

Design and Technology

General Certificate of Secondary Education

Unit **A532**: Graphics: Sustainable Design

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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Annotations

Annotation	Meaning
Green tick	Use for all correct answers and to show where marks are awarded
L1, L2, L3	Use to show the level of response in 16d

Question		Answer	Marks	Guidance
1		(b) Restocking of forests and woodlands	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
2		(d) Reduced	1	
3		(a) The earth	1	
4		(b) Chemically break down a product completely	1	
5		(c) How much greenhouse gas is produced by manufacture and transport	1	
6		Fairtrade, Fairtrade logo, Fairtrade symbol	1	The word Fairtrade must be included in the answer
7		A shop or factory in which employees work long hours / for low wages / under bad or poor working conditions	1	Answer must relate to the poor or unethical working conditions of WORKERS. Do not accept child labour unless qualified
8		Rethink	1	This is the only acceptable answer Do not accept an answer where the candidate has written more than 1 response (eg. a list such as.....Repair, rethink, refuse)
9		To take apart / pull apart / dismantle / separate the parts or pieces	1	Do not accept 'to disassemble' Do not accept 'broken down' unless explained (eg. broken down into pieces/parts)
10		Toxic, Toxins, Hazardous substances, greenhouse gases, pollution, pollutants, CFC's	1	Do not accept: Harmful chemicals, harmful to the environment, hazardous on its own.
11		False	1	These are the only acceptable answers. Only one answer should be ticked. If candidate ticks/marks both answers award zero.
12		True	1	
13		False	1	
14		False	1	
15		True	1	
Total			15	


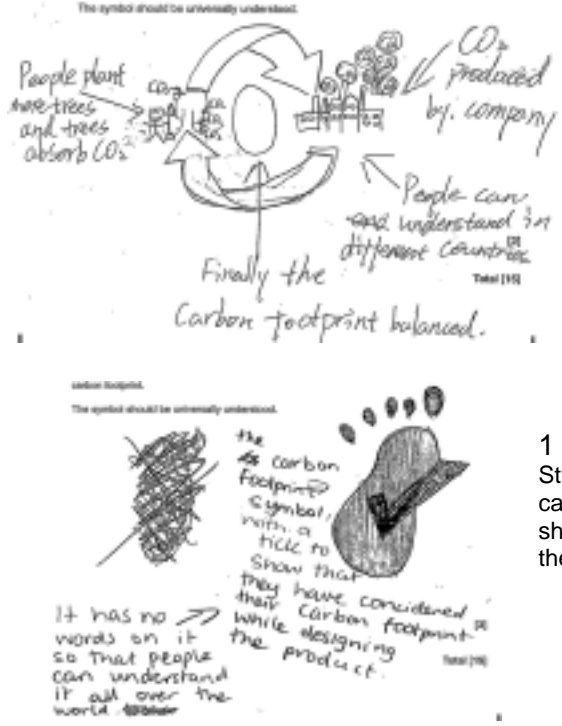
Question	Answer	Marks	Guidance
16 (a)	<p>Recycled material used Able to be recycled after use Non-toxic inks used for printing Unbleached card used Card can biodegrade when finished with Not use a lot of energy in production of card Made from sustainable/replenishable sources Manufactured using renewable energy Minimum waste created during manufacture Tessellated shapes to reduce wastage during manufacture Economic use of the card Non-toxic adhesives used Degradable adhesives used No unnecessary materials/features/finishes Same material used throughout that can be recycled after use Impact on the environment from the production of the card is minimal</p>	4	<p>Answers must relate to the environment. Do not accept: answers relating to safety, cost, paint, transport, durability or strength</p> <p>No marks for very simple one word answers eg. Recyclable Non-toxic Biodegradable Sustainable Environmentally friendly or eco-friendly <u>unless</u> explained</p> <p>Accept more than one correct answer per line</p>
(b)	 <p>Mobius Loop (1) mobius logo (1)</p> <p>The product/material can be recycled, It's recycleable (1)</p>	2	<p>Mobius Loop is the only acceptable answer</p> <p>Answer must relate that the product CAN be recycled</p> <p>Do not accept: Recycle, <u>has been</u> recycled</p>

