

Mark Scheme Summer 2007

GCSE

GCSE Design and Technology: Graphic Products Technology Higher Tier (1972/3972)

Marking Guidance

Give / State / Name

Normally a one or two word answer, at the very most a short sentence.

Describe

Normally, one or two sentences which form a description, making reference to more than one point. All points must be linked for a complete answer.

Explain

Normally, one or two sentences which form an explanation. This requires a clear or detailed account of something and includes a relevant justification, reason or example.

Evaluate

Normally one or two sentences where the quality, suitability or value of something is judged. This can include both positive and negative points, with each point normally requiring a relevant justification.

The mark scheme contains a range of possible answers for all questions. For some questions it is possible to provide a finite number of acceptable answers. However, in some instances it is not possible to provide every conceivable answer. In these instances objective guidance is provided.

For all answers candidates are not expected to give the exact wording contained in this mark scheme. However, to gain credit their answer must demonstrate the same meaning as detailed in the mark scheme.

It is the examiner's responsibility to apply their professional judgement in determining if what the candidate has written has the same meaning as the answer detailed in the mark scheme. For all answers the '*Key words*' have been written in bold text.

For describe and explain questions, candidates may give a different combination of the marking points listed in the mark scheme. In such instances candidates can be rewarded for the marking points provided that they are suitably linked. However, candidates cannot be rewarded for the same point repeated in two different combinations.

Examiners must mark in red pen using ticks and crosses in the body of the script.

Design & Technology: Graphic Products (1972/2H)
Full Course Higher Tier Mark Scheme

Question Number	Question		
1972_2H_Q01a	<p>The drawings show a child’s book that plays sounds when the buttons on the side are pushed. The book is aimed at children aged between two and four years.</p> <p>Two specifications points for the book are that:</p> <ul style="list-style-type: none"> • the covers must attract the attention of potential purchasers • the covers must allow the retailer to monitor sales easily <p>Under each of the following heading, give <u>one</u> more point that should be included in the specification for this book. For each point, give <u>one</u> reason why it should be included.</p>		
	<p>Answer</p> <p>Three specification points given: Three reasons given: <i>(Do not accept repetition of the specification points given or duplicate answers)</i> <i>(Some flexibility should be given as some points may cross over descriptions)</i></p> <p><u>Market</u></p> <p>Point: the cost of manufacturing the book should be low Reason: to maximise profits</p> <p>Point: the book should appear expensive / value for money Reason: to justify high price</p> <p>Point: the book should stand out from the other books Reason: to increase sales</p> <p>Point: the book should be a standard/suitable size to fit bookshop shelves Reason: shops are more likely to stock books that they don’t have to make special displays for</p> <p>Point: the book should be suitable for target age group Reason: safety / legal / moral / user satisfaction / educational Point: the book should display a logo / corporate id</p>	<p>Part Mark</p> <p>3x1 3x1</p>	<p>Total Mark</p> <p>(6)</p>

Reason: consumer awareness of manufacturer

Environment

Point: minimum materials used

Reason: resource conservation

Point: made from recycled materials / possible to be recycled /made from biodegradable materials

Reason: resource conservation / waste minimisation

Point: the manufacture / disposal of the book should not cause pollution

Reason: protection of the environment

Point: the book should display a recycle symbol

Reason: consumer awareness

Point: the battery should be removable / rechargeable

Reason: prevent contamination when disposed of

Point: the book should be long lasting / durable

Reason: the book can then be passed on to other children (*reducing waste*)

Quality

Point: the text/images should be easy to read / clearly printed

Reason: consumer satisfaction / brand reputation / improve sales

Point: the materials the book is made from / finishes should be durable /reliable / aesthetically pleasing

Reason: consumer satisfaction / brand reputation / improve sales

Point: the book should comply with relevant legal standards eg be tested by BSI/ISO, display a Kitemark

Reason: moral and legal obligation / improve sales

Point: the parts of the book should be tested during production

Reason: to ensure they meet specifications

Question Number	Question	
1972_2H_Q01bi	<p>The drawing below shows the case that surrounds the buttons. It is made from acrylic.</p> <p>One reason why the case is made from acrylic is that it can be vacuum formed to the required shape.</p> <p>Give <u>two</u> other reasons why acrylic is a suitable material from which to make the case.</p>	
	Answer	Part Mark Total Mark
	<p>Two reasons given:</p> <ul style="list-style-type: none"> • self coloured • non-toxic • thermoplastic • good surface finish • rigid / tough / strong / durable • cost effective (<i>do not accept 'cheap'</i>) • manufacturer may be familiar with using acrylic / be set up to use acrylic • properties of acrylic meet the requirements of the book • does not conduct electricity 	<p style="text-align: right;">2x1 (2)</p>

Question Number	Question		
1972_2H_Q01bii	One reason why the case is vacuum formed is that it is cost effective. Give <u>two</u> other reason why the acrylic case is made by vacuum forming.		
	Answer	Part Mark	Total Mark
	Two reasons given: <ul style="list-style-type: none"> • accuracy • high speed / fast • low tooling costs • can be automatic / continuous • manufacturer may be familiar with using vacuum forming / be set up to use vacuum forming • vacuum forming will produce products that meet the specification for the book • suitable for mass/volume/batch production / repeatability <i>(Do not accept any reference to cost)</i>	2x1	(2)
Question Number	Question		
1972_2H_Q01c	The pages of the book are made from solid board. Give <u>two</u> properties of solid board that make it suitable for the pages of the book. For each property, give <u>one</u> reason why it makes solid board suitable for the pages of the book		
	Answer	Part Mark	Total Mark
	Two properties & reasons given: <p>Property: rigid Reason: makes pages durable / easy to turn over</p> <p>Property: tough / strong Reason: makes pages durable / hard to tear</p> <p>Property: the pages will be thick Reason: makes the pages easy for children to turn over / prevents paper cuts</p> <p>Property: can be die cut</p>	2x1 2x1	(4)

