

# **Design and Technology**

General Certificate of Secondary Education

Unit **A532**: Graphics: Sustainable Design

## **Mark Scheme for June 2011**

---

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2011


Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

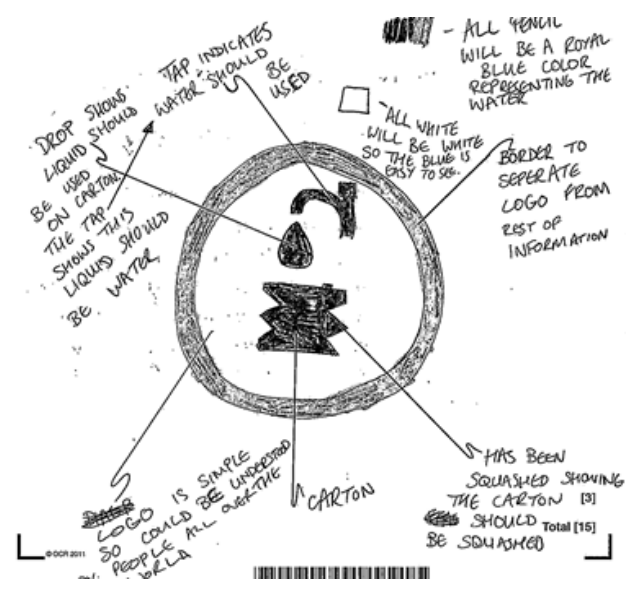
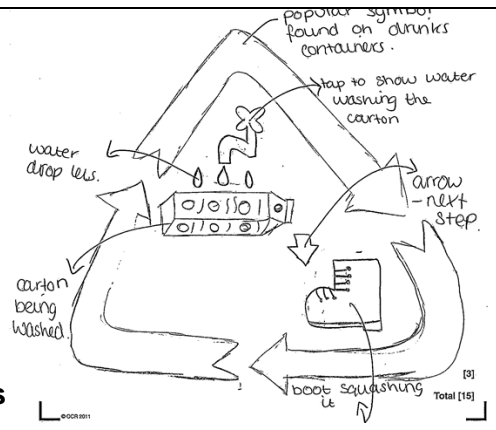

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
E-mail: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

Question		Expected Answer	Mark	Additional Guidance
1		(b) Refused	[1]	These are the only acceptable answers. No mark awarded if more than one answer ticked or if a candidate's response is not clear. Accept any other method of indicating a response e.g. ringed
2		(d) That different values and beliefs are considered	[1]	
3		(a) Carbon off-setting	[1]	
4		(c) Energy from the sun	[1]	
5		(a) It becomes outdated and must be replaced	[1]	
6		Secondary recycling is where products are recycled (typically by cutting up) into <b>different</b> products (not the same type of product), altering a product for a different use, examples: cutting up a magazine to use as a collage, turning a pair of jeans into a bag, cutting the top off a plastic milk bottle to use as a pot Used for another purpose, is made into another product Break down a product to reuse its parts	[1]	This answer must relate to the product becoming a <b>different</b> product/thing  Do Not accept: Recycling at home, recycling again, reused, used again (without qualifying that it is for another purpose), recycled, recycling after it's been used
7		Solar power/wind power/wave power/geothermal/tidal power/Hydro/biofuel/bioenergy/the sun/solar/natural gases/bio gas	[1]	Do Not Accept: 'wood' or 'trees' on it's own unless explained e.g. wood/trees from a managed forest, wood from a renewable forest, nuclear
8		Life Cycle Analysis / Life Cycle Assessment	[1]	These are the only acceptable answers and <b>all three words</b> are required for the mark. Accept variations of spelling.
9		A specific plastic product that can be recycled including water bottles, plastic bags, food containers, washing-up bottle, yogurt pot, shampoo bottle Accept: Plastic, 'plastics that can be recycled' or a specific named recyclable plastic such as Polyethylene Terephthalate, Polystyrene or Polythene	[1]	Do not accept: bottle, box, cans, cardboard box, packaging (unless product is specified or plastic packaging)  Do not accept general words such as; bleach, drink, yogurt, cleaning detergent unless answer states the <b>container</b> also (e.g. pot/bottle/container/dish)