Question	Answer	Marks	Guidance
(c)	<p>The card is made from mixed materials / the PVC balloon is hard to recycle / PVC balloon cannot be recycled with the card (1)</p> <p>The PVC balloon must be removed / separated from the card before recycling (1)</p>	3	<p>There are 2 aspects to this answer;</p> <ol style="list-style-type: none"> 1. Showing an understanding that the card is made from mixed materials / PVC is difficult to recycle / PVC is not recyclable / PVC is harmful to the environment 2. That the PVC Foam balloon needs to be removed / separated from the card before recycling <p>Up to 2 marks for each point identified Up to 3 marks for a well explained answer</p> <p>Example of where 3 marks can be awarded; 'The card is made from mixed materials and will need to be separated. The PVC foam balloon cannot be easily recycled and can cause damage to the environment, it may not be accepted by recycling centres who do not have the facilities to recycle it.'</p>

Question	Answer	Marks	Guidance
(d)	<p>Read through candidates answer decide on the level of response, then decide whether it just meets that level or clearly meets that level.</p> <p>Maximum of 2 marks for a list of separate points</p> <p>Points to consider;</p> <ul style="list-style-type: none"> • Renewable energy sources available such as; Sunlight, wind, rain, tidal, geothermal heat, hydroelectric, photovoltaic, solar, hydropower, wood from sustainable sources, waste, biomass, biofuel, water. • Renewable energy sources do not use up/deplete the earth's resources such as coal and oil • Renewable energy is sustainable • The worlds resources will not last forever • Less pollution is released into the atmosphere • Renewable energy is crucial to the continuation of the planet • Using renewable energy will give graphic products a lower carbon footprint • Graphic products are generally made from paper/card and have a high consumption/disposal rate • Re-processing vast quantities of graphic products using renewable energy is more sustainable 	6	<p>Level 1 (0-2 marks) Basic discussion, showing some understanding of the benefits of renewable materials and energy sources. 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.</p> <p>Level 2 (3-4 marks) Adequate discussion, showing an understanding of the benefits of renewable materials and energy sources. 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.</p> <p>Level 3 (5-6 marks) Thorough discussion, showing clear understanding of the benefits of renewable materials and energy sources. 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.</p>

Question			Answer	Marks	Guidance
			<ul style="list-style-type: none">• Consumers may feel it is a moral decision to buy/use graphic products produced using renewable energy• Consumers are encouraged to buy products that have lower carbon footprints• Manufacturers may improve their customer image by using renewable energy		
			Total	15	

Question		Answer	Marks	Guidance
17	(a)	Any one from; Waterproof, can be cut/shaped, strong, durable, printed onto, lightweight, good strength to weight ratio, weatherproof, rigid, stiff, hard.	1	Do not accept answers relating to cost or environmental
	(b)	Any two from; Estate agent name/logo, telephone number, e-mail address, website, sold, house details eg. 3 bed	2	Accept two answers on one line Do not accept: For Sale (as it is already on the diagram) or answers relating to recycling, price. Do not credit repeat answers
	(c) (i)	<p>REUSE: To be able to be used again for the same or different purpose.</p> <ul style="list-style-type: none"> • Corriflute can be used again for another purpose (eg. cut up and used as plant labels etc) • Can be used again as an estate agents sign • The wooden post can easily be recycled or made into another product <p>REDUCE: To lessen/diminish or use less of in some way.</p> <ul style="list-style-type: none"> • The size of the estate agents sign should be made smaller to minimise the amount of material used • The estate agents can reduce the number of signs used by attaching 'Sold' to the original sign • Get rid of the post and attach sign to house. <p>REPAIR: To mend or fix in some way.</p> <ul style="list-style-type: none"> • The corriflute sign / softwood post should be mended / parts replaced to minimise the amount of material used. • The estate agents can mend/re-glue/sand-down the wooden post • Mending the sign will reduce the amount of waste created as it will not be disposed of 	6	<p>2 marks available for each term.</p> <p>There are 2 aspects to each answer;</p> <ul style="list-style-type: none"> • Understanding and explaining the term • An example given for the estate agents sign <p>Do not credit repeat answers or answers that that repeat the 6R without explanation</p> <p>eg.</p> <p>REUSE: They should reuse the sign</p> <p>REDUCE: Reduce the size of the sign</p> <p>REPAIR: The estate agent should repair the sign</p>

