



Pearson
Edexcel

Mark Scheme (Results)

June 2022

Pearson Edexcel GCE

In Design & Technology: Product Design (9DT0)

9DT0/01

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

June 2022

Question Paper Log Number 70882

Publications Code 9DT0_01_2206_MS

All the material in this publication is copyright

© Pearson Education Ltd 2022

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

A Level 9DT01 – Version 6 Final

Question number	Answer	Mark
1(a)	<p>Any two of the following metals:-</p> <ol style="list-style-type: none">1. Chromium (1)2. Nickel (1)3. Molybdenum (1)4. Titanium (1)5. Copper (1)6. Niobium (1)7. Manganese (1)8. Aluminium (1)9. Tin (1)10. Magnesium (1) <p>Do not accept any additives that are not a metal</p>	(2)

Question number	Answer	Mark
1(b)	<p>Any two explanations that include a correct working property and a linked justification of why the property makes it a suitable material to use.</p> <ol style="list-style-type: none">1. Tough (1) so will resist impact / will not fracture / chip / break. (1)2. Hard (1) so will not scratch easily. (1)3. Smooth surface created during manufacture (1) which prevents foodstuffs from sticking / more hygienic / easy to clean (1).4. Will not corrode (1) so can be used in damp / wet conditions / will not contaminate food (1)5. Withstand high temperatures (1) so will not deform when in use / will not be damaged by hot items taken from the oven. (1)6. Chemical resistance / stain resistant (1) so can be cleaned with a range of cleaning fluids / materials / maintains aesthetics (1)	(4)

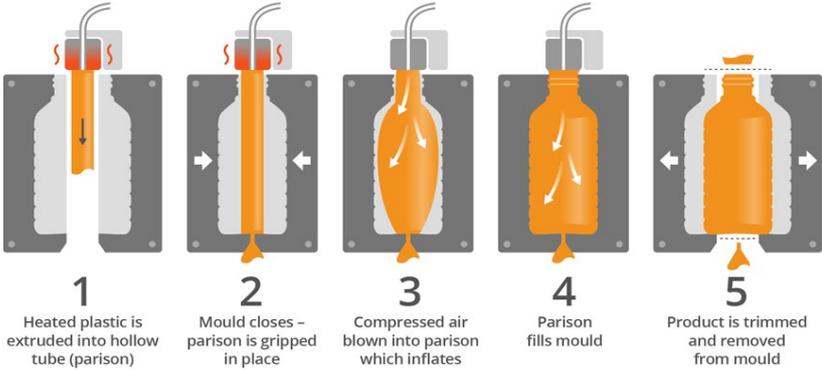
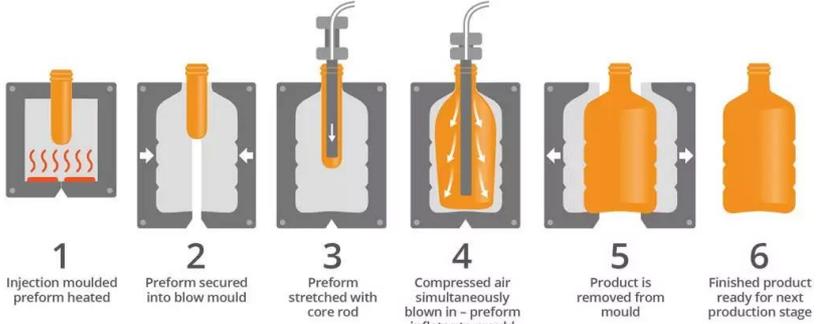
Question number	Answer Additional guidance	Mark
1(c)	<p>Any explanation that includes the identification of a correct reason (1) and linked justifications of that reason (1+1):</p> <ol style="list-style-type: none"> 1. Rubber is airtight / waterproof / can be compressed (especially in hot water) (1) and is flexible / will squash / expand into / grip the plug hole (1) providing a watertight seal / preventing water loss (1) 2. Rubber is a renewable material (1) because it can be harvested continuously without damaging the tree (1) so does not deplete natural resources (1) 3. Chemical resistant to soaps and detergents (1) so can be used in a domestic environment (1) without degrading / lasts a long time (1) 	(3)

