) • extractor hoods (1) • basic fabrication. (1) <p>Accept any other suitable response for products that rivets can join.</p>	<p>2</p> <p>AO1=1</p> <p>AO2=1</p>
---------------	---	---

19 (c)	<p>Give one reason why the joining tool shown in Figure 4 would be used instead of another method.</p> <p>Award one mark for a reason.</p> <ul style="list-style-type: none"> • It is used for fixing items securely, so they do not come apart. (1) • Rivets are less likely to come undone which could otherwise cause an accident/crash. (1) • Cannot be vandalised easily or unscrewed which protects safety of fixing. (1) • Riveting is a more attractive joining method than welding etc. (1) • Quicker process. (1) • Lower skill level to produce. (1) • One sided access (1) • Lower price (1) • One sided access (1) <p>Accept any other suitable response related to the process of using the technique.</p>	<p>1</p> <p>AO3=1</p>
---------------	--	-------------------------------------

20	<p>Employees face risks when using fixed machines such as lathes and pillar drills in an engineering workshop.</p> <p>Evaluate the control measures an engineering company could use to reduce the risks from different hazards.</p>	<p>9</p> <p>AO1=3</p> <p>AO2=3</p> <p>AO3=3</p>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Marks</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">7–9</td> <td> <p>A coherent evaluation with reference to a range of different hazards and associated control measures.</p> <p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context.</p> <p>Analysis and evaluation are present and very effective. The conclusions drawn are fully supported by judgements.</p> </td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">4–6</td> <td> <p>A clear evaluation with reference to some hazards and associated control measures.</p> <p>A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used, but not always consistently.</p> <p>Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors.</p> <p>Analysis and evaluation are present and effective but may be lacking appropriate development. There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant.</p> </td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1–3</td> <td> <p>A basic evaluation of some hazards and associated control measures.</p> <p>A limited range of relevant knowledge and understanding is shown but is often fragmented. Subject specific terminology, if</p> </td> </tr> </tbody> </table>			Level	Marks	Description	3	7–9	<p>A coherent evaluation with reference to a range of different hazards and associated control measures.</p> <p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context.</p> <p>Analysis and evaluation are present and very effective. The conclusions drawn are fully supported by judgements.</p>	2	4–6	<p>A clear evaluation with reference to some hazards and associated control measures.</p> <p>A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used, but not always consistently.</p> <p>Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors.</p> <p>Analysis and evaluation are present and effective but may be lacking appropriate development. There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant.</p>	1	1–3	<p>A basic evaluation of some hazards and associated control measures.</p> <p>A limited range of relevant knowledge and understanding is shown but is often fragmented. Subject specific terminology, if</p>
Level	Marks	Description												
3	7–9	<p>A coherent evaluation with reference to a range of different hazards and associated control measures.</p> <p>A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout.</p> <p>Application of knowledge and understanding is appropriate, with clear relevance to the context.</p> <p>Analysis and evaluation are present and very effective. The conclusions drawn are fully supported by judgements.</p>												
2	4–6	<p>A clear evaluation with reference to some hazards and associated control measures.</p> <p>A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used, but not always consistently.</p> <p>Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors.</p> <p>Analysis and evaluation are present and effective but may be lacking appropriate development. There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant.</p>												
1	1–3	<p>A basic evaluation of some hazards and associated control measures.</p> <p>A limited range of relevant knowledge and understanding is shown but is often fragmented. Subject specific terminology, if</p>												

		<p>used, is often inappropriate and a lack of understanding is evident.</p> <p>Application of knowledge and understanding may be inappropriate and may show fundamental errors.</p> <p>Analysis and evaluation, if present, are of limited effectiveness. Attempts to draw conclusions are seldom successful and likely to be irrelevant.</p>	
	0	No creditworthy material	
<p>Indicative content:</p> <p>3: Justification or evaluative statements to include the following:</p> <ul style="list-style-type: none"> • a range of primary hazards identified • risks from hazards fully explained • a range of control measures identified which are strongly linked to the hazards, such as emergency power cut off, hazard zones and personal protective equipment (PPE) • some evaluation of control measures in terms of risk reduction • examples in an engineering context examined with strong links to fixed machines (for example, lathe, pillar drill etc). <p>2: Reasoned statements with some justification to include the following:</p> <ul style="list-style-type: none"> • some primary hazards identified • some risks from hazards explained • some control measures identified which are linked to the hazards, such as emergency stop buttons, hazard zones and PPE • brief evaluation of control measures in terms of risk reduction • examples in an engineering context examined with some links to fixed machines (for example, lathe, pillar drill etc). <p>1: Brief statements with no justification:</p> <ul style="list-style-type: none"> • one primary hazard identified • limited explanation of risks from hazards • one control measure identified which is linked to the hazard, such as emergency stop buttons, hazard zones or PPE • no evaluation of control measures in terms of risk reduction • no examples in an engineering context examined. <p>0: No written material that has any reference to the context of hazards and control measures.</p> <p>Accept any other suitable response.</p>			

Assessment Objective Grid

Question	AO1	AO2	AO3	Total
1	1			1
2	1	2		3
3	1			1
4	2			2
5(a)	1	1		2
5(b)	2			2
6(a)	1			1
6(b)	1			1
6(c)	2			2
6(d)	1	1		2
7		2		2
8	3	3	3	9
9		3		3
10(a)		2		2
10(b)		1		1
10(c)	1			1
11	1			1
12	3			3
13			3	3
14(a)	1			1
14(b)	1			1
14(c)	1			1
14(d)	1			1
15		3		3
16	3	3	3	9
17	1		2	3
18(a)	1	1		2
18(b)	1	2		3
19(a)	1		1	2
19(b)	1	1		2
19(c)			1	1
20	3	3	3	9
Total	36	28	16	80