ADDITIONAL SAMPLE
ASSESSMENT MATERIAL

GCSE
DESIGN AND TECHNOLOGY

Mark scheme

Additional sample

Version 1.0

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

SECTION A

Qu	Part	Marking guidance	Total marks	AO
1		**A** Coal	1 mark	AO4
2		**A** A combination of two or more different materials	1 mark	AO4
3		**B** Two rotations	1 mark	AO4
4		**A** Denim	1 mark	AO4
5		**A** Bell crank linkage	1 mark	AO4
6		**B** Oak	1 mark	AO4
7		**B** Crowd funding	1 mark	AO4
8		**C** Medium density fibreboard is a man-made material used in the manufacture of flat pack furniture	1 mark	AO4
9		**A** A material that can withstand repeated impacts	1 mark	AO4
10		**B** Oscillating	1 mark	AO4
11		1 mark for each correct advantage given up to a maximum of 2 marks. **Indicative content:** • no need to plug into a mains supply • not restricted by the length of a power cable • the product powered can be moved to many different locations • discussion of product size due to power source. You should accept any other valid response.	2 marks	AO4

12		1 mark for each correct reason stated up to a maximum of 2 marks. **Indicative content:** • one programmable microcontroller can replace several discrete integrated circuits (chips) • reduced size of circuit boards • improved reliability • economies of scale – one programmable microcontroller can be bought in bulk and programmed differently for different applications • bulk buying of a standard component also can reduce component costs • allow for programming upgrades extending product life. You should accept any other valid response.	2 marks	AO4

13		1 mark for each valid point up to a maximum of 2 marks. A further 1 mark for a relevant example. **Indicative content:** • built-in plan to minimise product life (1) by a manufacturer (2) • product designed to last only a certain time (1) because of rapid developments in technology (2) • so manufacturers can sell more product (1) and create a demand/ sustain a market demand (2). Examples: • disposable razors • printer cartridges • disposable cameras. 1 mark max for an appropriate example. You should accept any other valid response.	3 marks	AO4

14		1 mark for each correct response up to a maximum of 3 marks. 1 correct =1 2 correct = 2 3 or 4 correct = 3 Bevel gear = **Hand whisk (E)** Foil lined board = **Food container (A)** Glass reinforced polymer = **PCB (C)** Polyester = **Jumper (B)**	3 marks	AO4

SECTION B

Qu	Part	Marking guidance	Total marks	AO
15		2 marks maximum for any two correct explanation points for each word. 1 mark for a simple explanation point. **Indicative content:** Reduce: • use less materials (1) in the manufacture of a product (2) • produce less waste (1) like toxic by-products (2) • use less energy (1) by turning products off and not leaving on stand-by (2). Refuse: • to use more product packaging (1) than is necessary and avoid using extra materials (2) • to dispose of a product in the easiest way (1) like landfill as it is not good for the environment (2). Reuse: • use a product again for the same purpose (1) after it has done its job (2) • find a new use for a product (1) after it has finished the job it was designed for (2). Accept other correct responses **and** credit appropriate examples if used by students to explain their understanding.	3×2 marks	AO4
16		3 marks for a detailed descriptive point with an example. 2 marks for a detailed descriptive point or simple descriptive point with an example. 1 mark for a simple descriptive point. **Indicative content:** • colour – ability to colour co-ordinate a product within an environment eg curtain fabric in a lounge • texture – upholstery fabric for use on a seat eg in a car to improve driving sensation • finish – a smooth finish pleasant to touch • shape/form – geometric or organic forms eg architecture. Accept other correct responses.	3 marks	AO4

17	**1**	1 mark for each correct surface treatment or finish named. **Indicative content:** • printing • embossing • UV varnishing • painting • tanalising • varnishing • dip coating • powder coating • galvanizing • polishing • vinyl decals • dyes • stain protection • PCB lacquering • lubrication. Accept any other correct response.	2 marks	AO4

