

Design and Technology

General Certificate of Secondary Education

Unit **A532**: Graphics: Sustainable Design

Mark Scheme for January 2011

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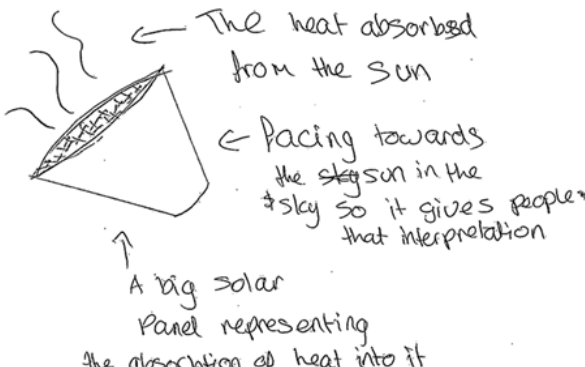
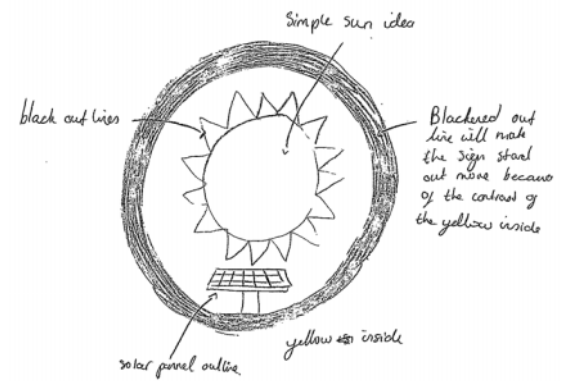
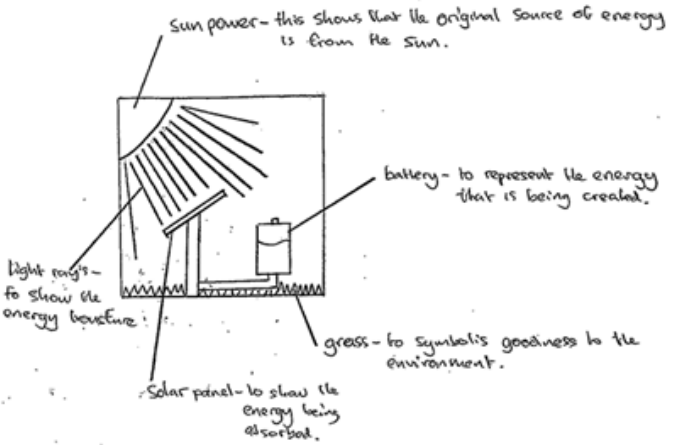
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Question		Expected Answer	Mark	Additional guidance
1		(d) Reduces the consumption of natural resources	[1]	These are the only acceptable answers. No mark awarded if more than one answer ringed or if a candidate's response is not clear. Accept any other method of indicating response eg tick or cross
2		(c) The materials and manufacturing processes used have little impact on the environment	[1]	
3		(c) Compact Discs	[1]	
4		(d) To fix or mend it so it can be used again	[1]	
5		(a) Protect and prolong the shelf life of a product	[1]	
6		Landfill, Rubbish tip, incinerator, council tip/tip, dump,	[1]	There may be other acceptable answers. Do not accept: scrap yard, compost heap, river, lake, sea
7		The product is no longer useful or in use Product is no longer of use, out of date / not needed / not relevant / not suitable for use / not suitable for it's function or purpose / doesn't meet current standards / obsolete / replaced	[1]	Accept variations on this answer Not accept: made into something else / no job / job not needed (as in redundancy) / not made or produced anymore / does not work or is broken, out of style / fashion, discarded / thrown away / recycled.
8		Refuse	[1]	This is the only acceptable answer
9		Composting / compost / decomposing	[1]	Do not accept biodegrade or biodegrading
10		The green dot symbol means that the company has paid (a financial contribution) towards recycling	[1]	Do not accept answers relating to the product/packaging can be recycled
11		False	[1]	These are the only acceptable answers. No mark awarded if more than one answer ringed or if a candidate's response is not clear. Accept any other method of indicating response eg tick or cross
12		True	[1]	
13		False	[1]	
14		True	[1]	
15		True	[1]	
Total			[15]	