Reason: allows shape to be made economically

Property: non toxic

Reason: does not poison user / safe for user

Property: has a surface suitable for printing / varnishing / finishing

Reason: reduces cost / number of manufacturing stages / improves appearance

Property: can be folded

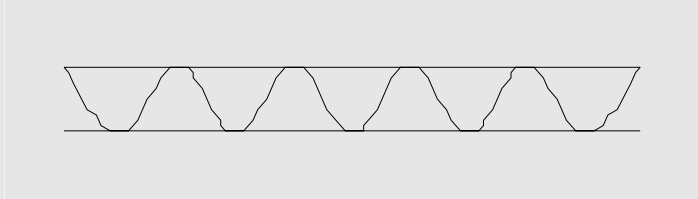
Reason: allows user to turn pages / reduces the number of pages to be bound

Property: can be recycled / made from recycled materials

Reason: preservation of environment/resources

Question Number	Question	Part Mark	Total Mark
1972_2H_Q01d	<p>The battery cover is made from a red material.</p> <p>Explain <u>one</u> reason why the battery cover is made from a red material.</p>		
	<p>Answer</p> <p>One reason explained:</p> <ul style="list-style-type: none">• associated with danger therefore the customer will be aware that the batteries within could be dangerous• will stand out therefore can find the battery	2x1	(2)

Question Number	Question		
1972_2H_Q01e	<p>The pages of the book are finished using laminating.</p> <p>Explain <u>one</u> reason why laminating is used for finishing the pages.</p>		
	<p>Answer</p> <p>One reason explained:</p> <ul style="list-style-type: none"> protects the pages / makes the pages stronger/tougher/rigid therefore maintains the quality of the product makes the product look better therefore increases user pleasure/enhances sales potential hygienic because it can be easily cleaned 	2x1	(2)
1972_2H_Q01f	<p>Two purposes of the covers of the book are:</p> <ul style="list-style-type: none"> attract the attention of potential purchasers allow the retailer to easily monitor sales of the book <p>Explain, under the following headings, how the covers of the book achieve these purposes.</p>		
	<p>Answer</p> <p>Two purposes explained:</p> <p>Attract the attention of potential purchasers</p> <ul style="list-style-type: none"> the cover has a large interesting picture / text on the front of it therefore clearly showing the user what the book is about / stands out / eye catching the book is printed in colour therefore making it attractive. <p>Allow the retailer to easily monitor sales of the book</p> <ul style="list-style-type: none"> the book has a barcode printed on it therefore allowing EPOS tills to function / stock control / can be scanned / links to a computer 	2x1	(2)
		2x1	(2)
(Total 22 marks)			

Question Number	Question		
1972_2H_Q02ai	<p>The drawing below shows a box made from corrugated card.</p> <p>Draw a sketch to show what the corrugations on the edge of the card look like.</p>		
	Answer	Part Mark	Total Mark
	<p>One drawing given:</p> 	1	(1)
Question Number	Question		
1972_2H_Q02aii	<p>The box will be used to package electronic equipment for transport.</p> <p>Give <u>two</u> advantages of making the box from corrugated card instead of solid board.</p>		
	Answer	Part Mark	Total Mark
	<p>Two advantages given:</p> <ul style="list-style-type: none"> • lighter / better strength-to-weight ratio / the box will be easier/cheaper to transport • more shock absorbent / the box more protective • easier to fold / dispose of • better insulator of heat 	2x1	(2)

Question Number	Question	Part Mark	Total Mark
1972_2H_Q02b	<p>The designer of the prototype of the box collected data relating to its design from a CD ROM instead of using a printed catalogue.</p> <p>Give <u>two</u> advantages to the designer of using CD ROMs to access data.</p>		
	<p>Answer</p> <p>Two advantages given:</p> <ul style="list-style-type: none"> • quicker • more people can access the same information simultaneously/the data can be shared on a network • data can be accessed remotely • purchase cost of data is less / production costs of CD ROMs are less than printed catalogues. • CD ROMs take up less storage space than books • CD ROMs are easier to carry than books 	2x1	(2)
Question Number	Question	Part Mark	Total Mark
1972_2H_Q02ci	<p>During the design of the prototype for the box CAD was used.</p> <p>Explain <u>one</u> way in which the use of CAD can make the design process quicker.</p>		
	<p>Answer</p> <p>One way explained:</p> <ul style="list-style-type: none"> • sections can be repeated because of the use of the copy & paste. • designs can be modified / edited because of a range of tools built into software. • it is quicker to store/retrieve files because they are stored digitally not physically. • designs can be sent electronically this is quicker because of no need to use postal service. • designs can be tested / simulated/modelled digitally which is quicker because there is no need to build a physical model • parametric designs are possible therefore designs can be produced using dialogue boxes • links to CAM/rapid prototyping therefore reduces development time / allows early testing/in-house production • collaborative design therefore more skills applied / faster turnaround 	2x1	(2)