17	**2**	1 mark for each simple point of explanation up to a maximum of 3 marks. NB allow 2 marks for a point of explanation clarified in more detail. **Indicative content:** • improve function (1) • protect the material (1) by providing a barrier against moisture/ UV/fungal/insect (2) • stop deterioration (1) • enhance their properties (1) by making them tougher/more resistant to wear (2) • make them easier to clean (1) and stop absorption of liquids that might stain (2) • improve aesthetics (1) • to make them look better/improve appearance (1). Accept other correct responses.	3 marks	AO4

18

3 marks	Process and its suitability for the indicated product are fully accurate and demonstrate excellent understanding.
2 marks	A good explanation with one or two minor errors or omissions suggesting gaps in understanding.
1 marks	A simple description of why the process is used. Several errors and only basic evidence of limited understanding.
0 marks	No attempt or not worthy of credit.

NB no mark for naming a product.

Indicative content:

Casting	• Create a complete object without having to join lots of different pieces together. • High quality finish on casting (die casting worth a second mark) reducing finishing time of product. • Complex shapes can be manufactured repeatedly from the same mould. • Waste materials can be re-melted and reused again saving on materials and reducing production costs. • Process can be highly suited to automation eg pressure die casting and gravity die casting.
Printing	• Reducing costs of digital printing has allowed higher quality digital prints to make use of the full colour range. • Use of CAD and CAM in commercial printing has greatly improved consistency in colour application and pattern alignment. • Accuracy in modern printing methods has reduced chemical and water consumption. • Modern printing methods are increasingly sustainable with a reduced negative impact on the environment. • Prototyping of samples to test different patterns allows designers and manufacturers to see what the final print will look like more quickly.
Injection moulding	• A rapid process for making a toothbrush in one piece • Pigments can be mixed with molten polymer to allow toothbrushes to be coloured. • Left over material can be readily recycled minimising waste. • Same equipment can be used for over moulding a TPE soft touch grip on the toothbrush. • Allow brush bristles to be held in place – encapsulated.

Indicative content continues on the next page.

3 marks

AO4

Die cutting	• Allows for multiple copies of card to be cut out in one go. • Highly suited to automation where high volumes of identical card products are required. • Maintains consistency and QC in all cards manufactured as the same die is used. • Different features like creases and perforations can be added to a die, and formed at the time of cutting.
Turning	• Turning allows accurate bowl formation as wood rotates about a central axis. Hand carving a bowl is more likely to have variations and be a more time and labour intensive process. • Use of CAD and CAM using CNC machines has led to improved accuracy – removal of human error. • Fine details can consistently be applied to a turned bowl in a way that is virtually impossible with hand turning. • Reduction in lung and respiratory diseases for human operators (avoid fine dust particles) – CAM machining can take place in a sealed environment with efficient extraction. • Efficient use of available material minimising waste.
Flow soldering	• Used to solder many through hole solder joints at once. • Improve the consistency of soldered joints. • Solder is heated to correct temperature to melt the solder without damaging the components. • Speed up the production of PCBs ie several joints are soldered at once rather than individually as with a soldering iron. • Significant reduction in manufacturing time, reduction in human errors and defective PCBs through soldering inconsistencies.

Accept other correct responses.

19

3 marks for a detailed description of how a material can be modified with an example provided.
2 marks for a simple description and an example or a detailed description with no example.
1 mark for a valid simple point made or named modification.

NB where students respond with detail on surface finishes (not a material modification) allow up to 2 marks max depending on the quality of the response.

Indicative content:

Material	**How is the material category modified?**	**Why does it undergo modification?**
Timbers	Seasoning – kiln or naturally dried	To reduce moisture content and ensure that the timber is less likely to warp, split or be subject to insect or fungal attack.
Metals	Annealing	Annealing – the 'softening' of metals by gentle heating to a predetermined temperature to make it more ductile and easier to fashion.
	Hardening	Hardening – make the surface of the metal more resistant to wear eg case hardening in gears.
	Tempering	Tempering – reduce the stresses set up in a metal to make them less brittle eg gardening equipment.
Papers and boards	Addition of a waterproof barrier	To prevent absorption of liquid and prevent moisture transfer eg waxed card.
Textiles	Application/addition of flame-retardants	Fabric surfaces treated to inhibit combustion and fire hazards. Reduce flammability eg fabric used in domestic furnishing ie sofas, curtains.
Polymers	Addition of UV stabilisers	To prevent discolouration of polymers left outside or in the sun eg UPVC window frames.
	Addition of fillers	Fillers to 'bulk out' polymers and reduce material costs.
	Addition of plasticisers	Plasticisers added to makes polymers easier to extrude/form.

