

Pearson Edexcel Level 3 Advanced Subsidiary GCE Design and Technology (Product Design) (8DT0)

Component 2

Candidate Assessment Booklet (CAB)

Pearson Edexcel Level 3 Advanced Subsidiary GCE Design and Technology (Product Design) (8DT0)	
Centre name:	Centre number:
Candidate name:	Candidate number:
Contextual challenge:	
Year of examination:	

Teacher declaration

I declare the work submitted for assessment has been carried out without assistance other than that which is acceptable according to the rules of the specification.

Assessor name:			
Assessor signed:		Date	

Candidate declaration

I certify that the work submitted for this assessment is my own. I have clearly referenced any sources used in the work. I understand that false declaration is a form of malpractice.

Candidate signed:		Date:	
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Additional candidate declaration

By signing this additional declaration you agree to your work being used to support professional development, online support and training of both centre-assessors and Pearson moderators. If you have any concerns please email: dt.eng@pearson.com

Candidate signed:		Date:	
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You must complete this Candidate Assessment Booklet (CAB) for each candidate.

Project submission

- The project consists of a portfolio and a prototype.
- The teacher responsible for overseeing the candidate's work must ensure that this booklet is completed for each candidate.
- The teacher and candidate **must** authenticate the work submitted by completing the declaration on the front page.
- The portfolio and CAB for each candidate in the sample **must** be sent by the date published in the Information Manual. This date will normally be in May of each examination year.

Photographic evidence of completed outcomes

Photographic evidence of manufacture and completed outcome(s) for the make section must be included in each candidate's portfolio and the same photo for the completed outcome(s) must be included on the next page. The quality of the photography must be sufficient to enable moderators to see the completed prototype clearly and in detail.

Teacher annotation

Each CAB should include teacher annotation indicating where the marks for each assessment criterion have been awarded, this should be page referenced to the candidate's folder.

Comments relating to assistance given to the candidate and the authenticity of their work should be included in the teacher comments section of the tables. If the candidate needed to use specialist equipment or facilities outside of school/college then this should be recorded in the teacher comments section of the tables also.

How to apply the assessment criteria

Finding the right level

The first stage is to decide which level the evidence should be placed in. To do this, use a 'best-fit' approach, deciding which level most closely describes the quality of the evidence. Where evidence displays characteristics from more than one level you must use the guidance below and your professional judgement to decide which level is most appropriate. Each descriptor in each level relates to a different skill/s. It is important to consider all of the skills equally when determining the correct level. Please note that a bullet (and its descriptor) does not relate to a 'mark' within a band. Please see below for further guidance.

Placing a mark within a level

After a level has been decided on, the next stage is to decide on the mark within the level.

You should be prepared to use the full range of marks available in a level and not restrict marks to the middle. You should start at the middle of the level (or the upper-middle mark if there is an even number of marks) and then move the mark up or down to find the best mark. To do this, you should take into account how far the evidence meets the requirements of the level:

3 or more marks in a level

- If it meets the requirements fully, you should be prepared to award full marks within the level. The top mark in the level is used for evidence that is as good as can realistically be expected within that level.
- If it only barely meets the requirements of the level, you should consider awarding marks at the bottom of the level. The bottom mark in the level is used for evidence that is the weakest that can be expected within that level. Alternatively, be prepared to drop the mark to the top of the band below.
- The middle marks of the level are used for evidence that has a reasonable match to the requirements. This might represent a balance between some characteristics of the level that are

fully met and others that are only barely met. In instances where there are two or more middle marks (e.g. levels containing 4 or more marks) the upper middle marks should be awarded for evidence that displays more characteristics towards fully meeting the criteria. The lower middle marks should be awarded for evidence that displays more characteristics towards barely meeting the criteria.

2 marks in a level

- If it meets the requirements fully, you should be prepared to award full marks within the level. The top mark in the level is used for evidence that is as good as can realistically be expected within that level.
- If it partially meets the requirements of the level, you should consider awarding marks at the bottom of the level. The bottom mark in the level is used for evidence that is the weakest that can be expected within that level.