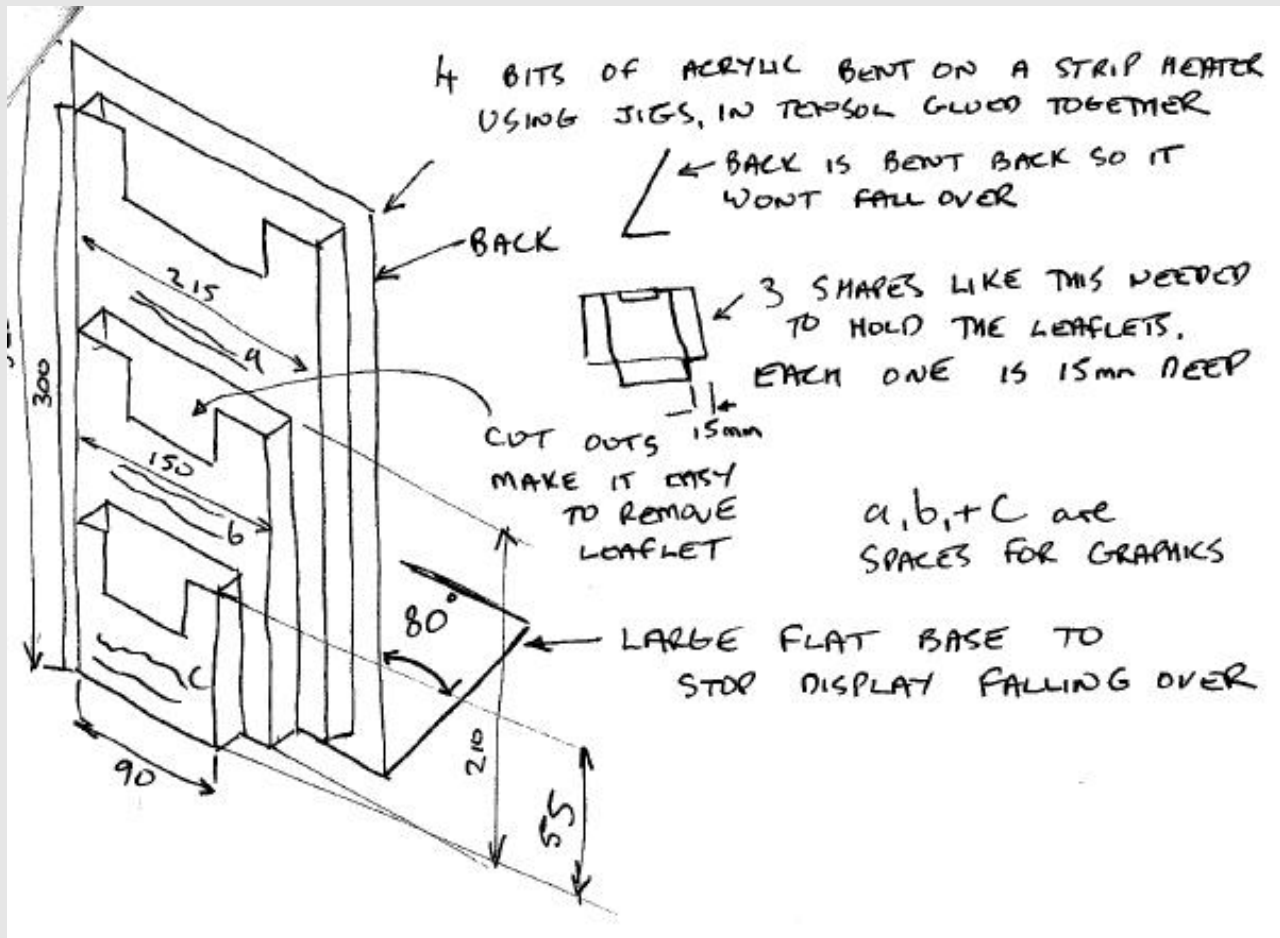
Question Number	Question	
1972_2H_Q02cii	<p>A model of the prototype of the box was made using a scalpel.</p> <p>Name <u>two</u> other tools, or items of equipment, that would be required to safely use the scalpel.</p>	
	Answer	Part Mark Total Mark
	<p>Two tools given:</p> <ul style="list-style-type: none"> • safety/Maun rule • cutting / safety mat (only answers) 	2x1 (2)
Question Number	Question	
1972_2H_Q02d	<p>Screen printing is used to print the graphics "<u>Handle with care</u>" on the outside of the box.</p> <p>Explain <u>one</u> economic reason for using screen printing.</p>	
	Answer	Part Mark Total Mark
	<p>One economic reason explained:</p> <ul style="list-style-type: none"> • the set up costs are low / it is a manual process therefore it reduces the cost of manufacturing the box / increases manufacturer's profits 	2x1 (2)
Question Number	Question	
1972_2H_Q02ei	<p>When packages are printed in shades of grey, a control strip is often printed on the package. A control strip is shown below.</p> <p>State what the control strip is used to measure.</p>	
	Answer	Part Mark Total Mark
	<p>One answer stated:</p> <ul style="list-style-type: none"> • density / depth / percentage / amount / tone 	1 (1)

Question Number	Question		
1972_2H_Q02eii	Some packages are printed in full colour. When printing in full colour it is important that the image-register is correct. Describe <u>one</u> way to achieve correct image-registration.		
	Answer	Part Mark	Total Mark
	One way described:		
	<ul style="list-style-type: none"> • registration marks are used to align the layers/colours 	2x1	(2)
Question Number	Question		
1972_2HQ02f	The manufacturer uses ICT to simulate a production line. Give <u>two</u> reasons why a manufacturer would simulate a production line.		
	Answer	Part Mark	Total Mark
	Two reasons given:		
	<ul style="list-style-type: none"> • potential problems could be identified • the need to modify the actual line later is reduced. • the layout of the production line could be optimised • reduce costs / increase speed • workflow could be planned • optimise resource use • used to develop computer-control programmes • train staff 	2x1	(2)