Accept other correct responses.

3 marks

AO4

20		2 marks for calculating the most cost effective way of purchasing required zips using purchase options ie buy 1400 not 1500 700 x 2 = 1400 zips 1000 x 0.30 = £300 500 x 0.45 = £225 £225 + £300 = £525 (1 mark) 1000 x 0.30 = £300 100 x 0.50 = £50 50 x 4 = £200 £300 + £200 = £500 (1 mark)	2 marks	AO4

21		<table><tr><td>7–8 marks</td><td>A fully coherent analysis and evaluation of how production aids (at least two named) improve the quality, accuracy and speed of manufacture. Response is well structured, with excellent use of knowledge and understanding to justify the argument made.</td></tr><tr><td>5–6 marks</td><td>A logical analysis and evaluation of how production aids (one or two named) improve the quality, accuracy and speed of manufacture. Response has structure. Expect imbalance in consideration of all three discussion points for this mark band. Good use of design and technology knowledge and understanding to justify the argument made.</td></tr><tr><td>3–4 marks</td><td>Some understanding of how production aids are used (at least one named). Responses will indicate analysis but minimal evaluation of how production aids are to improve the quality or accuracy or speed of manufacture. At least two discussion points considered for this mark band. Limited use of design and technology knowledge and understanding to justify the argument made.</td></tr><tr><td>1–2 marks</td><td>One or two brief points about production aids. Response is likely to focus on what production aids are and do. Expect no evaluation on how effective different production aids are.</td></tr><tr><td>0 marks</td><td>No attempt or nothing worthy of credit.</td></tr></table> **Please see next page for indicative content.**	8 marks	AO3

		Indicative content: Expect responses to consider the following production aids: • templates • jigs • patterns • formers • moulds • dies • stencils • fixtures. Quality: • expect references to quality assurance (systems used) and quality control (steps taken during making) • reduce waste through faulty parts/items or batches. Accuracy: • production aids can be reused and provide consistency • provide accuracy where more than one part is required – within a tolerance. Speed: • no need to mark out every item/component if using a production aid, shape and form should be guaranteed each time saving on marking out • use of moulds and formers can reduce finishing requirements and replace the need for fabrication, as the item/component is a complete outcome. You should award marks for anything worthy of credit.		

SECTION C

<table>
<tr><th>Qu</th><th>Part</th><th>Marking guidance</th><th>Total marks</th><th>AO</th></tr>
<tr><td>22</td><td></td><td>
<table>
<tr><td>5–6 marks</td><td>Excellent understanding of why designers research and compare products before designing. A detailed range of points made. Look for detailed reference to informing their own design ie what to incorporate and what to avoid.</td></tr>
<tr><td>3–4 marks</td><td>Good understanding of why designers research and compare products. Three or four points made. Link to value of informing own design is unclear/not made.</td></tr>
<tr><td>1–2 marks</td><td>Basic understanding of research and/or value in comparing existing products. One or two simple/general statements made.</td></tr>
<tr><td>0 marks</td><td>No attempt or nothing worthy of credit.</td></tr>
</table>
Indicative content:
Research (a specific product) because:
• they want to see what is available on the market already
• what a product looks like
• what materials it is made from
• how it is packaged
• sustainability eg air miles, carbon footprint, percentage of recycled or reused materials.

Compare (a range of products) because:
• want to know product specifications eg guarantee, technical features
• the price of similar products
• ease of use
• what target users think eg consumer group reports
• customer service.

Research and compare then link findings to designing their own products by:
• identifying a niche market/target group
• where market pull exists
• a gap in the market
• opportunities for new developments eg technology push
• design a better product/more ‘fit for purpose’
• identify strengths and weaknesses in the competition.