Question	Answer	Marks	Guidance
(d)	Carbon offsetting, Carbon Neutral, Carbon Offset	1	These are the only acceptable answers Do not accept: Carbon balance
(e)	They don't cause offence Do not discriminate Can be understood / read by different languages They promote / highlight differences To appeal to certain cultures To make the product more marketable To appeal to a wider target audience	2	Do not credit repeat answers Accept two correct answers on one line
(f)	<p>Stylised symbol (simplified shapes/colours/text) (1)</p> <p>Sketch/symbol shows balancing of carbon footprint/carbon offsetting can be images AND/OR text (1)</p> <p>Sketch is integrated (must be a symbol/sketch showing the balancing of carbon footprint) (1)</p>  <p>3 marks</p>	3	 <p>2 marks No mark given for stylised</p> <p>1 mark Stylised only, candidate has not shown balancing of the carbon footprint</p>
	Total	15	

Question		Answer	Marks	Guidance
18	(a)	<p>Good strength, lightweight, can be cut to shape, can be recycled, can be printed onto, can be folded into shape, environmentally friendly material, can be flat-packed for easy storage, transport and disposal, comes from a sustainable source.</p> <p>Sturdy, strong, durable, must be explained.</p>	2	<p>Do not accept; reused, light. Cheap, answers relating to cost unless qualified.</p> <p>Do not credit repeat answers</p> <p>Two correct one word or very simple answers – 1 mark max Eg. It's strong, It's durable – 1 mark</p>
	(b)	<p>Water based inks are non-toxic so can be disposed of without harming the environment Using water based inks means the product can be recycled after use / biodegrade safely as they are non-toxic/not harmful Water based inks do not harm the atmosphere when manufactured Not poisonous to animals / plants / humans / when disposed of</p>	2	<p>There are two parts to this answer</p> <ol style="list-style-type: none"> 1. Understanding that water based inks are non-toxic 2. They do not harm the environment during manufacture/disposal/recycling <p>Do not accept: Can be washed off, eco-friendly, environmentally friendly (unless explained)</p>
	(c)	<p>U.V varnish is solvent based and can produce harmful gases into the atmosphere therefore not environmentally friendly Varnish makes it difficult / time consuming to separate from the product, this increases energy usage A varnished product will have to go to landfill as it cannot be recycled, landfill has a negative effect on the environment UV varnish is not biodegradable and the product will not rot away when disposed of causing waste to pollute the earth</p>	2	<p>1 explained answer, or two valid points;</p> <p>Do not accept 'not environmentally friendly' or 'not sustainable' or harmful to the environment, unless qualified/explained</p> <p>Do not accept answers relating to aesthetic properties</p>

Question		Answer	Marks	Guidance
	(d)	<p>More can be transported when flatpacked meaning less journey's made and lower emissions produced Less use of fossil fuels because of less lorries used Noise pollution reduced as there is less transportation Less congestion on roads that cause pollution Manufacturing processes are shorter so less energy used Flat pack products need less storage so less environmental impact such as heating, lighting/ land use. Less packaging needed so waste is reduced</p>	4	<p>Ensure the same kind of response only credited once.</p> <p>Do not accept: Less petrol used unless qualified with an environmental advantage, do not accept cheaper/cheap</p>
	(e)	Planned obsolescence / built in obsolescence	1	<p>These are the only acceptable answers</p> <p>Do not accept obsolescence on its own.</p>
	(f)	<p>(i) Anthropometrics is the use of human body measurements/data to help design products The POS could be designed using anthropometric data of the measurement of foot to shoulder height to determine a suitable height for the POS (2)</p> <p>Ergonomics is how design relates to the human form (e.g. holding / carrying) The POS has been designed ergonomically so that it can be assembled and used by humans comfortably Appropriate size of text and images used (2)</p>	4	<p>Do not credit repeat answers.</p> <p>Only credit correct response next to the correct heading.</p>
		Total	15	
		Paper total	60	

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