Question		Expected Answer	Mark	Additional guidance
16	(a)	Accept any 2 answers from list: Glass can be recycled Made from recycled material Reprocessed into a new glass product (re-blown) Glass is a sustainable resource Glass bottle can be washed out and then used again Can be reused Does not contain contaminants when recycled / discarded	[2]	Accept variations on this answer Do Not Accept: 'environmentally friendly' on it's own Lasts a long time on its own Answers relating to aesthetics of glass Answers relating to hygiene Answers relating to cheapness Answers relating to strength
	(b)	Four points relating to a benefit of the material: Material is recyclable (both of the materials are) Card made from renewable / sustainable material Keeps liquids from spilling out, seeping through the cardboard, leak proof, holds liquids Protects against external moisture / contamination / taint Adds strength to carton, good strength to weight ratio, can be recycled/disposed of, can be squashed when empty Can be cut and folded into shape easily Can be printed onto, durable, lightweight	[4]	Do not accept; Cheap, protects, easy to store. Prolongs the shelf life, biodegradable, malleable, easy to open, hold the shape Do not accept the word sustainable or recyclable on its own. Answer should relate to the material Be careful not to accept repeat answers
	(c)	Aluminium cans can be melted down (1) Made into new products / cans (1) Aluminium uses little energy to recycle (1) Cost effective to recycle (1) Aluminium is 100% recyclable / (1) No need for sorting/separating aluminium cans, removing labels, single material (1) Aluminium can reprocessed over and over without losing any of it's original properties (1) Cans are easily squashed so take up less room (1)	[4]	Do not accept: Environmentally friendly or doesn't harm the environment unless qualified 'Can be recycled' unless stated that it is 100% recyclable Can be reused Made from Aluminium
	(d)	2 answers; Remove / separate any plastic or foil eg caps / screw lids or straws etc, separate different materials Flatten / crush / open out the carton before recycling Make sure the carton is empty & washed Remove labels / wrappings etc	[2]	Accept variations on these answers. Answer should relate to 'doing' something to a product to make it more suitable for recycling not general terms to lessen waste / excess packaging Do not accept: Put it in a recycling bin/box, put it on the compost heap

Question		Expected Answer	Mark	Additional guidance
	(e)	Primary recycling is when a product is recycled/reused again without altering / changing it in any way (1) Giving clothes / books (1) to a charity shop (1) or leaving magazines / newspapers (1) in a doctor's / dentists surgery (1)	[3]	Explanation of the term primary recycling (1) An example given – Named product (1) How it is reused (1)
Total			[15]	

Question		Expected Answer	Mark	Additional guidance										
17	(a)	Sunlight / sun / light (1) The conversion into energy / power / electricity (1) Renewable energy (1) from the sun (1)	[2]	Accept variations as long as the answer relates to conversion/turning/changing of sunlight into power / energy										
	(b)	Wind power, tidal power, geothermal power, hydropower, biomass	[1]	There may be other answers										
	(c)	Road signs are located outside (1) so can absorb the sun's rays throughout the day (1) Low power needed (1) Located away from power source (1) No cables required (1)	[2]	Do not accept; Waterproof or answers relating to strength / durability References to use at night on its own										
	(d)	Any 2 points The solar panel would capture / harnessed the sun's energy in the daytime (1) and this would be stored (1) Can be stored in a battery (1) At night the stored electricity is used to light up the sign (1) Light dependent switching (1)	[2]	Accept variations on these answers as long as the answer relates to the storing / collecting / conserving / absorbing of the sun's energy to be released to power the sign at night when it's dark.										
	(e)	Not enough hours of sun / not enough strength of sun (1), to create sufficient electricity to light up/power the sign for the whole of the night (1)	[2]	Accept variations on wording as long as the answer relates to a lack of sunlight to power the sign										
	(f)	<table border="1"> <thead> <tr> <th>6Rs</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>RECYCLE</td> <td>Products that can be recycled or use recycled materials</td> </tr> <tr> <td><u>REUSE</u></td> <td>Products that can be adapted for an alternative use</td> </tr> <tr> <td><u>RETHINK</u></td> <td>To approach design problems differently</td> </tr> <tr> <td>REDUCE</td> <td><u>Parts of the product made smaller or minimised/lessen materials or energy used/minimise excess packaging</u></td> </tr> </tbody> </table>	6Rs	Description	RECYCLE	Products that can be recycled or use recycled materials	<u>REUSE</u>	Products that can be adapted for an alternative use	<u>RETHINK</u>	To approach design problems differently	REDUCE	<u>Parts of the product made smaller or minimised/lessen materials or energy used/minimise excess packaging</u>	[3]	One mark for each correct statement Reuse – only acceptable answer Rethink – only acceptable answer Reduce – answer should <u>not</u> use the word <u>reduce</u> unless justified, accept lessen / diminish / minimise / smaller / less
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Question	Expected Answer	Mark	Additional guidance
<p>(g)</p>	<p>Sketch / symbol is related to the sun (1) Stylised symbol, quality of sketch (1) Notes and/or sketch showing a suitable link of the sun to some form of power / energy (not just a sun & a solar panel or the letters SP) (1)</p>  <p>Example 1: 1 mark (No mark as sketch does not relate to the sun and no mark for quality of sketch)</p>  <p>Example 2: 2 marks (No notes linking solar panel to power/energy)</p>	<p>[3]</p>	<p>If there is more than one sketch, choose the sketch that fits best</p>  <p>Example 3: 3 marks (Sun, simple stylised drawing, solar panel & battery with notes)</p>
	<p>Total</p>	<p>[15]</p>	