Accept any other correct response.
</td><td>6 marks</td><td>AO4</td></tr>
</table>

<table>
<tr>
<td>23</td>
<td>1, 2 and 3</td>
<td>
Award up to a maximum of 4 marks for each of the three parts of the question.
<table>
<tr><td>3–4 marks</td><td>Well described and justified analysis containing a full evaluation, drawing conclusions having considered both positive and negative factors.</td></tr>
<tr><td>1–2 marks</td><td>Brief points mentioned but not fully explained. Analysis present but limited evaluation/conclusions drawn. May have focused solely on either positive or negative factors.</td></tr>
<tr><td>0 marks</td><td>No attempt or nothing worthy of credit.</td></tr>
</table>
Allow positive and negative responses.

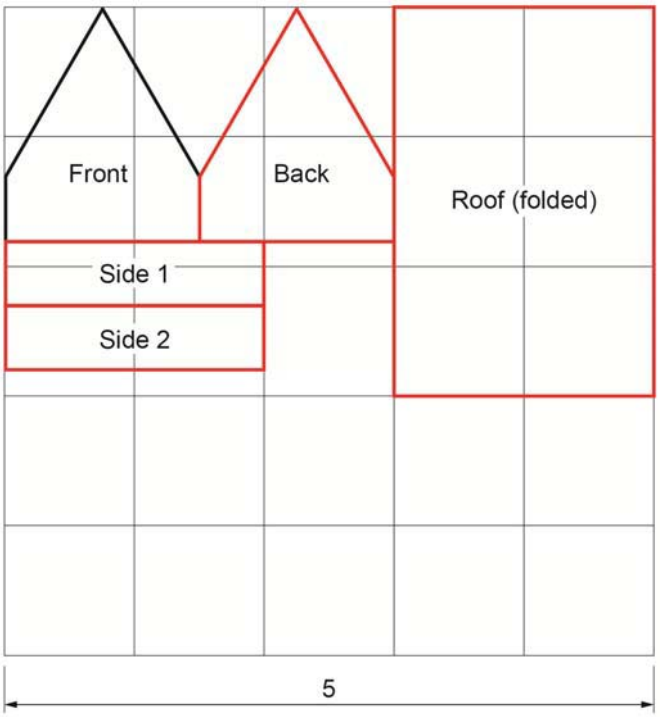
Indicative content:
<table>
<tr><td>A family holiday</td><td>Positive responses:
can be folded up in a compact space to fit in a car or top box
telescopic poles can be collapsed making them easier to transport in a family car
good for families who want a multi stop holiday
cost effective way of going on holiday with a family.
Negative responses:
tent only holds two people and some families would involve three or more people eg two adults, children and a pet
it rains a lot in the UK and the tent is only shower proof
if they get wet they can be inconvenient to dry out when you get home
no security if you go out for the day.</td></tr>
<tr><td>Use in a natural disaster</td><td>Positive responses:
transported rapidly in large numbers by airfreight (flat packed, compact) where disaster area may not be easily accessible
no specialist tools required to set up/assemble
can be stored and reused once the disaster is over
durable to survive elements/conditions
they can be put up in geometric patterns (rows) to save space.
Negative responses:
cotton fabric may not provide enough insulation if crisis occurs in inclement weather</td></tr>
</table>
</td>
<td>12 marks</td>
<td>AO3</td>
</tr>
</table>

	• many separate parts, meaning distribution of all parts in a crisis becomes more complex • they require a degree of skill and stamina to put up, which the end user may not have • time consuming to set up in a crisis • bulky to transport in large numbers due to numerous parts • does not include a mosquito net which might be essential.
A festival	Positive responses: • can be set up in a field easily where access might be difficult • can be carried into the event in a backpack • can be pitched in high density to accommodate lots of festival 'goers'. Negative responses: • pop festivals can get very muddy and the tent would get dirty in these conditions • made from several materials, which makes sorting and recycling more complex after the event – many tents get left • tents get set up anywhere and people may trip over guy ropes – safety hazard • cotton burns which may be another danger where there are lots of camp fires • no security and there are lots of people at festivals.