Question Number	Question		
1972_2HQ02g	<p>The manufacturer uses lay planning when producing the boxes.</p> <p>Give <u>two</u> advantages to the manufacturer of using lay planning when producing the boxes.</p>		
	<p>Answer</p> <p>Two advantages given:</p> <ul style="list-style-type: none"> • waste is minimised / purchase / disposal cost is minimised • amount of materials required are reduced / less expenditure on materials / the storage space required reduced • cost reduction • production time is reduced / less material is processed / handled 	Part Mark	Total Mark
		2x1	(2)
1972_2H_Q02h	<p>The manufacturer uses Computer Integrated Manufacture (CIM) to produce the box.</p> <p>Explain <u>two</u> advantages for the manufacturer of using CIM to produce the box.</p>		
	<p>Answer</p> <p>Two advantages explained:</p> <ul style="list-style-type: none"> • products can be produced quickly because the system is efficient • high quality products are made because of CAD/CAM and automatic measurements • costs are reduced because there is less labour/less waste • production lines can be adapted quickly for flexible manufacturing system/FMS • just-in-time/JIT production is possible therefore reducing costs/storage space • 24/7 production therefore faster turnaround 	Part Mark	Total Mark
		2x1 2x1	(4)

Question Number	Question	Part Mark	Total Mark						
1972_2H_Q03a	<p>A sports centre required a stand to display its publicity leaflets on shop counters. The drawings below show the set of publicity leaflets.</p> <p>Each pack of 100 leaflets is 15mm thick.</p> <p>The specification for the display stand is that it must:</p> <ul style="list-style-type: none"> • hold all three sizes of leaflet without falling over • hold at least 100 of each leaflet in such a way that leaflets can be removed individually • have space to clearly display the graphic <u>“Please take one”</u> while the leaflets are in place • be made using materials and processes suitable for batch production <p>Use sketches and, where necessary, brief notes to show <u>two different</u> design ideas for the display stand which meet this specification.</p>								
	<p>Answer</p> <p>Design idea 1</p> <p>Each point of specification has two marking points.</p> <p>1 mark should be awarded for evidence of each point of specification resolved in the design</p> <table> <tr> <td>For each point with both elements viably satisfied</td> <td>2 marks</td> </tr> <tr> <td>For each point with only one element viably satisfied</td> <td>1 mark</td> </tr> <tr> <td>Where the answer does not viably answer a specification point</td> <td>0 marks</td> </tr> </table> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <p>No marks are awarded for quality of communication.</p>	For each point with both elements viably satisfied	2 marks	For each point with only one element viably satisfied	1 mark	Where the answer does not viably answer a specification point	0 marks		
For each point with both elements viably satisfied	2 marks								
For each point with only one element viably satisfied	1 mark								
Where the answer does not viably answer a specification point	0 marks								

Hold all three sizes of leaflet without falling over.		
<ul style="list-style-type: none"> • There is an indication that the stand will hold all three different leaflets. <i>eg There are three separate compartments to put the leaflets into.</i> 	1	
<ul style="list-style-type: none"> • There is an indication of how the stand will not fall over, ie it is stable. <i>eg The shape of the stand leans backwards and has a base that stops it falling backwards .</i> 	1	
Hold at least 100 of each leaflet in such a way that leaflets can be removed individually		
<ul style="list-style-type: none"> • There is an indication of how will hold at least 100 of each type of leaflet ie a dimension of at least 15mm is shown (allowances for thicknesses of materials can be ignored) <i>eg The compartments are shown to be 20mm wide.</i> 	1	
<ul style="list-style-type: none"> • There is an indication of how the leaflets can be removed individually <i>eg There is a space at the front of the compartment for fingers to touch the leaflet.</i> 	1	
Have space to clearly display the graphic "please take one" while the leaflets are in place.		
<ul style="list-style-type: none"> • A space for "please take one" is indicated <i>eg "please take one" is written on the stand.</i> 	1	
<ul style="list-style-type: none"> • The space for "please take one" is not obscured by the leaflets or their holders. <i>eg "please take one" is written above the compartments that hold the leaflets.</i> 	1	
Be made using materials and processes suitable for batch production.		
<ul style="list-style-type: none"> • A material suitable for batch production is indicated. <i>eg The drawing is annotated to indicate it is made from acrylic.</i> 	1	
<ul style="list-style-type: none"> • A process suitable for batch production is indicated <i>eg The drawing is annotated to indicate the material is cut using a laser cutter.</i> 	1	(8)