Question number	Answer	Mark
2(a)	<p>Any two of the following methods:</p> <ol style="list-style-type: none"> 1. Sand casting (1) 2. Fabrication (1) 3. Extrusion (1) 4. Additive manufacturing (1) 5. Die casting (1) <p>Note: If casting is used twice it must specify die & sand to be awarded two marks</p>	(2)

Question number	Answer	Additional Guidance	Mark
2(b)	<p>In order for the candidates to solve the problem, they will need to recognise that each of the following stages are required.</p> <p><u>Method 1</u></p> <p>Stage 1 (calculate the volume of the block) $135 \times 45 \times 30 = 182,250$ (1)</p> <p>Stage 2 (calculate volume removed) $135 \times (45-8 - 8) \times (30-8) = 86,130$ (1)</p> <p>Stage 3 (calculate proportion of original block) $(182,250 - 86,130)/182,250 = 0.5274...$ (1)</p> <p>Stage 4 (calculate mass of component) $492 \times 0.5274 = 259.48...$ (1)</p> <p>Stage 5 (correct to 1 dp) 259.5 (1)</p> <p><u>Alternative Method 2</u></p> <p>Stage 1 (calculate the volume of the component) $(135 \times 8 \times 30 \times 2) + (135 \times (45-8-8) \times 80) = 96,120$ (1)</p> <p>Stage 2 (calculate the volume of the block) $135 \times 45 \times 30 = 182,250$ (1)</p> <p>Stage 3 (calculate proportion of original block) $96120/182,250 = 0.5274...$ (1)</p> <p>Stage 4 (calculate mass of component) $492 \times 0.5274 = 259.48...$ (1)</p> <p>Stage 5 (correct to 1 dp) 259.5 (1)</p> <p><u>Continued onto the next page</u></p>	<p>Accept alternative methods of correct working out.</p> <p>Error carried forward should be applied.</p> <p>Award full marks for correct answer only.</p> <p>SC 259.48 seen award 4 marks</p>	(5)

	<p><u>Alternative Method 3</u></p> <p>Stage 1 – same as existing</p> <p>Stage 2 - calculate the weight per mm³ $82250 / 452 = 370.43\text{g (1)}$</p> <p>Stage 3 – volume of the sides $2 \times 8 \times 130 \times 135 = 64800 \text{ (1)}$</p> <p>Stage 4 – volume of the base $29 \times 8 \times 135 = 31320 \text{ (1)}$</p> <p>Stage 5 – mass of the component $(31320 + 64800)/370.43 = 259.5 \text{ (1)}$</p> <p>Note – if candidates arrive at an incorrect answer at stage 4 but then correctly round their answer to 1dp then 1 mark should be awarded for stage 5.</p>		
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--

Question number	Answer	Mark
3(a)	<p>A valid explanation with linked justification:</p> <ol style="list-style-type: none"> 1. Tough / has good impact resistance (1) so the bottle will not shatter or break if dropped (1) 2. Good tensile strength (1) so will retain its shape/volume when filled with liquid / will resist pressures associated with fizzy drinks (1) 3. Good chemical resistance (1) so will prevent contamination of the drink / not react with the contents of the bottle (1) 4. Transparent / see through (1) so the drink in the bottle can be clearly seen (1) 5. Good fluidity when heated (1) allowing the material to easily take the form of the mould (1) 6. Inert / non toxic (1) so does not react with the drink / is hygienic / will not degrade / is food safe (1) 7. Does not allow passage of fluids/gas / water resistant (1) so no fluid / gas loss / retained fluid remains fizzy (1) 	(2)