Question		Expected Answer	Mark	Additional Guidance
10		Better working conditions/better pay/improved living standards /fair pay/beliefs and cultures supported/ duty of care, moral beliefs considered, safe/clean environment, protective clothing, appropriate training, no slavery, fair and equal opportunities	[1]	Do Not accept: Better ethical life (ethical in the question)
11		True	[1]	These are the only acceptable answers. No mark awarded if more than one answer ticked or if a candidate's response is not clear. Accept any other method of indicating a response e.g. ringed
12		False	[1]	
13		True	[1]	
14		True	[1]	
15		False	[1]	
		<b>Total</b>	<b>[15]</b>	

Question		Expected Answer	Mark	Additional Guidance
16	(a)	Two benefits <b>to the retailer</b> : Cartons can be stacked side by side at supermarket/store Easier to store/save space Lots of cartons can be transported around the store in larger square boxes Stable shape, won't fall over, stands upright when displayed	[2]	Do not accept: answers relating to the consumer, fits into fridge, easier to pick up, cheaper, easier to hold, easier to pour, safer on the table, less likely to spill, can be flatpacked, can be flattened when recycled, reused, can hold a lot of juice
	(b)	One advantage to the <b>consumer</b> : Lighter to hold Less likely to smash/break, safer if it breaks/smashes on the floor, carton not as fragile as glass Takes up less space than a glass bottle in recycling bin when squashed	[1]	Do not accept: Cheaper, easier to pour, easier to store unless relating to the carton being squashed for recycling, can be reused, easier to reuse, easier to recycle, easier to recycle than glass, can have a design printed on it.
	(c)	'Carbon footprint' - the amount/impact/effect of carbon dioxide/greenhouse gases/CO <sub>2</sub> /Carbon emissions produced/released into the atmosphere in the life cycle/ manufacture/ transportation of a product/human activity	[2]	Answer doesn't have to relate to cartons  1 mark for the impact 1 mark for life cycle
	(d)	Two points: Aluminium foil would enable the product to have a longer shelf life , keeps the product fresh for longer Foil means the product doesn't have to refrigerated Preservatives are not needed, barrier to contaminants, keeps contents cold/cooler Stops odours and/or light from reaching the product	[2]	Do not accept answers relating to strength, can be recycled, easier to be recycled, protection (unless explained) appearance, leak proof, waterproof, holds the liquid (Polythene and cardboard make the carton waterproof)
	(e)	 Mobius loop symbol – the product can be recycled	[1]	This is the only acceptable answer

Question		Expected Answer	Mark	Additional Guidance
16	(f)	After a product is finished with it can be used again or for another purpose(s) e.g. using a cleaned out jam jar as a storage pot for pens, sweet tin used for cakes/biscuits	[2]	<p>This is an explain answer</p> <p>An explanation of the term (1 mark)</p> <p>An example given (1 mark)</p> <p>A well explained definition – up to 2 marks</p> <p>Do not accept 'reused' on its own</p>
	(g) (i)	<p>Two points:</p> <p>Be easy to understand/read/recognisable</p> <p>Be linked with washing &amp; squashing of the carton</p> <p>Simple/clear/stylised design</p> <p>Use 1 or 2 colours (candidate can specify)</p> <p>Not discriminate against race/colour/background/culture</p> <p>Understood in any language/ be universally understood</p> <p>Show that the carton can be recycled</p>	[2]	<p>Do not accept: needs to show 'wash' and 'squash' as two separate specification points – 1 mark max</p> <p>Do not accept: written/be in different languages/show different languages (symbol should not rely on text), be visually pleasing (too vague)</p> <p>Be careful not to credit repeat answers</p>

Question	Expected Answer	Mark	Additional Guidance
(ii)	<p>Sketches and or notes which shows washing <b>and</b> squashing the carton (1)                      Simplistic stylised image/wordless image (1)                      Symbols/images combined/integrated (like a road sign) (1)</p>  <p><b>3 marks</b></p> <ul style="list-style-type: none"> <li>- Shows washing &amp; squashing</li> <li>- Is a very clear example of a stylised/simple design (simple shapes, no small detail, black &amp; white image)</li> <li>- Combined/Integrated symbol</li> </ul>	<p>[3]                      [15]</p>	<p><b>Additional Guidance</b></p>  <p><b>2 marks</b></p> <ul style="list-style-type: none"> <li>- Shows washing &amp; squashing</li> <li>- Not a simplistic/stylised design (too much detail on carton/bootlaces)</li> <li>- It is combined/integrated (a symbol rather than a set of instructions)</li> </ul>  <p><b>1 mark</b></p> <ul style="list-style-type: none"> <li>- Shows washing &amp; squashing</li> <li>- Not simplistic/stylised image (too much detail)</li> <li>- Not combined/integrated (looks like a set of instructions)</li> </ul>
<b>Total</b>			