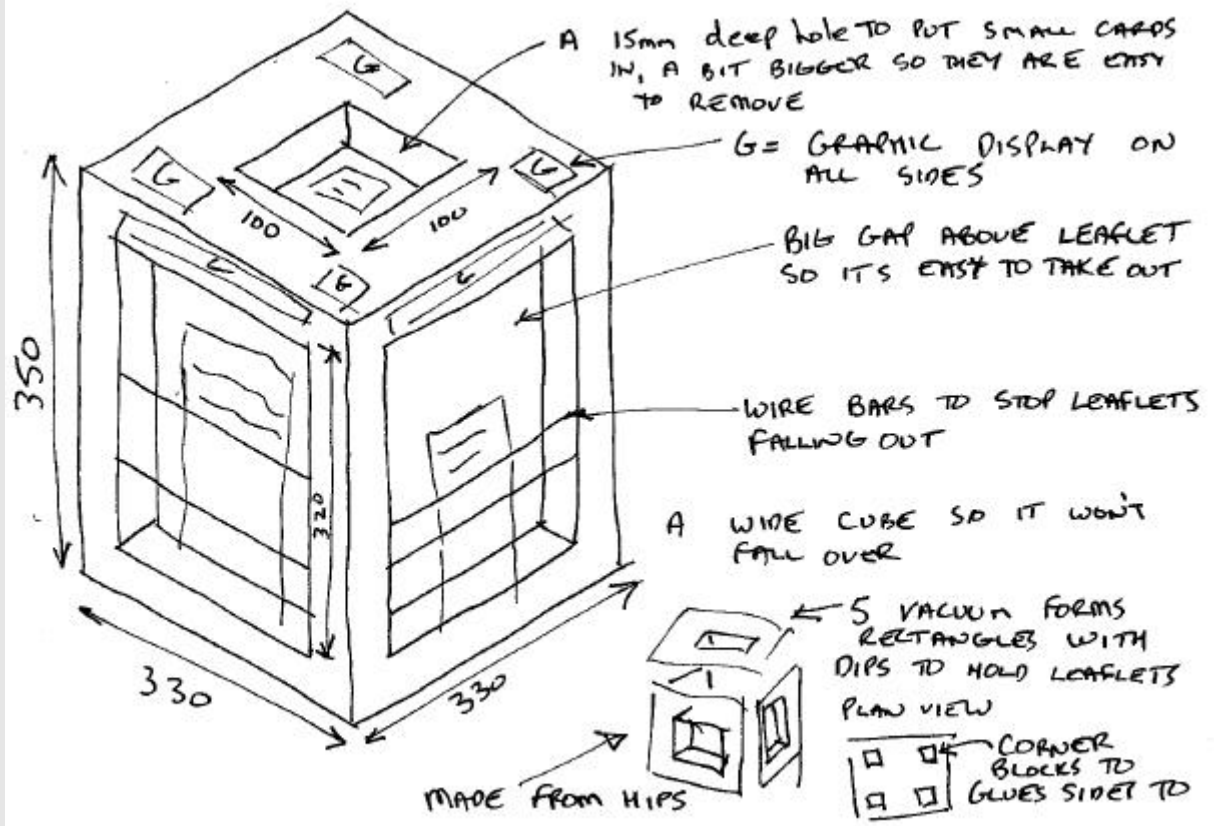
Design idea 2

Specification points 1,2 and 4 must be fully resolved in the second idea using **technically or conceptually different** solutions that are significantly different, eg simply changing proportions would not be significantly different.

Specification point 3 must be fully resolved again in design idea 2. Specification point 3 is **not** subject to the requirement to be different, eg if the graphics are placed top centre on design 1 and design 2 it will score in both designs.

- There is a **different** indication that the stand will hold **all** three different leaflets. 1
- There is a **different** indication of how the stand will not fall over, ie It is stable. 1
- There is a **different** indication of how it will hold at least 100 of each type of leaflet eg a dimension of at least 15mm is shown. 1
- There is a **different** indication of how the leaflets are easy to remove. 1
- A space for "please take one" is indicated 1
- The space for "please take one" is not obscured by the leaflets or their holders. 1
- A **different** material suitable for batch production is indicated. 1
- A **different** process suitable for batch production is indicated. 1

(8)



Question Number	Question		
1972_2H_Q03bi-iii	<p>Three of the original specification points are repeated below.</p> <p>Evaluate how <u>one</u> of your design ideas succeeds or fails to meet each of these specification points.</p> <p>(i) The display stand must hold all three sizes of leaflet without falling over</p> <p>(ii) The display stand must hold at least 100 each leaflet in such a way that leaflets can be removed individually</p> <p>(iii) The display stand must be made using materials and processes suitable for batch production</p>		
	Answer	Part Mark	Total Mark
	<p>Each point clearly evaluated</p> <p>If a candidate has indicated Design idea 1 (or 2) then evaluates Design 2 (or 1) for all or part (i), (ii) & (iii) then the idea in greater evidence should be marked.</p> <p>The evaluation of the design must contain reference to either positive or negative qualities not simply a description of the design. The answers must contain new information from that credited in the design solutions.</p> <p>Repetition of original specification scores 0</p>		
	<p>(i) Evaluation of: Hold all three sizes of leaflet without falling over.</p> <ul style="list-style-type: none"> • how the stand will hold all three different leaflets. <i>eg My design holds each leaflet in its own section.</i> • how the stand will not fall over, ie it is stable. <i>eg My design has a big base which will make it stable.</i> 	2x1	(2)
	<p>(ii) Evaluation of: Hold at least 100 of each leaflet in such a way that leaflets can be removed individually.</p> <ul style="list-style-type: none"> • how the stand will hold at least 100 of each type of leaflet <i>eg Because each section is 20mm wide there will be plenty of space to hold the pack.</i> • how the leaflets are easy removed individually <i>eg Because the front of the sections are cut away there will be a big gap where you can pick up the leaflet.</i> 	2x1	(2)

(iii)	Evaluation of: Be made using materials and processes suitable for batch production. <ul style="list-style-type: none"> • a material suitable for batch production is indicated. <i>eg Acrylic is available in large sheets so many bits can be cut in one go.</i> • a process suitable for batch production. <i>eg Because laser cutting works without the need for constant human effort it is suitable for batch production.</i> 	2x1	(2)
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(Total 22 marks)

Question Number	Question
1972_2H_Q04ai	<p>The drawing below shows a fruit juice carton.</p> <p>The carton is made from a laminate of three different materials. The table below lists the materials used in the laminate.</p> <p>Fill in <u>one</u> reason for each material. Each reason must be different.</p>

Answer		Part Mark	Total Mark								
	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 25%;">Material</th> <th style="width: 75%;">Reason for use given</th> </tr> </thead> <tbody> <tr> <td>Polyethylene(PE)</td> <td>Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness</td> </tr> <tr> <td>Aluminium</td> <td>Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness</td> </tr> <tr> <td>Paper</td> <td>Provides a printing surface / rigidity / toughness</td> </tr> </tbody> </table> <p><i>Each answer must be different</i></p>	Material	Reason for use given	Polyethylene(PE)	Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness	Aluminium	Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness	Paper	Provides a printing surface / rigidity / toughness	3x1	(3)
Material	Reason for use given										
Polyethylene(PE)	Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness										
Aluminium	Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness										
Paper	Provides a printing surface / rigidity / toughness										