Question number	Answer	Mark
3(b)	<p>Award marks as follows (maximum 4 marks):</p> <ol style="list-style-type: none"> 1. Heated plastic is extruded into hollow tube (parison) / parison preform is inserted (1) 2. Mould closes, parison is gripped in place (1) 3. Compressed air is blown into the parison which inflates (1) 4. Parison fills / takes the shape of the mould (1) 5. Screw thread on the neck of the bottle is formed during the process (1) 6. Mould/bottle is cooled to solidify plastic (1) 7. Product is trimmed and removed from the mould (1) <div style="text-align: center;">  <p>1 Heated plastic is extruded into hollow tube (parison)</p> <p>2 Mould closes – parison is gripped in place</p> <p>3 Compressed air blown into parison which inflates</p> <p>4 Parison fills mould</p> <p>5 Product is trimmed and removed from mould</p> </div> <p>If no sketch, a sketch without labels or incorrect order, award a maximum of 3 marks.</p> <div style="text-align: center;">  <p>1 Injection moulded preform heated</p> <p>2 Preform secured into blow mould</p> <p>3 Preform stretched with core rod</p> <p>4 Compressed air simultaneously blown in – preform inflates to mould</p> <p>5 Product is removed from mould</p> <p>6 Finished product ready for next production stage</p> </div>	(4)

Question number	Answer	Additional guidance	Mark
3(c)	<p>Any two explanations that include identification of a benefit (1) and linked justifications of that benefit (1) + (1).</p> <ol style="list-style-type: none"> 1. Blow moulding is a rapid industrial process (1) because it utilises automated machinery (1) that can operate on a continuous cycle / increasing potential profits (1) 2. Blow moulding produces minimal waste (1) resulting in reduced landfill (1) therefore reducing environmental impacts (1) 3. Uniform wall thickness / consistent finish (1) because the polymer is in a fluid state (1) allowing air pressure to evenly distribute the polymer within the mould (1) 4. Addition of screw thread is incorporated into the process (1) meaning that secondary processes are not required (1) saving production costs / time (1) 5. Blow moulding produces a seamless bottle / one piece product / hollow product (1) eliminating a potential area of weakness (1) reducing the chance of the bottle failing in use / leaking (1) 6. There is a high demand for drinks bottles / large quantities need to be produced (1) which can be achieved cost effectively with blow moulding (1) because of economies of scale (1) 7. Reusable mould (1) reduces the overheads of bottle production (1) allowing the bottle to manufactured cost effectively (1) 	<p>Do not accept repeated justification.</p> <p>Allow mix and match of appropriate identifications and justifications.</p>	(6)

Question number	Answer	Mark
4(a)	Any three of the following features up to a maximum of 3 marks: <ol style="list-style-type: none"> 1. Projects broken down into small 'step by step' stages (1) 2. Stage timings/duration shown (1) 3. Route of stage completion to subsequent stage starts (1) 4. Shows dependencies between activities (1) 5. Indication of routes to completion (from shortest to longest) /optimum route to completion (1) 6. Concurrent less critical activities (1) 7. Identification of activities with most impact on overall completion (1) 8. Identification of 'float' (1) 9. Key dates or timings (1) 10. Links to JIT (1) 11. Reduces downtime (1) 	(3)

Question number	Answer	Mark
4(b)	An outline covering any 6 of the following points: <ol style="list-style-type: none"> 1. Set-up costs (1) 2. Material costs (1) 3. Labour costs (1) 4. Transportation costs (1) 5. Training and development costs (1) 6. Manufacturing costs (1) 7. Overhead costs / facilities costs (1) 8. Sales and marketing costs /market research (1) 9. Production capacity (1) 10. Market trends (1) 11. Break even output (1) 12. Product retail price / affordability (1) 13. Quality (1) 14. Market demand / expected production output (1) 15. Storage costs (1) 16. Packaging costs (1) 17. Energy costs (1) 18. Inflation impacting on costs (1) 19. Profit forecasts and requirements (1) 20. Government policies (1) 21. Long term aims and objectives (1) 22. Contingencies / allowance for unexpected events (1) 	(6)