Question			Expected Answer	Mark	Additional Guidance
17	(a)	(i)	Paper or card/cardboard	[1]	Do not accept plastic(s)/metal(s), corrugated card, foamboard, corriflute, polystyrene, pulp
		(ii)	Paper or card/cardboard, that can be: <b>recycled/biodegrade/biodegradable/reused/repulped</b> Paper/card comes from <b>trees that be regrown/replenished</b> Comes from a sustainable forest	[1]	Answer must relate to the material being suitable for recycling or can biodegrade or that the material can be regrown/reused  Do not accept: its always available, its sustainable (on its own), its durable, long lasting, its environmentally friendly, comes from trees (unless qualified)  <b>No marks for a one word answer</b>
	(b)		Two from; Less harmful to the environment/atmosphere Makes paper easier to recycle Doesn't give off harmful gases during <b>manufacture/printing</b> Reduces the use of toxic/harmful chemicals in the <b>manufacturing/printing</b> of the inks Safer for factory <b>workers</b> to use/handle More cost efficient/ more economic to use than normal/solvent based inks Easier to remove vegetable inks before recycling Vegetables are a renewable/sustainable resource as they can be regrown/replanted	[2]	Do not accept 'cheaper' or cheap <b>unless</b> qualified against the cost of normal inks,  <b>Do not accept biodegradable</b> because card or paper products printed using any ink will biodegrade  Do not accept safer for children/humans/customers or safer on its own, 'its environmentally friendly', easily made, non-toxic/less toxic or not poisonous unless related to printing/manufacturing  <b>Max 1 mark for two one word answers</b>
	(c)		Reuse	[1]	This is the only acceptable answer  <b>No marks if candidate lists more than one answer</b>
	(d)	(i)	European Eco-Label , Eco Label, EU Eco Label	[1]	These are the only acceptable answers, accept spelling variations



Question			Expected Answer	Mark	Additional Guidance
17	(d)	(ii)	It means that consumers can recognise/identify that the product/service is environmentally friendly throughout it's life-cycle	[3]	<p>The candidate must explain that</p> <ol style="list-style-type: none"> <li>1. Consumers/customers/retailers recognise/identify/see/understand</li> <li>2. The product(s) are environmentally friendly/'eco friendly/do not harm the environment/have little environmental impact</li> <li>3. Throughout the life of the product/from manufacture to disposal</li> </ol> <p>Do Not accept: it is made from wood from a sustainable/ managed forest, Europe is environmentally friendly</p>

Question		Expected Answer	Mark	Additional Guidance
17	(e)	<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><b>Maximum of 2 marks for a list</b></p> <p>Discussion should include;</p> <ul style="list-style-type: none"> <li>The products have to be separated before they can be recycled this is usually done by trained staff and is usually undertaken by hand, it takes a longer amount of time and then impacts on costs</li> <li>Cost are increased as they have to employ staff , possibly more staff, to separate the materials, they have to be trained, they may have to undertake specialist training so that they can recognise different materials, it takes time for staff to sort</li> <li>The recycling centre may have to be bigger to accommodate special areas for sorting and separating of mixed material products</li> <li>Machinery can be used to separate and sort but it is expensive to purchase, staff need specialist training to run machinery, health and safety guidelines must be adhered to</li> <li>Not everything can be recycled, recycling centre has to dispose carefully of the waste, this may cost the recycling centre to have the un-recyclable waste disposed of</li> <li>Unrecyclable waste will have to go to landfill</li> </ul>	[6]	<p>Level 1 (0-2 marks)  <b>Basic discussion</b>, showing some understanding of the issues faced by recycling. Can provide a limited discussion of some of the issues. There will be <b>little or no</b> use of <b>specialist terms</b>. Answers may be <b>ambiguous</b> or <b>disorganised</b> or 'list like'. <b>Errors</b> of grammar, punctuation and spelling may be intrusive.</p> <p>Level 2 (3-4 marks)  <b>Adequate discussion</b>, showing an understanding of the issues surrounding recycling mixed materials at recycling centres. Can provide a <b>reasonable discussion</b> of the issues with <b>some examples</b>. There will be <b>some</b> use of <b>specialist terms</b>, although these may not always be used appropriately. The information presented will be for the most part in a <b>structured</b> format. There may be <b>occasional</b> errors in spelling, grammar and punctuation.</p> <p>Level 3 (5-6 marks)  <b>Thorough discussion</b>, showing clear understanding of why there are difficulties when recycling centres have to separate and sort mixed materials for recycling. Can provide clear examples of issues <b>with examples</b>. <b>Specialist terms</b> will be <b>used appropriately and correctly</b>. The information will be presented in a <b>structured</b> format. The candidate will demonstrate the <b>accurate</b> use of spelling, punctuation and grammar.</p>
		<b>Total</b>	[15]	