Question Number	Question		
1972_2H_Q04aii	<p>The drawing below shows the cap of the carton. The cap is made from PVC. It is a one piece moulding made by an injection moulding process.</p> <p>Give <u>two</u> reasons why PVC is a suitable material for the cap.</p>		
	<p>Answer</p> <p>Two reasons given:</p> <ul style="list-style-type: none"> flexible / a one piece moulding possible inert / does not taint the contents impermeable / prevents ingress to container / egress / leakage of contents can be glued to the carton is a thermoplastic 	2x1	(2)
Question Number	Question		
1972_2H_Q04bi	<p>An airbrush was used to create an image for the carton design.</p> <p>Explain <u>one</u> advantage of using an airbrush instead of colouring pencils to create an image.</p>		
	<p>Answer</p> <p>One advantage explained:</p> <ul style="list-style-type: none"> a wider range of colours / shades / tones are possible because inks can be mixed / blended / graduated tones / shades / colours can be applied more evenly because wide areas can be sprayed at once / images can be masked 	2x1	(2)

Question Number	Question	Part Mark	Total Mark
1972_2H_Q04bii	<p>A scanner was used to import the airbrushed image into a desktop publishing package(DTP).</p> <p>Give <u>two</u> advantages to the designer of scanning the airbrushed image into a DTP package.</p>		
	<p>Answer</p> <p>Two reasons given:</p> <ul style="list-style-type: none"> • images can be edited using software • images can be stored • transferred electronically • ready for digital processing 	2x1	(2)
Question Number	Question	Part Mark	Total Mark
1972_2H_Q04biii	<p>DTP packages have a number of tools that can help the designer.</p> <p>Name <u>two</u> tools that help with the accurate layout of designs in DTP packages.</p>		
	<p>Answer</p> <p>Two tools given:</p> <ul style="list-style-type: none"> • rulers • grids • dialogue boxes or buttons automatically align objects left / right / centre/ justified / relative to other objects / relative to page border / relative to frame • text dialogue entry boxes • pre-drawn shapes • guidelines • templates • frames • snap to 	2x1	(2)

Question Number	Question		
1972_2H_Q04c	Manufacturers frequently use CAD/CAM to reduce the cost of production. Give <u>one</u> way in which CAD/CAM can reduce the cost of production.		
	Answer	Part Mark	Total Mark
	One way given:		
	<ul style="list-style-type: none"> reduction in labour requirements / skills required efficiency of operation. eg can work 24/7 / less waste/ easy lay planning/ increase speed/volume, automatic between design and manufacture ability to reuse design data / manufacturing programming 	1	(1)
Question Number	Question		
1972_2H_Q04d	During the design of the carton, the designer used email for communication. Explain <u>two</u> disadvantages for the designer of using email for communication.		
	Answer	Part Mark	Total Mark
	Two disadvantages explained:		
	<ul style="list-style-type: none"> security compromised / work damaged because of viruses. personal relationships compromised because of a lack of face to face. costs may rise because of the setup costs of internet charges. health risks because of extended use of equipment. technical limitations may restrict size of file/complexity of design communications may not arrive / be seen due to technical errors / filters / human error 	2x1 2x1	(4)

Question Number	Question	
1972_2H_Q04e	Some of the materials used to make the carton are produced by sustainable technologies. Explain <u>one</u> advantage for society of using materials produced by sustainable technologies.	
	Answer	Part Mark Total Mark
	One advantage explained:	
	<ul style="list-style-type: none"> materials continuously available because they can be regenerated / recycled. waste materials will not build up because they will be harmless to the environment / biodegradable / recyclable 	2x1 (2)
Question Number	Question	
1972_2H_Q04f	Packaging regulations require that the address of the product manufacturer is given. Explain <u>one</u> advantage for the consumer of knowing the address of the product manufacturer.	
	Answer	Part Mark Total Mark
	One advantage explained:	
	<ul style="list-style-type: none"> the consumer can communicate with the manufacturer. the consumer can choose where they purchase products from therefore they can make an informed choice. 	2x1 (2)

Question Number	Question	
1972_2H_Q04g	<p>The drawing below shows an international symbol on a product manufactured in Europe. The product is to be sold in Japan.</p> <p>Explain <u>one</u> reason why the use of international symbols is important when a product is sold in a country with a different culture to the country where it is manufactured.</p>	
	Answer	Part Mark Total Mark
	<p>One reason explained:</p> <ul style="list-style-type: none"> • no language barrier therefore the consumers will be able to follow the instructions • no need to translate therefore no danger of misinterpretation 	<p style="text-align: right;">2x1 (2)</p>
		(Total 22 marks)
TOTAL FOR PAPER: 88 MARKS		

Design & Technology: Graphic Products (3972/2H)
Short Course Higher Tier Mark Scheme

Question Number	Question		
3972_2H_Q01a	<p>The drawings show a child's book that plays sounds when the buttons on the side are pushed. The book is aimed at children aged between two and four years.</p> <p>Two specifications points for the book are that:</p> <ul style="list-style-type: none"> • the covers must attract the attention of potential purchasers • the covers must allow the retailer to monitor sales easily <p>Under each of the following heading, give <u>one</u> more point that should be included in the specification for this book. For each point, give <u>one</u> reason why it should be included.</p>		
	<p>Answer</p> <p>Three specification points given: Three reasons given: <i>(Do not accept repetition of the specification points given or duplicate answers)</i> <i>(Some flexibility should be given as some points may cross over descriptions)</i></p> <p><u>Market</u></p> <p>Point: the cost of manufacturing the book should be low Reason: to maximise profits</p> <p>Point: the book should appear expensive / value for money Reason: to justify high price</p> <p>Point: the book should stand out from the other books Reason: to increase sales</p> <p>Point: the book should be a standard/suitable size to fit bookshop shelves Reason: shops are more likely to stock books that they don't have to make special displays for</p> <p>Point: the book should be suitable for target age group Reason: safety / legal / moral / user satisfaction / educational</p>	<p>Part Mark</p> <p>(3x1) (3x1)</p>	<p>Total Mark</p> <p>(6)</p>