Question number	Answer	Mark
4(c)	<p>Any two of the following:</p> <ol style="list-style-type: none"> 1. Symbol / insignia / logo / icon (1) 2. Word / phrase / slogan (1) 3. Name / initials (1) 4. Device / design / style (1) 5. Sounds / jingle (1) 6. Colour schemes (1) 	(2)

Question number	Answer	Mark
4(d)	<p>This question asks candidates to discuss cost, sales, profit and market implications to the manufacturer of the various stages of a product's life cycle. Candidates should discuss the factors and how these impact on the manufacturer. Candidates might refer to the following in their responses:</p> <p>Introduction stage</p> <ul style="list-style-type: none"> • Set-up and marketing costs • Low output high marginal costs • Advertising / attracting early adopters • Slow sales / uptake • Small market share <p>Growth stage</p> <ul style="list-style-type: none"> • Increasing consumer awareness • Increasing popularity and sales • Product tweaking and updates in response to feedback • Increasing market share • Development costs covered • Increasing economies of scale • Can price goods to give increasing competitive edge • Higher marginal profit • Competitors take an interest in product success <p>Maturity stage</p> <ul style="list-style-type: none"> • Market saturation achieved • Competitors release competing products • Levelling/slowing of demand • Price adjustments • Redevelopment / updates to increase demand • Facelifts • Incorporation of updated technology • Preparation for replacement models <p>Decline stage</p> <ul style="list-style-type: none"> • Reduction in sales • Impacts on profits • Development costs fully covered • Eventual loss of profitability • Withdrawal from market 	(9)

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 – 3	<ul style="list-style-type: none"> • Superficial discussion that considers a narrow range of factors, demonstrating limited understanding. • Partial application of understanding to the context of the question.
Level 2	4 – 6	<ul style="list-style-type: none"> • Coherent discussion that makes some relevant links between a sufficient range of factors, demonstrating competent understanding. • Generally sound application of understanding to the context of the question.
Level 3	7 - 9	<ul style="list-style-type: none"> • Comprehensive discussion that makes effective links between a wide range of factors, demonstrating thorough understanding. • Considered and effective application of understanding to the context of the question.

Question number	Answer	Additional Guidance	Mark
5(a)	<p>Stage 1 (convert litres to cm^3) (1) $10 \times 1,000 = 10,000 \text{ cm}^3$</p> <p>Stage 2 (re-arrange formula) (1) $r = \sqrt[3]{(3V/4\pi)}$</p> <p>Stage 3 (correct substitution) (1) $r = \sqrt[3]{(10,000 \times \frac{3}{4}) \pi}$</p> <p>Stage 4 (correct answer) (1) $r = 13.3650461751976$ (using calculator value for π or 13.36730544227453 (using $\pi = 3.14$)</p> <p>Stage 5 (rounding to 2dp) (1) $r = 13.37$ (same for both values of π) $r = 13.36$ using $\pi = 3.142$</p>	<p>Accept alternative methods of correct working out.</p> <p>Error carried forward should be applied.</p> <p>Award full marks for a correct answer shown even if no working is shown.</p> <p>SC 6.20 seen as final answer 4 marks</p>	(5)

Question number	Answer	Additional Guidance	Mark
5(b)	Stage 1 (convert 10 litres to m ³) (1) $10/1000 = 0.01\text{m}^3$ Stage 2 (1) $M = Vd$ $M = 0.01 \times 2.7 = 0.027$ (tonnes) Stage 3 (convert to kg) (1) $0.027 \times 1000 = 27\text{kg}$	Accept alternative methods of correct working out. Error carried forward should be applied. Award full marks for a correct answer shown even if no working is shown.	(3)

