

Design and Technology

General Certificate of Secondary Education

Unit **A534**: Graphics: Technical Aspects of Designing and Making

Mark Scheme for January 2012

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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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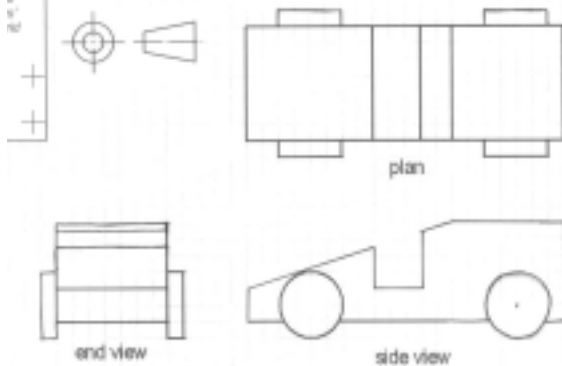
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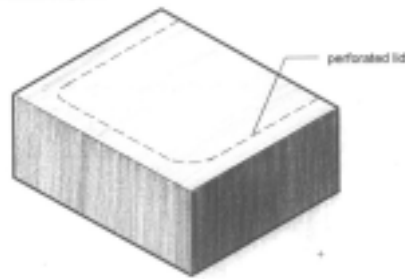
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Question			Answer	Mark	Guidance
1	(a)	(i)	Upper case E and U added in the correct spaces Upper case E and U in the same style as the given letters. Letters should be one square thick.	1 1	Candidates to be given credit for adding the letters in the correct spaces and credit for drawing the letters in a similar style to the given letters. Award a maximum of one mark for lower case letters, with thickness, in the correct spaces.
		(ii)	Bottom half of body of fish added Bottom half of tail added	1 1	Only award marks for drawings that are completed in a similar style to that given. Depth is not an issue – must be a smooth curve.
1	(b)	(i)	A prototype is the first product to be made	1	Accept variations so long as it is clear that the candidate understands a prototype is the first product to be made or a 'one off' or a 'test'
1	(b)	(ii)	If you make one to see how it looks it does not waste too many materials	1	The answer must be an economic reason, stating how making a prototype saves money/materials. Do not accept: it save money/materials.
1	(b)	(iii)	200 to 500 Microns or 160 to 380 gsm	1	Accept any value between the two given so long as gsm or microns/micrometers are also stated
1	(c)		Any specific drawing tool: Pencil, pen, CAD program, printer	1	Do not accept: computer
			Stanley knife, craft knife, safety knife, scalpel, scissors, vinyl/laser cutter, guillotine	1	Do not accept: knife, cutter on their own without a suitable type being stated.
			PVA glue, copydex, pritt stick, UHU, glue stick, super glue double sided tape, spray mount, hot glue gun or other suitable adhesive	1	Do not accept: glue, adhesive, tape, sellotape, epoxy resin, contact adhesive.

Question		Answer	Mark	Guidance
1	(d)		<p>1</p> <p>1</p>	<p>Award one mark if fold line is dotted / dashed and in correct place</p> <p>Award one mark if glue flap is on right hand end and to a suitable size (1 – 3 squares wide) and has sloped sides.</p>
Question		Answer	Mark	Guidance
2	(a)		<p>1</p> <p>1</p> <p>1</p>	<p>Thick lines around outside</p> <p>Two thick lines added correctly to 'cockpit'</p> <p>Thick lines added to left hand side of holes</p>
2	(b)		<p>1</p> <p>1</p>	<p>Elliptical shape added to front surface. Ellipse should be symmetrical around diagonal lines. Can be any size.</p> <p>Do not award marks for drawing a circle.</p> <p>Rear profile drawn parallel to the front profile with edges of tyre added.</p>
2	(c)	<p>Using a craft knife, hot wire, jigsaw, scroll saw, fretsaw, coping saw, band saw, abrafile.</p>	<p>1</p>	<p>Accept any reasonable answer that names a suitable method</p>

Question		Answer	Mark	Guidance
2	(d)	 <p>The drawing shows three views of a toy car: an end view (top left), a plan view (top right), and a side view (bottom right). The end view shows a rectangular shape with a wheel on the right. The plan view shows a rectangular shape with a central vertical line and two small rectangles on the sides. The side view shows a rectangular shape with a wheel on the left and a smaller wheel on the right. The labels 'end view', 'plan', and 'side view' are placed below their respective drawings.</p>	1 1 1 1	Two wheels correctly added to the plan Rear portion and rear wheel on side view correctly completed Front end and cockpit on side view correctly completed (has to project from the plan and end view) End view including wheel correctly completed. Accept to candidate's side view solution.
2	(e) (i)	The real car is 50 times larger than the toy car	1	Accept variations eg. The toy car is 50 times smaller than the real car (allow 1/50 th of real car)
2	(e) (ii)	10mm	1	This is the only correct answer

