

Design & Technology

A-Level

Strategies, techniques and approaches to explore, create and evaluate design ideas

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- Use a cross in the box to mark you answer



Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

Good luck!

Q1. What is iterative design

- A** A product is never change throughout the design process ☐
- B** A product is continually analysed, tested And revisited throughout the design process ☐
- C** A product is developed once throughout The design process ☐

Q2. What is an advantage of user-centred design?

- A** The user is put at the centre of design ☐
- B** The user is consulted at the end of the Design ☐
- C** The user is not consulted during the Design process ☐

Q3. Which of these is not an advantage of collaboration when designing

- A** it is an excellent way of gaining feedback ☐
- B** it is a way to take ideas from others ☐
- C** It can help overcomes design fixation ☐

Q4. What is 'Right to repair'?

- | | | |
|----------|--|--------------------------|
| A | Law for manufacturers to make their Products more reliable | <input type="checkbox"/> |
| B | Law to make spare parts for expensive | <input type="checkbox"/> |
| C | Law to protect you from policies that Make it difficult/expensive to repair Products on your own | <input type="checkbox"/> |

Q5. Which box one of the following is a feature of a product designed for maintenance?

- | | | |
|----------|-------------------------|--------------------------|
| A | Biodegradable materials | <input type="checkbox"/> |
| B | Planned obsolescence | <input type="checkbox"/> |
| C | Repairable components | <input type="checkbox"/> |

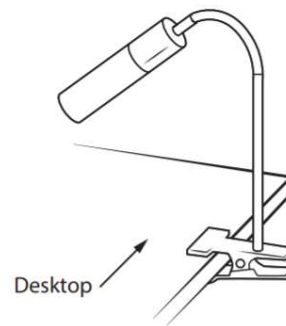
Q6. The image below shows playground equipment.



Specification for playground equipment:

- For use by children age 4-12.
- Designed for external use.
- Recessed/flush fitting construction fittings used.
- All fittings are tamper proof.
- Use of weatherproof materials.
- Suitable for installation on a flat surface.
- Use of non-slip surfaces.
- Tough, durable and wear resistant finish applied to all parts.
- Parts designed to be bolted together

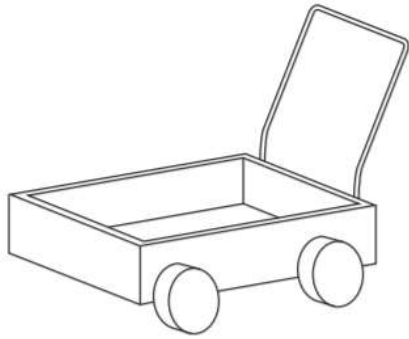
Analyse and evaluate the playground equipment in terms of suitability for the user. **(4 marks)**



Desk lamp B - Battery powered

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Q8. The image below shows 2 different types of baby-walking aid.



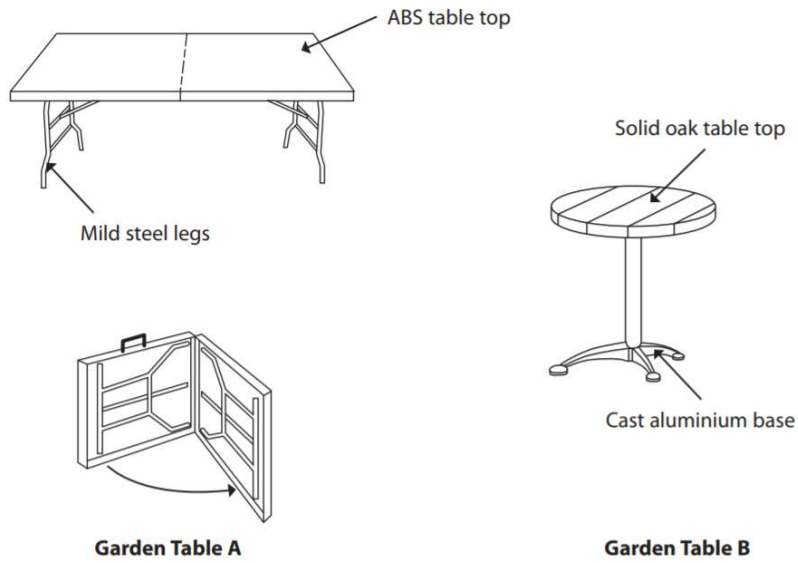
Walking aid A



Walking aid B

Evaluate walking aid A compared with walking aid B, in terms of form and user requirements. **(6 marks)**

Q9. The image below shows 2 different types garden tables.