Question Number	Answer	Mark
6(a)	Any two of the following marking out tools: <ol style="list-style-type: none"> 1. Mortise/marking gauge (1) 2. Steel rule / ruler / steel tape (1) 3. Try/combination/carpenter's square (1) 4. Marking / craft knife (1) Do not accept engineers square.	(2)

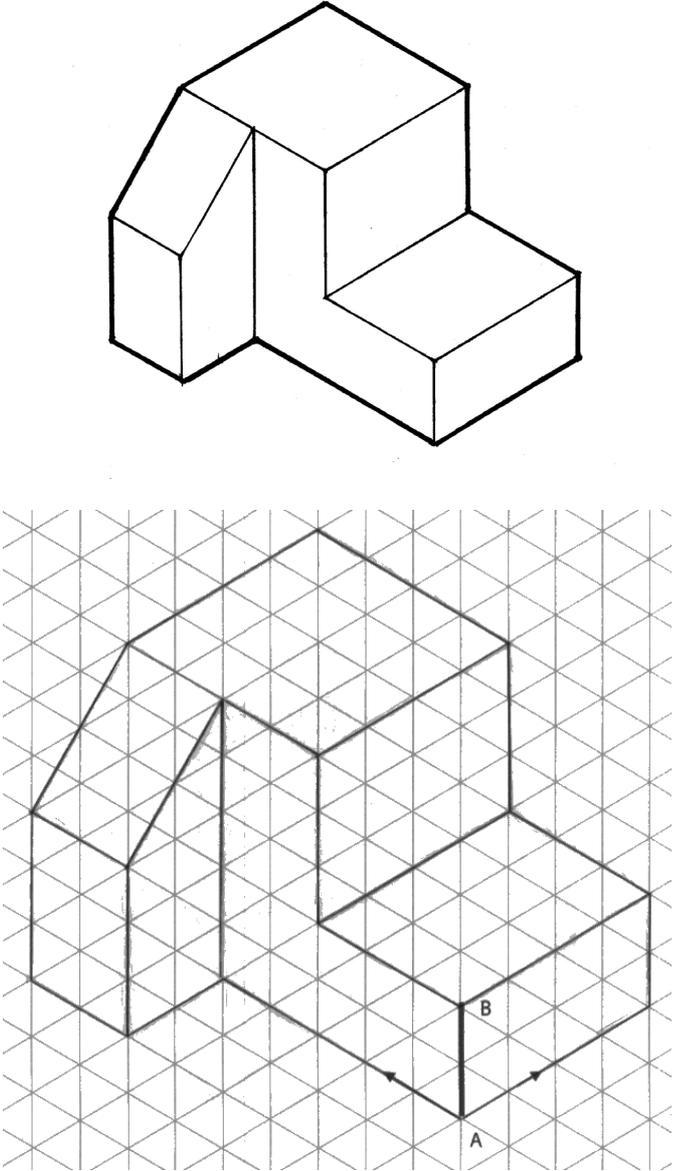
Question number	Answer	Mark
6(b)	Any two explanations that include identification of a reason (1) and linked explanations of that reason (1) + (1). <ol style="list-style-type: none"> 1. Batch production utilises flexibility of tooling/equipment/workforce skills (1) allowing the production facility to adapt to manufacture different products (1) therefore small manufacturers can produce/stock/sell a range of products (1) 2. Batch production is cost effective / appropriate when relatively small / set production quantities are required (1) as permanent specialist production lines are not required / can be manufactured using general workshop equipment / exact quantities of materials ordered for the batch (1) allowing the manufacturer to maximise profits / minimise unit costs (1) 3. Small scale batch production reduces the need to store manufactured products / surplus materials (1) because batches can be sized to match current orders / demand (1) before products are sold / shipped direct to the customer (1) 4. More time efficient (1) as jigs can be used during the manufacturing process (1) which reduces the need to mark out individual parts (1) 	(6)

