

Design and Technology

Advanced Subsidiary GCE

Unit **F521/01/02**: Advanced Innovation Challenge

Mark Scheme for January 2011

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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Outlines initial thoughts, these are predictable/non-creative.	Outlines initial thoughts in some detail, some creative thinking.	Clearly outlines initial thoughts in detail, responding with an open mind showing unexpected and/or challenging ways of thinking.	Box 1,2
Analyses the problem at a superficial level that lacks depth Some consideration of a user/market resulting in a design brief.	Analyses some aspects of the problem. Identifies a user/market, resulting in a design brief.	Analyses problem in depth, responds in a way that allows scope for innovation. Identifies a user/market resulting in a clear design brief.	Box 1,2,3&4
Produces a basic or superficial specification that is vague/generic.	Develops an adequate specification that gives some basic requirements of the product.	Develops a detailed specification that identifies the key features of the product.	Box 5
0 1 2 3	4 5 6	7 8 9	Box 6
Presents only a limited range of innovative/creative ideas	Presents a good range of innovative/creative ideas	Presents a wide range of innovative/creative initial ideas,	Box 6
using annotated sketching at a limited level with little detail of construction/materials. Little or no reference made to the design specification.	using reasonable quality annotated sketching showing some detail of construction/materials. Some reference to the specification	using high quality annotated sketching showing full details of construction/materials. Good reference to the specification	Box 6
Presents only a limited and mainly subjective evaluation of ideas with little or no justification of decisions.	Presents an adequate and objective evaluation of ideas against the design specification and justifies most decisions.	Presents a detailed and objective evaluation of ideas against the design specification and justifies all decisions.	Box 6, 7&8
Presents a limited range of evidence to show the sources of inspiration and influences on the designing. Limited reflection on their design and little/if any response to feedback from others.	Presents an adequate range of evidence to show the sources of inspiration and influences on the designing. Some reflection on their chosen design and response to feedback from others.	Presents a wide range of evidence to show the sources of inspiration and influences on the designing. Reflects on their chosen design and responds to feedback from others, making further improvements if necessary.	Box 6,7,8,9 &10
0 1 2 3 4	5 6 7 8	9 10 11 12	Box 11
Presents limited improvements, and limited evidence of modelling, experiments, testing, and modifications to their design,	Presents improvements, presents some evidence of modelling, experiments, testing, making modifications their design	Presents improvements, presents evidence of modelling, experiments, testing, making modifications to their design to define and refine it,	Box 11
Little if any consideration of materials, components or ingredients and methods of manufacture. Limited understanding of sustainability issues and how this affects their design	Some consideration of materials, components or ingredients and methods of manufacture. Some consideration of sustainability issues.	Thorough consideration of materials, components or ingredients and methods of manufacture. Good consideration of sustainability issues etc	Box 11
Produces a simplistic action plan for making that shows limited awareness of materials/ingredients/ resources etc.	Produces a reasonable action plan for making, to include a list of materials/ingredients/resources, etc	Produces a detailed action plan for making, to include a list of materials/ingredients/resources, etc.	Box 11, 12&13
0 1 2 3	4 5 6	7 8 9	Box 14, 15,16, 17,18 and photos 1,2&3
Records progress at various stages but limited detail and thought Use of materials and processes is limited as are any further modifications to their design.	Record and reflects on progress at various stages. Selects and uses materials adeptly and makes further modifications to their design.	Records and reflects on progress in detail at various stages Selects and uses materials innovatively and creatively and further develops idea to define and refine it.	Box 14, 15,16, 17,18 and photos 1,2&3
Product/model is finished to a poor standard/or is incomplete.	Completes a product/model to a good standard. Model/product accurately reflects design.	Completes a product/model to a high standard. Model/product accurately reflects design.	Box 18
Limited range of making skills apparent.	Demonstrates accuracy of making skills.	Demonstrates a range of making skills/ and or complexity.	Box 18
0 1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16	17 18 19 20 21 22	Box 18
Presents limited modifications to their idea, using basic annotated sketches.	Presents some realistic and detailed modifications to their idea, using annotated sketches.	Presents realistic and detailed modifications to their idea, using annotated sketches; improvements are creative.	Box 18
Produces a limited evaluation of their product identifying some strengths and weaknesses and shows limited consideration of the users/market.	Produces a reasonable evaluation of their product identifying some strengths and weaknesses and shows good consideration of the users/market.	Produces a detailed evaluation of their product identifying strengths and weaknesses and shows good consideration of the users/market.	Box 18
Some evidence of evaluation of their design against their product specification at a superficial level.	Reasonable evaluation of their design against their product specification.	Evaluates their design thoroughly against their product specification	Box 18
0 1 2 3	4 5	6 7 8	Total/60

Initial Thoughts	Designing	Development	Making	Evaluating

Name:	Candidate No:	Centre No:	Examiner
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Two outline presentations to an expert/panel will be presented, answers will be in the form of written material supported by annotated sketches. (10 Marks each). QWC is assessed in P and S

P relevant points/issues raised up to 4 marks
Points must cover each bullet point within question and relate specifically to their product and the overriding question.

One bullet point or one relevant point	1 mark
Two bullets points or one bullet point and one relevant point	2 marks
All three bullets points or two bullet points and one relevant point	3 Marks
All three bullets points and one further relevant point	4 Marks

S supporting example and/or sketches up to 3 marks
Must relate to the three bullet points

QWC quality of written communication up to 3 marks

QWC Level descriptors

3 Marks: Presents information and arguments in a clear and concise manner, using appropriate technical phrases and high quality written communication skills.
2 Marks: Presents information and arguments in a reasonably clear and concise manner, with limited use of technical phrases and reasonable written communication skills.
0–1 marks: Presents information and arguments in a manner that lacks a clear and concise approach, with little or no use of technical phrases and basic written communication skills.

- 1 Discussion may include, these points must be relevant to the product:
 - useability issues relating to product, age and ability, anthropometry and inclusive design
 - user research and testing, empathetic approaches to design, understanding and imagining user, barrier free design
 - modifications you would make to your product to make it more ergonomically suitable/ inclusive to a broader range of users, ie the elderly, the disabled or children
 - materials and manufacturing techniques that could be used. Cost implications of any modifications to improve useability.

- 2 Discussion may include, these points must be relevant to the product:
 - type of product, likely demand
 - product use and the feasibility of the product, comparisons with other products
 - capital, premises, tooling labour skills
 - use of standardised components, stock control, JIT, CAM, one off, jigs and templates for batches, automated production
 - scale of production and commercial viability of product
 - modifications to product to make it easier to batch or mass produce.

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