Points must be specific to the given scenario in order to be credit worthy.

NB allow repeats but they must be in context ie made specifically relevant to each situation.

Accept any other credit worthy answers.

23	**4**	1 mark for correct number of parts drawn. 1 mark for positioning of the pieces with least possible waste. 1 mark for correct use of scale and proportions. 1 mark for showing that 15 square metres/3 full metres of fabric will be required per tent. 1 mark for indication of no waste when cutting ie touching parts of the product when cutting. 	5 marks	AO4

23	**5**	1 mark for the correct subtraction of area required for tent pieces from total area available on a 4 metre long piece of fabric. 1 mark for correct percentage waste to **two** decimal places. **Calculation** **Step 1:** 3 x 5 = 15 square metres for minimum quantity of material required **Step 2:** inserting of total fabric area and waste area into formula 1.95/15 x 100 = 13.066 **Step 3:** percentage waste to two decimal places is 13.07% **NB** if a student has assumed a value other than 15 square metres but calculated the correct percentage of waste using the waste value provided in the question do not double penalise and award full credit.	2 marks	AO4

23	**6**	Students may respond: • By calculating the height of the tent poles using trigonometry. • By drawing out the required height of the tent pole graphically. **Trigonometry:** **1 mark** for use of tangent formula: eg tan A = opposite/adjacent. **1 mark** for correct substitution of values: eg tan 30 degrees = 0.75/adjacent. **1 mark** for correct transposition: eg adjacent (Tent pole) = 0.75/ tan 30 degrees or 0.75/0.58 **1 mark** of correct tent pole length: eg 1.30 metres plus 0.5 metres = 1.8 metres. **Graphic:** **1 mark** for accurate construction of 30 degree angle in correct location. **1 mark** for scaled drawing measured lengths. **1 mark** for identifying portion on the pole in the sloping roof to be 1.3m scaled length. **1 mark** for answer ie adding calculated drawn vertical height and 0.5m together: **accept 1.79m or 1.8m**	4 marks	AO4

23	**7**	**1 mark** for each correct reason stated up to a maximum of 2 marks. One reason with a detailed explanation would get 2 marks. Accept examples to clarify understanding even though question does not ask for them. **Indicative content:** • consider how the tent interacts with its users eg touch, feel, aesthetics possibly even smell of the materials • how easy it is to put up the tent • does it provide sufficient shelter eg keep the rain off the occupants/ keep them warm. You should accept any other valid responses.	2 marks	AO4

24	**1**	**1 mark** for a specific product associated with your named designer. **NB** if no designer is named, no credit for a specific product can be awarded. **Indicative content:**	1 mark	AO4

Designer	**Associated product**
Harry Beck	• London underground map
Marcel Breuer	• Wassily chair • Knoll furniture
Coco Chanel	• Fashion designer who focused on handbags, jewellery and perfumes
Norman Foster	• Millennium Bridge • 30 St Mary – the Gherkin • New Wembley stadium • City Hall on the South Bank
Sir Alec Issigonis	• The Morris Minor • The original Mini
William Morris	• Textile designer who focused on fabrics and wallpaper
Alexander McQueen	• Fashion designer – union jack coat for David Bowie • 'Bumster' trousers
Mary Quant	• Mini skirt • 'Mod' style
Louis Comfort Tiffany	• Art Nouveau – the Tiffany lamp
Raymond Templier	• Art deco jewellery
Gerrit Reitveld	• Red Blue chair
Charles Rennie Mackintosh	• Furniture with an art nouveau influence • Stained glasswork
Aldo Rossi	• The conical coffee maker and tea pot for Alessi • Moment clock for Alessi • Milan chair
Ettore Sottsass	• Valentine typewriter • Olivetti office machines • The Carlton room dresser
Philippe Starck	• The Juicy Saliff lemon squeezer • Bubble chair
Vivienne Westwood	• Punk fashion/New wave • Tartan and tweed

<table>
<tr>
<td>24</td>
<td>2</td>
<td>
<table>
<tr><td>5–6 marks</td><td>Thorough, detailed description, making reference to inspiration, materials and technologies. Response demonstrates an excellent understanding of the impact of each feature upon the work of the chosen designer.</td></tr>
<tr><td>3–4 marks</td><td>Good descriptions of how inspiration, materials and technologies are used in the work of the chosen designer. Expect an imbalance in descriptions for each area.