Grids with uneven mark distributions

In some grids, a greater number of marks are placed within the middle and/or upper bands than the lower bands. In such instances, you must follow the relevant guidance above relating to placing a mark in a level. For example, where the lower level contains 2 marks apply the '2 marks in a level' guidance and middle and/or upper levels contain 3 marks apply the '3 or more marks in a level' guidance.

Images of completed outcome(s)
Please use page 27 for additional images

Assessment criteria

Part 1: Identifying opportunities for design

Level	Mark	Investigation of needs and research (Grid 1) (AO1 1a 10 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1-3	<ul style="list-style-type: none"> Evidence of limited investigation and identification of some relevant design possibilities which are superficially justified in relation to the contextual challenge. Superficial assessment of user needs and wants and the requirements of the proposed prototype/product in response to the contextual challenge, with limited reference to form and function. Limited links between the design requirements and the research undertaken in relation to the contextual challenge. Basic selection of research sources, including existing products showing a superficial consideration of the contextual challenge. 				

Level	Mark	Investigation of needs and research (continued) (AO1 1a 10 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 2	4–7	<ul style="list-style-type: none"> • Evidence of developed investigation and identification of mostly relevant design possibilities. • Developed assessment of user needs and wants and the requirements of the proposed prototype/product in response to the contextual challenge, with sound reference to form and function. • Sound links between the design needs and the research undertaken in relation to the contextual challenge. • Sound selection of research sources, including existing products that provide some good insight to the design context, showing a developed consideration of the contextual challenge. 				
Level 3	8–10	<ul style="list-style-type: none"> • Evidence of fully developed investigation and identification of fully relevant design possibilities. • Fully developed assessment of user needs and wants and the requirements of the proposed prototype/product in response to the contextual challenge, with perceptive reference to form, function and sustainability. • Perceptive links between the design needs and the research undertaken in relation to the contextual challenge. • Perceptive selection of research sources, including existing products that provide a good insight to the design context, showing a comprehensive consideration of the contextual challenge 			/10	

Part 1: Identifying opportunities for design (continued)

Level	Mark	Specification (Grid 2) (AO1 1b 10 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–3	<ul style="list-style-type: none"> • Basic design brief that demonstrates a simplistic response to the contextual challenge, addressing some of the investigated needs, wants and values of the client/end user. • Superficial specification points which are basic, and partially measurable, based on a superficial investigation of research in relation to the contextual challenge. • Limited justification of the performance requirements for the product in relation to the contextual challenge. 				
Level 2	4–7	<ul style="list-style-type: none"> • Considered design brief that demonstrates an effective response to the contextual challenge, addressing many of the investigated needs and wants of the user. • Developed specification points which are realistic, technical and mostly measurable, based on a developed investigation of research in relation to the contextual challenge. • Sound justification of the performance requirements for the product in relation to the contextual challenge. 				

Level	Mark	Specification (continued) (AO1 1b 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	8–10	<ul style="list-style-type: none"> • Comprehensive design brief that demonstrates a sophisticated response to the contextual challenge, addressing most of the investigated needs of the user. • Comprehensive specification points which are realistic, technical and measurable, based on a comprehensive investigation of research in relation to the contextual challenge. • Perceptive justification of the performance requirements for the product in relation to the contextual challenge. 			/10	

Part 2: Designing a prototype

Level	Mark	Design ideas (Grid 3) (AO2 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–2	<ul style="list-style-type: none"> • Basic selection and use of design strategies to inform decisions to generate limited and simplistic design ideas in response to the contextual challenge. • Ideas show basic consideration of user needs and wants and specification parameters. • Basic selection and use of aesthetic features which have a limited impact on designs, showing limited understanding of historical and cultural influences. • Selection of materials, processes and techniques demonstrates a basic understanding of their uses and applications. 				
Level 2	3–4	<ul style="list-style-type: none"> • Considered selection and use of design strategies to inform decisions to generate developed design ideas in response to the contextual challenge. • Ideas show a sound consideration of the user needs and wants and specification parameters. • Effective selection and use of aesthetic features which have a mostly effective impact on designs, showing a sound understanding of historical and cultural influences. • Selection of materials, processes and techniques demonstrates a sound understanding of their uses and applications. 				