Question number	Answer	Mark
6(c)	<p>This question is about the principles and applications of health and safety laws and regulations as they would apply to the manufacturer of the furniture. Creditworthy responses will make connections which show understanding of factors that need to be considered, going beyond general knowledge.</p> <p>Candidates might refer to the following in their responses:</p> <ul style="list-style-type: none"> • The Health and Safety at Work Act (1974) • The Control of Substances Hazardous to Health (COSHH) Regulations • Specific regulations relating to woodworking machinery eg Woodworking Machines Regulations (1974) • Other relevant regulations • The Health and Safety Executive • Health and safety policy • Risk assessments • Method statements • Safety officer requirements • Union representation • Staff training and certification • Age restrictions • Guarding of machinery • Handling and storage of substances / materials • Signage • Safety files • Use and provision of PPE • Health and safety inspections • Control of / protection from noise • Control of / extraction of dust 	(6)

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 - 2	<ul style="list-style-type: none"> • Superficial discussion that considers a narrow range of factors, demonstrating limited understanding. • Partial application of understanding to the context of the question.
Level 2	3 - 4	<ul style="list-style-type: none"> • Coherent discussion that makes some relevant links between a sufficient range of factors, demonstrating competent understanding. • Generally sound application of understanding to the context of the question.
Level 3	5 - 6	<ul style="list-style-type: none"> • Comprehensive discussion that makes effective links between a wide range of factors, demonstrating thorough understanding. • Considered and effective application of understanding to the context of the question.

Question number	Answer	Mark
6(d)	Any two of the following natural fibres: 1. cotton (1) 2. linen (1) 3. wool (1) 4. silk (1) 5. bamboo (1) Any other appropriate answer Do not accept leather	(2)

Question number	Answer	Additional Guidance	Mark
6(e)	<u>Method 1</u> Stage 1 Strip 0.45m wide produces $500/0.85 = 588$ pieces (1) Stage 2 Strip 0.85m wide produces $500/0.45 = 1111$ pieces (1) Stage 3 Total number required $588 + 1111 = 1699$ pieces (1) <u>Method 2</u> Stage 1 – calculate area of roll $500 \times 1.3 = 650$ (1) Stage 2 – Calculate area of each sheet $0.45 \times 0.85 = 0.3825$ (1) Stage 3 – Calculate the number of pieces $650/0.3825 = 1699$ (1)	Accept alternative methods of correct working out. Error carried forward should be applied. Do not use ECF if inappropriate rounding has been used at any stage Award full marks for correct answer only. Stage three mark must be a whole number	(3)

Question number	Answer	Mark
7	<p data-bbox="416 181 959 215">An isometric drawing of the component.</p>  <p>The image shows an isometric drawing of a mechanical component on a grid. The component is a complex 3D shape. It features a base that is a rectangle with a triangular cutout on the left side. From the right side of this base, a vertical rectangular block rises. On top of this block, there is a larger rectangular block that extends further to the left. The top surface of this larger block is a trapezoid, with the left side being shorter than the right side. The entire drawing is rendered in a 3/4 isometric view, showing the top, front, and right-side surfaces. The grid consists of a regular pattern of lines, with a vertical line labeled 'A' and a horizontal line labeled 'B' at the bottom right corner of the drawing area.</p>	(6)

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 - 2	<ul style="list-style-type: none"> • Drawing is produced with limited attention to detail and lacks accuracy and precision. • Inappropriate use of isometric grid resulting in inappropriate drawing orientation • Inappropriate attention to scale, size and dimensions • Line style is inconsistent and inappropriate throughout.
Level 2	3 - 4	<ul style="list-style-type: none"> • Drawing is produced with some precision and accuracy. • Mostly appropriate use of isometric grid with mostly accurate orientation • Some attention to scale, size and dimensions • Line style is mostly appropriate and consistent throughout.
Level 3	5 - 6	<ul style="list-style-type: none"> • Drawing is produced with precision and accuracy. • Fully appropriate use of isometric grid with correct orientation • Accurately drawn to scale • Line style is appropriate and consistent throughout enhancing the 3D effect.