Point: the book should display a logo / corporate id
Reason: consumer awareness of manufacturer

Environment

Point: minimum materials used
Reason: resource conservation

Point: made from recycled materials / possible to be recycled /made from biodegradable materials
Reason: resource conservation / waste minimisation

Point: the manufacture / disposal of the book should not cause pollution
Reason: protection of the environment

Point: the book should display a recycle symbol
Reason: consumer awareness

Point: the battery should be removable / rechargeable
Reason: prevent contamination when disposed of

Point: the book should be long lasting / durable
Reason: the book can then be passed on to other children (*reducing waste*)

Quality

Point: the text/images should be easy to read / clearly printed
Reason: consumer satisfaction / brand reputation / improve sales

Point: the materials the book is made from / finishes should be durable /reliable / aesthetically pleasing
Reason: consumer satisfaction / brand reputation / improve sales

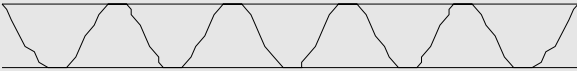
Point: the book should comply with relevant legal standards eg be tested by BSI/ISO, display a Kitemark
Reason: moral and legal obligation / improve sales

Point: the parts of the book should be tested during production
Reason: to ensure they meet specifications

Question Number	Question	
3972_2H_Q01bi	<p>The drawing below shows the case that surrounds the buttons. It is made from acrylic.</p> <p>One reason why the case is made from acrylic is that it can be vacuum formed to the required shape.</p> <p>Give <u>two</u> other reasons why acrylic is a suitable material from which to make the case.</p>	
	Answer	Part Mark Total Mark
	<p>Two reasons given:</p> <ul style="list-style-type: none"> • self coloured • non-toxic • thermoplastic • good surface finish • rigid / tough / strong / durable • cost effective (<i>do not accept 'cheap'</i>) • manufacturer may be familiar with using acrylic / be set up to use acrylic • properties of acrylic meet the requirements of the book • does not conduct electricity 	2x1 (2)
Question Number	Question	
3972_2H_Q01bii	<p>One reason why the case is vacuum formed is that it is cost effective.</p> <p>Give <u>two</u> other reason why the acrylic case is made by vacuum forming.</p>	
	Answer	Part Mark Total Mark
	<p>Two reasons given:</p> <ul style="list-style-type: none"> • accuracy • high speed / fast • low tooling costs • can be automatic / continuous • manufacturer may be familiar with using vacuum forming / be set up to use vacuum forming • vacuum forming will produce products that meet the specification for the book • suitable for mass/volume/batch production / repeatability <p><i>(Do not accept any reference to cost)</i></p>	2x1 (2)

Question Number	Question		
3972_2H_Q01c	<p>The pages of the book are made from solid board.</p> <p>Give <u>two</u> properties of solid board that make it suitable for the pages of the book. For each property, give <u>one</u> reason why it makes solid board suitable for the pages of the book</p>		
	Answer	Part Mark	Total Mark
	<p>Two properties & reasons given:</p> <p>Property: rigid Reason: makes pages durable / easy to turn over</p> <p>Property: tough / strong Reason: makes pages durable / hard to tear</p> <p>Property: the pages will be thick Reason: makes the pages easy for children to turn over / prevents paper cuts</p> <p>Property: can be die cut Reason: allows shape to be made economically</p> <p>Property: non toxic Reason: does not poison user / safe for user</p> <p>Property: has a surface suitable for printing / varnishing / finishing Reason: reduces cost / number of manufacturing stages / improves appearance</p> <p>Property: can be folded Reason: allows user to turn pages / reduces the number of pages to be bound</p> <p>Property: can be recycled / made from recycled materials Reason: preservation of environment/resources</p>	<p>2x1 2x1</p>	<p>(4)</p>

Question Number	Question	
3972_2H_Q01d	The battery cover is made from a red material. Explain <u>one</u> reason why the battery cover is made from a red material.	
	Answer	Part Mark Total Mark
	One reason explained:	
	<ul style="list-style-type: none"> • associated with danger therefore the customer will be aware that the batteries within could be dangerous • will stand out therefore can find the battery 	2x1 (2)
Question Number	Question	
3972_2H_Q01e	The pages of the book are finished using laminating. Explain <u>one</u> reason why laminating is used for finishing the pages.	
	Answer	Part Mark Total Mark
	One reason explained:	
	<ul style="list-style-type: none"> • protects the pages / makes the pages stronger/tougher/rigid therefore maintains the quality of the product • makes the product look better therefore increases user pleasure/enhances sales potential • hygienic because it can be easily cleaned 	2x1 (2)