Question			Expected Answer	Mark	Additional Guidance
18	(a)	(i)	Brown paper bag is biodegradable and will not pollute the environment, bag can be recycled after use, no need for bleaching, can come from a sustainable source	[1]	No marks for 'easier to carry' or 'cheaper' <b>Do not accept one word answers</b>
		(ii)	<b>Identification</b> of a weakness e.g. Not very strong, will crumple/crush easily, handle may break, can split/tear/rip <b>Explanation</b> of effect of weakness e.g. Heavy contents will fall through bottom of bag, bag will not protect content from being squashed, bag will fall to the ground when handle breaks, weakened when wet	[2]	A weakness must be <b>identified</b> and then <b>explained</b>
	(b)		<b>2 qualified points;</b> Plastic bags may not be biodegradable/not recyclable and will not rot/disintegrate/dissolve away when disposed of Plastic bags take many years to degrade and they may end up in landfill Plastic bag <b>production</b> creates greenhouse gases, which contribute to global warming Plastic bags are manufactured using fossil fuels which are non-renewable/not sustainable Animals/fish are hurt or die by swallowing/getting wrapped up in disposed plastic bags <b>this effects</b> our eco-system If plastic bags are <b>burnt</b> they release harmful toxins into the atmosphere	[4]	Accept two simplistic answers, but max of 1 mark e.g. non biodegradable and non recyclable 1 mark  Do not accept: bad for the environment, not environmentally friendly, unless <b>qualified as to how or why</b> <b>Harmful to animals must explain the impact on the environment</b>  Do not accept: could suffocate children, harm people, are poisonous, doesn't look very nice if left as litter, do not accept answers related to cost  <b>Do not credit repeat answers</b>
	(c)		The carbon footprint/carbon emissions/CO <sub>2</sub> will be <b>increased</b> because during manufacture the bag has to <b>travel many miles</b> by air/boat from China/Thailand to India then to the U.K	[2]	There are two points to this answer 1 The carbon footprint/carbon emissions/co <sub>2</sub> is <b>increased/greater/larger</b> 2 Because the many miles it has to travel during its manufacture/life cycle Do not accept: Costs <b>Do not accept general explanations of the term Carbon Footprint</b>
	(d)		Non-biodegradable means that the product/waste will not rot down and become a part of the soil/earth	[2]	There are two points to this answer 1 The product/waste will <b>not/cannot</b> 2 <b>Rot/decompose/degrade/compost</b> into the earth <b>Do not accept: biodegrade</b>

Question		Expected Answer	Mark	Additional Guidance
18	(e)	<p>Suitable plastics put into recycling bin at home or at recycling collection centre</p> <p>Recycling waste <b><u>collected/taken/gathered/ picked up/ transported</u></b> from kerbside or recycling collection centre</p> <p>Plastics <b><u>sorted/separated /grouped/organised/ split</u></b> into different types/colours of plastic by trained staff</p> <p>Plastic is then heated together until it <b><u>melts/liquifies</u></b> and then is cooled</p> <p>The plastic is <b><u>grated/shredded/cut into pieces/broken up/broken down/ chopped into pieces/ground down</u></b> and reprocessed into granules called regranulate</p> <p>The regranulate is processed into new plastic products</p>	[4]	<p>These are the only acceptable answers</p> <p>Do not accept crushed</p> <p>Do not accept chopped or cut (on its own) for the fourth point</p>
		<b>Total</b>	<b>[15]</b>	
		<b>Paper Total</b>	<b>[60]</b>	

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**14 – 19 Qualifications (General)**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
**is a Company Limited by Guarantee**  
**Registered in England**  
**Registered Office; 1 Hills Road, Cambridge, CB1 2EU**  
**Registered Company Number: 3484466**  
**OCR is an exempt Charity**



**OCR (Oxford Cambridge and RSA Examinations)**  
**Head office**  
**Telephone: 01223 552552**  
**Facsimile: 01223 552553**

© OCR 2011