Question		Answer	Mark	Guidance
3	(a)	 <p>The drawing shows a 3D perspective view of a rectangular block. The top surface is shaded with a light tone. A dashed line indicates a lid on the top surface, which is labeled 'perforated lid'.</p>	2 1	3 different tones of clearly visible on each face, with top surface being the lightest. Top can be left unshaded. Shading should be relatively neat and even. Award one mark for neatness and 'even-ness' of shading.
3	(b)	<p>Select the lines.</p> <p>Select Mirror command</p> <p>Select axis – 2 points on the centre line</p>	1 1 1	<p>The three key parts to this are:</p> <ol style="list-style-type: none"> 1. The selection of the half already drawn 2. The mirror command stated or icon selected (allow flip) 3. The selection of the centre line as the axis for the mirrored image or move flipped image so in line with other half. <p>Award one mark for each part.</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
3	(c*)	<p>Key points:</p> <ul style="list-style-type: none"> • Cardboard box has perforated lid so cannot be re-sealed once opened.(Plastic box can) • Cardboard box is not waterproof and may get damp and disintegrate (Plastic box is waterproof) • Plastic box has hanger so easier to see in shop (Cardboard box doesn't have hanger) • Plastic box allows contents of box to be seen – quantity when bought and how many left. (Cardboard box does not) • Plastic box has indented lid so can be stacked safely (Cardboard cannot once opened) • Plastic box is more difficult to recycle than cardboard. Plastic does not biodegrade whereas cardboard does. Card is made from a sustainable source, plastic isn't. 	<p>Level 3 (5-6 marks)</p> <p>Level 2 (3-4 marks)</p> <p>Level 1 (0-2 marks)</p>		<p>Thorough comparison, showing detailed understanding of the differences between the two boxes and the needs of the user. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar.</p> <p>Comparison shows some understanding of the differences between the two boxes and the needs of the user. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation.</p> <p>Comparison shows limited understanding of any differences between the two boxes or the needs of the user. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.</p>

Question		Answer	Mark	Guidance
4	(a)	Registration or registered or registered trade mark	1	These are the only acceptable answers.
		Protects the design / product / name. Shows ownership	1	Prohibits copying...or similar explanation.
		Bar code	1	This is the only acceptable answer.
		To track or identify the product. So the product can be scanned.	1	...or similar explanation. Do not accept answers that refer to the product being sold or the price displayed unless scanned is clearly stated in the answer.
4	(b)	Vacuum Forming	1	Both words are required for the mark.
4	(c)	Styrene, Polyester Copolymer, Polystyrene, Polycarbonate, Polypropylene, Polyethylene, Polyvinyl Chloride	1	Accept acronyms: ABS, PVC, HIPS. PET Do not accept any other plastics or acronyms

Question			Answer	Mark	Guidance
5	(a)	(i)	Computer Aided Manufacture	1	This is the only correct answer. All three words required for the mark.
5	(a)	(ii)	Quicker or faster to produce. All exactly the same. More accurate Lower labour costs.	2	Award one mark for each correct answer.
5	(b)		Digital or screen printing	1	These are the only 2 acceptable answers
5	(c)		Photochromic, thermochromic, phospherent, fluorescent, luminous inks or pigments. UV varnish.	2	Any two of these. One mark for each correct answer.
5	(d)		<p>The design should clearly show the following:</p> <ul style="list-style-type: none"> • hold one pen • be made from one A5 sheet of 5mm thick foamboard • be made from shapes that slot together • have surface graphics that promote a company called 'PHK Chemicals'. 	<p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>	<p>Award one mark if design shows/states it holds one pen. Do not award mark if design shows several pens.</p> <p>Award one mark if the design shows it is made from foamboard (some thickness is shown or stated) Award second mark if design appears to use approximately one A5 sheet. Use dimensions (if given) or scale of pen to judge</p> <p>Award one mark if design clearly shows that it slots together.</p> <p>Award other mark for overall quality of design.</p> <p>Award mark if the initials PHK are clearly shown on the design.</p> <p>Note: A completed design solution must be shown. Answers that show component parts but do not explain or show how they will all fit together to make the final design – max 3</p>

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