Question		Expected Answer	Mark	Additional guidance
18	(a)	Any one point: To protect the DVD's during transportation More DVD's can be transported easily Transport boxes can be stacked in the lorry more easily Easier to carry / transport / in numbers	[1]	No marks for 'cheaper'
	(b)	Corrugated cardboard, corrugated	[1]	This is the only acceptable answer No marks for 'cardboard' or 'card' or drawing
	(c)	By using recycled materials the manufacturer is maintaining/portraying a good public image and helping the environment, attracts customers who want to support environmentally friendly companies/products helps reduce the company's carbon footprint	[1]	Accept variations on this answer Do not accept answers relating to recycled materials being cheaper, the manufacturer being able to reuse the material or just 'Environmentally friendly' unless justified
	(d)	 The wood pulp/ the trees (1) used to make the original material comes from a managed and sustainable forest (1) A sustainable forest (1) where trees are replanted after being cut down (1) Reforestation (1)	[2]	There are two parts to this answer 1. That the material is sourced from wood/trees 2. It comes from a managed/sustainable/replenishable forest Do not credit Forest Stewardship Council unexplained

Question	Expected Answer	Mark	Additional guidance
(e)	<p>Level 1 (0 – 2 marks) Basic discussion, showing some understanding of the benefits of a shipper. Can provide a limited discussion of some of the issues. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised or ‘list like’. Errors of grammar, punctuation and spelling may be intrusive. List of one or two points maximum one mark. List of three or more maximum two marks One specific point well made or two general points (2) One general point (1)</p> <p>Level 2 (3 – 4 marks) Adequate discussion, showing an understanding of the benefits of a shipper. Can provide a reasonable discussion of the issues with some examples. There will be some use of specialist terms, although these may not always be used appropriately. The information presented will be for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation. Two specific points well made (4) Two specific points adequately made (3)</p> <p>Level 3 (5 – 6 marks) Thorough discussion, showing clear understanding of the benefits of a shipper. Can provide clear examples of issues with examples. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate will demonstrate the accurate use of spelling, punctuation and grammar. Three specific points well made (6) Three specific points adequately made (5)</p>	[6]	<p>Type of packaging is a ‘shipper’</p> <p>Benefits include;</p> <p>Environmental –</p> <ul style="list-style-type: none"> • Reduced excess packaging so better for the environment • Less natural resources used • Carbon footprint reduced • Waste reduced <p>Manufacturer –</p> <ul style="list-style-type: none"> • Storage and transportation space will be reduced, • cost of materials will be reduced, • same box could be used for different products <p>Retailer –</p> <ul style="list-style-type: none"> • Less time consuming to stack & display, • possibly no shelves needed <p>Customer –</p> <ul style="list-style-type: none"> • Not just an empty space on shelf if out of stock • easier to grab and go • could bulk buy the product by taking the whole box.

Question	Expected Answer	Mark	Additional guidance
(f)	Cardboard broken down/separated and flattened in the home Cardboard collected for recycling or taken to a <u>recycling centre/recycling bank/recycling factory/recycling facility</u> (1) <u>Water/liquid</u> (1) added to cardboard and mixed to a <u>pulp/mush</u> (1) New pulp blended with the recycled pulp Pulp is pressed and dried flat Recycled cardboard sheets are <u>trimmed/cut</u> (1) to size Recycled cardboard is used to make new products	[4]	This is the only acceptable answer Do not accept 'factory' or 'bank' on it's own
	Total	[15]	
	Paper Total	[60]	

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