Question number	Answer	Mark
8	<p>Discussion focusing on the design influence and style of the Arts and Crafts movement This question is about the design influence and style of the Arts and Crafts movement and how this influenced the design of the William Morris’s Red House. Creditworthy responses will make connections, which show understanding of factors that need to be considered, going beyond general observation of the images provided. Candidates should consider the philosophies and style of the movement, showing understanding of their impact on the design of William Morris’s Red House.</p> <p>Candidates might refer to the following in their responses:</p> <p>Design philosophy</p> <ul style="list-style-type: none"> • Two founding figures John Ruskin and William Morris who were influential in the development of the movement • “Have nothing in your life that you do not know to be useful, or believe to be beautiful” • Influenced by the writings of John Ruskin who praised the work of medieval craftsmen • Grew out of a concern for the effects of industrialisation upon design, traditional craftsmanship and the lives of ordinary ‘working class’ people • The need to consider the design of mass produced items • Designs appropriate to the lives of ordinary working class people • Considered the relationship between art, society and labour • Great value placed on craftsmanship • Established workers guilds and societies to promote quality and bridge the gap to the professions <p><u>CONTINUED ON NEXT PAGE</u></p>	(9)

	<p>Style</p> <ul style="list-style-type: none"> • Simplistic by removing clutter • Suitably proportioned furniture • Humbly constructed with minimal ornate decoration • Splendour, experimenting with different materials and new techniques in artistic ways • Small and highly ornate artefacts were produced working with unusual materials and precious metals • Natural plant, bird and animal forms were a powerful source of inspiration • Use of stylised flower patterns emulating natural rhythms • Symbolism with motifs such as the heart symbolising friendship or the sailing ship representing the journey of life • Colours (from nature) used to provide unity and focus <ul style="list-style-type: none"> • Strong colours concentrated in small areas • Use of natural materials: stone, wood, wool and linen • Use of locally available materials
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 – 3	<ul style="list-style-type: none"> • Superficial discussion that considers a narrow range of factors, demonstrating limited understanding. • Partial application of understanding to the context of the question.
Level 2	4 – 6	<ul style="list-style-type: none"> • Coherent discussion that makes some relevant links between a sufficient range of factors, demonstrating competent understanding. • Generally sound application of understanding to the context of the question.
Level 3	7 – 9	<ul style="list-style-type: none"> • Comprehensive discussion that makes effective links between a wide range of factors, demonstrating thorough understanding. • Considered and effective application of understanding to the context of the question.

Question number	Answer	Mark
9	<p>Candidates might refer to the following in their responses:</p> <ul style="list-style-type: none"> • Software technology has allowed multiple functions to be assigned to a single control panel • Advanced/miniaturised/improved integrated circuits allow more components on a single chip • Faster processors have allowed advanced functionality and multitasking • Advanced battery technology results in smaller and lighter batteries • Advanced liquid crystal displays/OLED displays are thinner • Advanced liquid crystal displays/OLED/‘always on’ displays require less current therefore reduces battery size • Modern materials including alloys and carbon fibre can be of thin wall construction • Modern materials reduce the need for an internal structure allowing for a more compact containment of components • Inductive charging removes the need for a charging socket • Use of solid state ‘on chip’ memory/storage • No moving parts reduces space requirements • Wireless/bluetooth technology reduces the need for ports for earphones/headphones/connectors • Touch screen technology means that keyboards or traditional controls are not required • Modern circuits consume less power allowing smaller batteries to be used • Sensors to monitor health and fitness are now small enough to be incorporated into the watch eg blood oxygen sensor, ECG sensor, optical heart sensor (HRM), gyroscope, accelerometer, altimeter, GPS • Microphones and speakers are now small enough to be incorporated into the watch • Automation of production lines and use of nanolithography in electronic chip production • Lightweight components reduce weight for wearing on the wrist • Use of QTCs allows curved screens and edge to edge displays • Higher resolution images and displays 	(9)