Level	Mark	Design ideas (continued) (AO2 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	5-6	<ul style="list-style-type: none"> • Sophisticated selection and use of design strategies to inform decisions to generate comprehensive design ideas in response to the contextual challenge. • Ideas show an in-depth consideration of user needs and wants and specification parameters. • Accomplished selection and use of aesthetic features which have a fully effective impact on designs and show a comprehensive understanding of historical and cultural influences. • Selection of materials, processes and techniques demonstrates a in-depth understanding of their uses and applications. 			/6	

Part 2: Designing a prototype (continued)

Level	Mark	Review of initial ideas (Grid 4) (AO3 1a 3 marks, AO3 1b 3 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–2	<ul style="list-style-type: none"> • Superficial analysis of initial design ideas in response to the contextual challenge, demonstrating a limited understanding of design considerations. • Limited and imbalanced evaluation of the specification and design ideas, leading to a basic refinement and development of designs. 				
Level 2	3–4	<ul style="list-style-type: none"> • Generally developed analysis of initial design ideas in response to the contextual challenge, demonstrating a sound understanding of design considerations. • Generally sound and mostly balanced evaluation of the specification and design ideas, leading to competent refinement and development of designs. 				
Level 3	5–6	<ul style="list-style-type: none"> • Fully developed analysis of initial design ideas in response to the contextual challenge, demonstrating an in-depth understanding of design considerations. • Sound and fully balanced evaluation of the specification and design ideas, leading to accomplished refinement and development of designs. 			/6	

Part 2: Designing a prototype (continued)

Level	Mark	Development of design ideas into a final design (Grid 5) (AO2 8 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1-2	<ul style="list-style-type: none"> • Superficial use of research to inform ongoing developmental changes. • Basic use of an iterative approach, leading to refinements of design proposals that are partially informed by the application of technical knowledge and modelling/simulation techniques. • A final design idea is presented that includes the basic application of calculations to determine limited technical details of the materials and components that could be superficially interpreted by a third party. 				
Level 2	3-5	<ul style="list-style-type: none"> • Considered use of research to inform ongoing developmental changes. • Sound use of an iterative approach, including considered input of user feedback, leading to refinements of design proposals that are mostly informed by the application of technical knowledge and modelling/simulation techniques. • A final design idea is presented that includes the competent application of calculations to determine adequate technical details of the materials and components that could be mostly interpreted by a third party. 				

Level	Mark	Development of design ideas into a final design (continued) (AO1 1a 4 marks, AO2 8 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	6 – 8	<ul style="list-style-type: none"> Perceptive use of research to inform ongoing developmental changes. Accomplished use of an iterative approach, including input of user feedback, leading to refinements of design proposals that are fully informed by the application of technical knowledge and modelling/simulation techniques. A final design idea is presented that includes accomplished application of calculations to determine comprehensive technical details of materials, components and processes that could be fully interpreted by a third party. 			/8	

Part 2: Designing a prototype (continued)

Level	Mark	Review of development and final idea (Grid 6) (A03 1a 6 marks, A03 1b 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–3	<ul style="list-style-type: none"> • Superficial analysis of the refinements made to designs in response to the contextual challenge, through the development process with limited references to feedback made by others and consideration of materials, components and manufacturing techniques. • Limited and imbalanced evaluation of the refinements made to designs through the development process, which draw limited conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Superficial analysis of the designs and prototypes made by others, which considers limited factors and makes superficial connections between elements of the design. • Limited and imbalanced evaluation of the design and prototypes made by others, which begins to inform their own design decisions. 				