Good understanding of how each feature has impact on the work of the chosen designer.</td></tr>
<tr><td>1–2 marks</td><td>Basic description. One or two points made, with vague or no linking to the work of the chosen designer.</td></tr>
<tr><td>0 marks</td><td>Nothing worthy of credit/incorrect response.</td></tr>
</table>
Indicative content:

Inspiration themes:
• biomimicry/nature
• architecture
• fashion and trends
• popular culture
• religion
• geometry
• trends.

Material themes:
• natural materials
• man-made materials
• smart materials
• modern materials.

Technologies:
• mass production
• production lines
• computer aided design (CAD)
• computer aided manufacture (CAM)
• rapid prototyping
• automation/robotics.
</td>
<td>6 marks</td>
<td>AO4</td>
</tr>
</table>

<table>
<tr>
<td>25</td>
<td>1</td>
<td>
<table>
<tr><td>5–6 marks</td><td>A fully coherent and logical description with clear points fully explained as to how the chosen modelling technique is used to develop products.</td></tr>
<tr><td>3–4 marks</td><td>Response shows some good understanding with points made why the chosen modelling technique is used to develop products.</td></tr>
<tr><td>1–2 marks</td><td>Limited understanding of why the chosen modelling technique is used to develop products.</td></tr>
<tr><td>0 marks</td><td>Nothing worthy of credit/incorrect response.</td></tr>
</table>
Indicative content:

Card modelling:
• Test out parts of a design/ the design in 3 dimensions.
• See how the product might look in real life.
• Check out material proportions and dimensions.
• Consider and identify fabrication issues that cannot be seen in a 2D paper drawing.
• Save on expensive high quality material where mistakes and changes in the 3D form might still occur.

Toile:
• Allow a designer to see how a garment might look full size (mock-up) without investing money in expensive material. This cannot be done with paper as it does not handle like fabric ie linen.
• Allows small alterations in a cheaper material form to see how a garment might look.
• A sewing pattern might require a few tweaks as no one human form is identical. This can be carried out using a toile.
• Test out construction and assembly techniques whilst developing a design.
• Peace of mind to check the item is right before wasting time and energy on expensive final materials.

Breadboard:
• Test an electronic circuit to see if it works using real electronic components.
• Confirm the working of a virtual electronic circuit designed with PCB software on a PC.
• Speed up research and development as you do not have to waste time soldering components into place.
• Sustainability – allows for the reuse and exchange of electronic components through experimentation at the development phase.
</td>
<td>6 marks</td>
<td>AO4</td>
</tr>
</table>

25	**2**		6 marks	AO4

5–6 marks	A fully coherent and logical discussion with clear points fully explained as to how computer based tools might be used to develop products.
3–4 marks	Response shows some good understanding with points made to discuss how computer based tools might be used to develop products.
1–2 marks	Limited understanding of how computer based tools might be used to develop products.
0 marks	Nothing worthy of credit/incorrect response.

Indicative content:
Students are likely to focus on CAD and CAM.

CAD:
- Internet – materials research and existing product research.
- Social media – potential customer/client/end user opinion.
- Shape /form – see what the final product might look like in the real world eg different surfaces finishes, views from different positions.
- Non-destructive testing – avoid wasting unnecessary materials to find out how a material/part/product may perform when in use.
- Share – ability to shape information worldwide instantly eg CAD file.

CAM:
- Accuracy – make a scaled or full size mock-up of a final part/component etc without wasting more expensive material.
- Rapid prototyping – accurate and fast replication of a CAD design in a modelling material eg PLA.
- CNC machinery eg 3 axis miller to realise a virtual realisation of a component/part/product.
- Testing – check settings for CAM to ensure the settings are correct before final manufacture eg laser – power/speed/PPI in the 'real' material.

You should accept any other valid responses.