SEE LEVELS GRID ON NEXT PAGE

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 – 3	<ul style="list-style-type: none"> • Superficial discussion that considers a narrow range of factors, demonstrating limited understanding. • Partial application of understanding to the context of the question.
Level 2	4 – 6	<ul style="list-style-type: none"> • Coherent discussion that makes some relevant links between a sufficient range of factors, demonstrating competent understanding. • Generally sound application of understanding to the context of the question.
Level 3	7 - 9	<ul style="list-style-type: none"> • Comprehensive discussion that makes effective links between a wide range of factors, demonstrating thorough understanding. • Considered and effective application of understanding to the context of the question.

Question number	Indicative Content	Mark
10	<p>Any three explanations that include identification of a benefit (1) and linked justifications of that advantage (1) + (1).</p> <ol style="list-style-type: none"> 1. The lenses will produce a sunglasses effect / will darken in sunlight/UV light (1) which means a second pair is not required / prescription sunglasses are no longer required (1) thus reducing the cost to the consumer / improving sustainability (1) 2. Only need to carry/use one pair of glasses / no need for additional 'clip-on' sunglasses (1) so less bulk in pockets (1) improving user comfort /appearance of clothes (1) 3. No need to change glasses as the user moves between environments / because the glasses will always have the correct level of tint / UV protection / suit the ambient light conditions (1) minimising eye strain / damage / improving safety to the user (1) 4. The user is likely to wear them all the time (1) so there is less chance of them being lost / broken / sat on (1) reducing the need for costly replacements (1) 5. Improved safety when driving (1) because the driver does not have to change glasses (1) when light levels change / when entering tunnels / when passing through areas of shade (1) 	(9)

Question number	Answer	Mark
11	<p>This question asks candidates to evaluate the performance of a recliner and footstool with reference to aesthetics and use requirements. Candidates should analyse the chair and footstool in terms of aesthetics, potential performance and ease of use and give reasoned justification to qualify their judgements and conclusion.</p> <p>Points of analysis:</p> <ul style="list-style-type: none"> • Shape and form • Functional use • Position and use of recliner tension adjuster • Position and shape of chair arms • Rotating base • Use of flame resistant foam • Use of leather • Use of laminated beech • Use of mild steel frame • Support and balance • Aesthetic points related to the above <p>Points of evaluation:</p> <ul style="list-style-type: none"> • Weight limits • Proportion and size • Range of human movement • Use by age demographics • Use of anthropometrics • Safety • Stability • Comfort • Head support • Features of the chair • Aesthetic evaluation • Durability • Market positioning • Sustainability • Appropriate conclusion 	(12)

SEE LEVELS GRID ON NEXT PAGE

Level	Mark	Descriptor
	0	No rewardable materials
Level 1	1 – 3	<ul style="list-style-type: none"> • Applies a basic understanding to deconstruct information, making limited connections between concepts. • Incomplete evaluation with unresolved conclusion that demonstrates limited synthesis of understanding. • Judgements are tentatively supported by evidence.
Level 2	4 – 6	<ul style="list-style-type: none"> • Applies a generally sound understanding to deconstruct information and provide some clear connections between concepts. • Imbalanced evaluation that synthesises some relevant understanding into a generally coherent conclusion. • Judgements are occasionally supported by relevant evidence.
Level 3	7 - 9	<ul style="list-style-type: none"> • Applies an effective understanding to deconstruct information and provide logical connections between concepts. • Balanced evaluation that synthesises relevant understanding into a considered conclusion. • Judgements are mostly supported by relevant evidence.
Level 4	10 - 12	<ul style="list-style-type: none"> • Applies a comprehensive understanding to deconstruct information and provides insightful connections between concepts throughout. • Thorough and balanced evaluation that synthesises relevant understanding into a well-developed conclusion. • Judgements are supported by pertinent evidence throughout.