Level	Mark	Review of development and final idea (continued) (AO3 1a 6 marks, AO3 1b 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 2	4–6	<ul style="list-style-type: none"> • Some developed analysis of the refinements made to designs in response to the contextual challenge, throughout the development process, mostly relevant references to feedback made by others and consideration of materials, components and manufacturing techniques. • Sound and mostly balanced evaluation of the refinements made to designs through the development process, which is used to draw sound conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Mostly developed analysis of the designs and prototypes made by others, which considers mostly relevant factors and makes mostly relevant connections between elements of the design. • Sound and mostly balanced evaluation of the designs and prototypes made by others, which effectively informs their own design decisions. 				
Level 3	7–9	<ul style="list-style-type: none"> • Mostly developed analysis of the refinements made to designs in response to the contextual challenge, throughout the development process, mostly relevant references to feedback made by others and consideration of materials, components and manufacturing techniques. • Sound and mostly balanced evaluation of the refinements made to designs through the development process, which is used to draw sound conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Mostly developed analysis of the designs and prototypes made by others, which considers mostly relevant factors and makes mostly relevant connections between elements of the design. Sound and mostly balanced evaluation of the designs and prototypes made by others, which effectively informs their own design decisions. 				

Level	Mark	Review of development and final idea (continued) (AO3 1a 6 marks, AO3 1b 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 4	10–12	<ul style="list-style-type: none"> • Comprehensively developed analysis of the refinements made to designs in response to the contextual challenge, through the development process, pertinently supported by references to feedback made by others and consideration of materials, components and manufacturing techniques. • Perceptive and balanced evaluation of the refinements made to designs through the development process, which is used to draw perceptive conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Comprehensively developed analysis of the designs and prototypes made by others, which considers comprehensive factors and makes comprehensive connections between elements of the design. • Perceptive and balanced evaluation of the designs and prototypes made by others, which is used perceptively to inform their own design decisions. 			/12	

Part 2: Designing a prototype (continued)

Level	Mark	Communication of design ideas (Grid 7) (AO2 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–2	<ul style="list-style-type: none"> • Basic selection and appropriate use of traditional/manual graphical techniques to communicate design proposals. • Basic selection and appropriate use of computer aided design (CAD) techniques to communicate design proposals. • Basic selection and appropriate use of written techniques to communicate design proposals. 				
Level 2	3–4	<ul style="list-style-type: none"> • Considered selection and effective use of traditional/manual graphical techniques to communicate design proposals. • Considered selection and effective use of computer aided design (CAD) techniques to communicate design proposals. • Considered selection and effective use of written techniques to communicate design proposals. 				

Level	Mark	Communication of design ideas (continued) (AO2 6 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	5-6	<ul style="list-style-type: none"> • Perceptive selection and accomplished use of traditional/manual graphical techniques to communicate design proposals. • Perceptive selection and accomplished use of computer aided design (CAD) techniques to communicate design proposals. • Perceptive selection and accomplished use of written techniques to communicate design proposals. 			/6	

Part 3: Making a final prototype

Level	Mark	Tools and equipment (Grid 8) (AO2 12 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1-3	<ul style="list-style-type: none"> Basic selection of materials, fixtures, components and fittings some of which are appropriate for the final prototype, showing a limited understanding of the intended purpose of the prototype. Limited use of tools and equipment to prepare materials for the manufacture of the prototype, showing a limited understanding of the need for dimensional accuracy. Demonstrate a generally adequate degree of safe working practice for self and others. 				
Level 2	4-6	<ul style="list-style-type: none"> Adequate selection of materials, fixtures, components and fittings which are generally appropriate for the final prototype, showing a partially sound understanding of the requirements of the end user and the intended purpose of the prototype. Some skilful use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing a generally sound understanding of the need for dimensional or geometric accuracy. Demonstrate a fully adequate degree of safe working practice for self and others. 				