Question Number	Question		
3972_2H_Q01f	<p>Two purposes of the covers of the book are:</p> <ul style="list-style-type: none"> • attract the attention of potential purchasers • allow the retailer to easily monitor sales of the book <p>Explain, under the following headings, how the covers of the book achieve these purposes.</p>		
	<p>Answer</p> <p>Two purposes explained:</p> <p>Attract the attention of potential purchasers</p> <ul style="list-style-type: none"> • the cover has a large interesting picture / text on the front of it therefore clearly showing the user what the book is about / stands out / eye catching • the book is printed in colour therefore making it attractive. <p>Allow the retailer to easily monitor sales of the book</p> <ul style="list-style-type: none"> • the book has a barcode printed on it therefore allowing EPOS tills to function / stock control / can be scanned / links to a computer 	<p>Part Mark</p> <p>2x1</p> <p>2x1</p>	<p>Total Mark</p> <p>(2)</p> <p>(2)</p>
(Total 22 marks)			
Question Number	Question		
3972_2H_Q02ai	<p>The drawing below shows a box made from corrugated card.</p> <p>Draw a sketch to show what the corrugations on the edge of the card look like.</p>		
	<p>Answer</p> <p>One drawing given:</p> 	<p>Part Mark</p> <p>1</p>	<p>Total Mark</p> <p>(1)</p>

Question Number	Question		
3972_2H_Q02aii	The box will be used to package electronic equipment for transport. Give <u>two</u> advantages of making the box from corrugated card instead of solid board.		
	Answer	Part Mark	Total Mark
	Two advantages given: <ul style="list-style-type: none"> • lighter / better strength-to-weight ratio / the box will be easier/cheaper to transport • more shock absorbent / the box more protective • easier to fold / dispose of • better insulator of heat 	2x1	(2)
Question Number	Question		
3972_2H_Q02b	The designer of the prototype of the box collected data relating to its design from a CD ROM instead of using a printed catalogue. Give <u>two</u> advantages to the designer of using CD ROMs to access data.		
	Answer	Part Mark	Total Mark
	Two advantages given: <ul style="list-style-type: none"> • quicker • more people can access the same information simultaneously/the data can be shared on a network • data can be accessed remotely • purchase cost of data is less / production costs of CD ROMs are less than printed catalogues. • CD ROMs take up less storage space than books • CD ROMs are easier to carry than books 	2x1	(2)

Question Number	Question		
3972_2H_Q02ci	<p>During the design of the prototype for the box CAD was used.</p> <p>Explain <u>one</u> way in which the use of CAD can make the design process quicker.</p>		
	Answer	Part Mark	Total Mark
	<p>One way explained:</p> <ul style="list-style-type: none"> • sections can be repeated because of the use of the copy & paste. • designs can be modified / edited because of a range of tools built into software. • it is quicker to store/retrieve files because they are stored digitally not physically. • designs can be sent electronically this is quicker because of no need to use postal service. • designs can be tested / simulated/modelled digitally which is quicker because there is no need to build a physical model • parametric designs are possible therefore designs can be produced using dialogue boxes • links to CAM/rapid prototyping therefore reduces development time / allows early testing/in-house production • collaborative design therefore more skills applied / faster turnaround 	2x1	(2)
Question Number	Question		
3972_2H_Q02cii	<p>A model of the prototype of the box was made using a scalpel.</p> <p>Name <u>two</u> other tools, or items of equipment, that would be required to safely use the scalpel.</p>		
	Answer	Part Mark	Total Mark
	<p>Two tools given:</p> <ul style="list-style-type: none"> • safety/Maun rule • cutting / safety mat <p><i>(only answers)</i></p>	2x1	(2)

Question Number	Question
3972_2H_Q02d	Screen printing is used to print the graphics " <u>Handle with care</u> " on the outside of the box. Explain <u>one</u> economic reason for using screen printing.

Answer	Part Mark	Total Mark
One economic reason explained:		
<ul style="list-style-type: none"> The set up costs are low / it is a manual process therefore it reduces the cost of manufacturing the box / increases manufacturer's profits 	2x1	(2)

(Total 11 marks)

Question Number	Question
3972_2H_Q03ai	The drawing below shows a fruit juice carton. The carton is made from a laminate of three different materials. The table below lists the materials used in the laminate. Fill in <u>one</u> reason for each material. Each reason must be different.

Answer	Part Mark	Total Mark								
<table border="1"> <thead> <tr> <th>Material</th> <th>Reason for use given</th> </tr> </thead> <tbody> <tr> <td>Polyethylene (PE)</td> <td>Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness</td> </tr> <tr> <td>Aluminium</td> <td>Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness</td> </tr> <tr> <td>Paper</td> <td>Provides a printing surface / rigidity / toughness</td> </tr> </tbody> </table> <p><i>Each answer must be different</i></p>	Material	Reason for use given	Polyethylene (PE)	Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness	Aluminium	Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness	Paper	Provides a printing surface / rigidity / toughness	3x1	(3)
Material	Reason for use given									
Polyethylene (PE)	Provides a barrier to liquids/air/bacteria/ germs / enhances appearance / increases strength / increases toughness									
Aluminium	Provides a barrier to light/liquids/bacteria/ germs / increases strength / toughness									
Paper	Provides a printing surface / rigidity / toughness									

Question Number	Question
3972_2H_Q03bii	A scanner was used to import the airbrushed image into a desktop publishing package(DTP). Give <u>two</u> advantages to the designer of scanning the airbrushed image into a DTP package.

Answer	Part Mark	Total Mark
Two reasons given:		
<ul style="list-style-type: none"> • images can be edited using software • images can be stored • transferred electronically • ready for digital processing 	2x1	(2)

Question Number	Question
3972_2H_Q03biii	DTP packages have a number of tools that can help the designer. Name <u>two</u> tools that help with the accurate layout of designs in DTP packages.

Answer	Part Mark	Total Mark
Two tools given:		
<ul style="list-style-type: none"> • rulers • grids • dialogue boxes or buttons automatically align objects left / right / centre/ justified / relative to other objects / relative to page border / relative to frame • text dialogue entry boxes • pre-drawn shapes • guidelines • templates • frames • snap to 	2x1	(2)

(Total 11 marks)

TOTAL FOR PAPER: 44 MARKS