Evaluate garden table A compared with garden table B, in terms of sustainability and user requirements. **(6 marks)**

[illegible]

Q10. What is Circular economy and give 1 example of it. **(3 marks)**

Answers

Q1. B

Q2. A

Q3. A

Q4. C

Q5. C

Q6.

Indicative content:

- Bright colours are engaging encouraging children to interact
- The house feature may promote child interaction
- Lots of different things to do and play developing coordination skills as well as physical activity
- Recessed fixings will ensure child does not catch or hurt themselves on the equipment
- Tough and durable finish will ensure the equipment stays looking good for longer and attract children
- Designed with specific age of children in mind so they can climb, use and fit on the equipment e.g. step distance, not too far to fall off the bottom of the slide
- Not suitable for over 12s or under 4s.
- Additional evaluative points worthy of credit:
- Only suited to day use as the equipment goes outside unless artificial light present

Accept all other valid responses

Q7.

Evaluation to address the following issues:

Form

Why is the product shaped/styled as it is?

Desk lamp A	Desk lamp B
<ul style="list-style-type: none">• Large heavy base will not fall over• Easily adjustable lampshade• Traditional / old fashioned style• Easy to clean /polish• Takes up more space• Targeted light area	<ul style="list-style-type: none">• Simple / minimalist design• Small and compact• Easy to adjust lamp head / position• Takes up less desk top space/ sits on the edge of the desk / worktop

User requirements

What makes the product attractive to potential users?

Desk lamp A	Desk lamp B
<ul style="list-style-type: none">• Formal / traditional style• Mains powered / will not run out of power• Professional image banker / lawyer / wealth• Needs to be near a plug socket	<ul style="list-style-type: none">• Lightweight and easily moved• Battery powered / no trailing leads / can be used anywhere• Easily clipped onto a bookshelf / desk / work top edge• Uses LED instead of a bulb / they last longer / cheaper to run• Maintenance issues – batteries need replacing

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Candidate identifies the area(s) of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells, punctuates and uses the rules of grammar with limited accuracy.
Level 2	3-4	Candidate identifies some areas of comparison with associated developments showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5-6	Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy.

Q8.

Evaluation to address the following issues:

Form

Why is the product shaped/styled as it is?

Walking aid A	Walking aid B
<ul style="list-style-type: none"> • It has a handle onto which the child can hold • The base is a good shape so as not to topple over • The tray is capable of holding toys 	<ul style="list-style-type: none"> • The child is held / supported inside and so cannot fall over / out • It has a tray in front so that they can play with toys • The wide base is out of the way of their feet and so they will not get run over / caught • Gives the baby greater independence • Child can sit in this and rest • Rounded shape/ less likely to damage furniture

User requirements

What qualities make the product attractive to potential users? (User might be child or parent)

Walking aid A	Walking aid B
<ul style="list-style-type: none"> • It can be used to store some toys • It gives the child greater freedom / mobility • Develops play skills • Learn / encourage to walk • Helps develop leg muscles 	<ul style="list-style-type: none"> • It allows the child to develop their leg muscles • The child can also play with toys whilst being in the frame / cradle • It is wide and therefore will not fall over • It has a tray to be able to put things on • Baby can manoeuvre themselves quite a bit • Helps develop leg muscles • Easy to wipe clean

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Q9. Evaluation to address the following issues:

User requirements

What qualities make the product attractive to potential users?

Table A	Table B
<ul style="list-style-type: none"> • Large flat surface area • Large stable base • Can be folded and stored away • Handle for easy carrying • Lighter and easy for carrying • More hygienic/wipe clean 	<ul style="list-style-type: none"> • Smaller and more intimate • Café style • More use of natural materials for table top • Will naturally age/weather • Can enhance appearance with stain/varnish

Sustainability

How does the design allow for environmental considerations?

Table A	Table B
<ul style="list-style-type: none"> • Oil based products required to make plastics • Extraction and energy consumption in the production of the steel for the legs • Recycled / reused • Will last longer due to being stored away 	<ul style="list-style-type: none"> • Wooden top can be reused or recycled • Top will blend in better with natural environment • Aluminium can also be recycled but requires lots of energy to make

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Q10.

A circular economy is an alternative to traditional linear economy

- Keep resources as long as possible
- Extract the maximum value from them whilst in use
- Recover and regenerate products and materials at the end of each service life
- Reduce (materials, waste, pollution), Refurbish, Repair, Recycle

For example: Using a plastic bottle with holes in it as a sprinkler

Any 2 and 1 example for 3 marks