Level	Mark	Tools and equipment (continued) (AO2 12 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	7–9	<ul style="list-style-type: none"> • Mostly sophisticated selection of materials, fixtures, components and fittings which are mostly appropriate for the final prototype, showing a sound understanding of the requirements of the end user and the intended purpose of the prototype. • Mostly skilful use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing a sound understanding of the need for dimensional or geometric accuracy. • Demonstrate a generally high degree of safe working practice for self and others. 				
Level 4	10–12	<ul style="list-style-type: none"> • Sophisticated selection of materials, fixtures, components and fittings which are fully appropriate for the final prototype, showing an in-depth understanding of material properties, the requirements of the end user, and the intended purpose of the prototype. • Accomplished use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing an in-depth understanding of the need for dimensional and geometric accuracy. • Demonstrate a consistently high degree of safe working practice for self and others. 				
					/12	

Part 3: Making a final prototype

Level	Mark	Quality and accuracy (Grid 9) (AO2 18 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–4	<ul style="list-style-type: none"> Produce a prototype that demonstrates mostly adequate making skills in relation to a basic design problem. Produce a partly functioning prototype which matches the end user needs. Produce a prototype that superficially meets the design specification. Basic application of an iterative approach to manufacture and to produce a prototype. 				
Level 2	5–9	<ul style="list-style-type: none"> Produce a prototype that demonstrates some skilful making skills at an advanced level in relation to a partially effective design problem Produce a generally functioning prototype which matches the end user needs. Produce a prototype that partially meets the design specification. Considered application of an iterative approach to manufacture to produce a prototype. 				

Level	Mark	Quality and accuracy (continued) (AO2 18 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	10–14	<ul style="list-style-type: none"> • Produce a prototype that demonstrates skilful making skills at an advanced level in relation to an effective design problem. • Produce a mostly functional prototype which matches the end user needs. • Produce a prototype that mostly meets the design specification. • Accomplished application of an iterative approach to manufacture to produce a prototype. 				
Level 4	15–18	<ul style="list-style-type: none"> • Produce a prototype that demonstrates accomplished making skills at an advanced level in relation to a sophisticated design problem • Produce a fully functional prototype which matches the end user needs. • Produce a prototype that fully meets the design specification. • Sophisticated application of an iterative approach to manufacture to produce a prototype. 			/18	

Part 4: Evaluating own design and prototype/product

Level	Mark	Testing and Evaluation (Grid 10) (AO3 1a 3 marks, AO3 1b 3 marks, AO3 2a 3 marks, AO3 2b 3 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
	0	No rewardable material				
Level 1	1–4	<ul style="list-style-type: none"> • Superficial analysis of the final prototype, taking into account refinements implemented during the development and manufacturing process and the client/end user specification, showing a limited approach to testing against measurable criteria. • Limited evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing imbalanced conclusions from testing. • Superficial analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype • Limited evaluation of the impact on the environment of the prototype. 				

Level	Mark	Testing and Evaluation (continued) (AO3 1a 3 marks, AO3 1b 3 marks, AO3 2a 3 marks, AO3 2b 3 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 2	5-8	<ul style="list-style-type: none"> • Developed analysis of the prototype, taking into account refinements implemented during the development and the client/end user specification, showing a sound approach to testing against measurable criteria. • Sound evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing mostly balanced conclusions from testing against measurable criteria. • Developed analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype. • Sound evaluation of the impact on the environment of the prototype. 				

Level	Mark	Testing and Evaluation (continued) (AO3 1a 3 marks, AO3 1b 3 marks, AO3 2a 3 marks, AO3 2b 3 marks)	Evidence found on page	Teacher comments	Mark awarded	Pearson use only
Level 3	9-12	<ul style="list-style-type: none"> Comprehensively developed analysis of the prototype, taking into account refinements implemented during the development and the client/end user specification, showing a perceptive approach to testing against most measurable criteria. Perceptive evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing balanced conclusions from testing against measurable criteria. Comprehensively developed analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype. Perceptive evaluation of the impact on the environment of the prototype. 			/12	

Please now add the totals for each section here.

Totals for each section		Mark awarded	Pearson use only
1	Identifying opportunities for design	/20	/20
2	Designing a prototype	/38	/38
3	Making a final prototype	/30	/30
4	Evaluating own design and prototype	/12	/12
TOTAL		/100	/100

Additional images