OCR
Oxford Cambridge and RSA

GCSE

Design and Technology Graphics

Unit **A535**: Sustainability and technical aspects of designing and making

General Certificate of Secondary Education

Mark Scheme for June 2018

Annotations

A ✓ tick is to be used to show where a mark has been awarded.

Marks awarded must be equal to the number of ticks show. (This does not apply to banded questions).

Do not use **x**
Do not use **?**

Banded mark scheme questions to show **L1, L2** or, **L3 only** – do not use ticks.

Where a **list or bullet points** have been used to answer the Banded Mark Scheme question a **maximum mark of 2** is to be given.

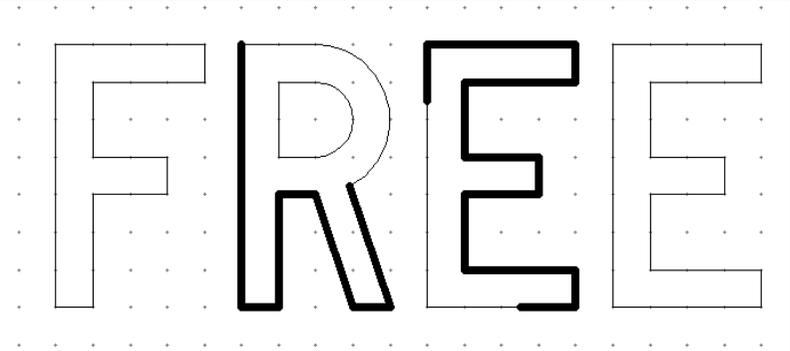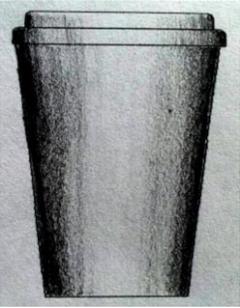|			
L1	L1	Level 1	Use in banded mark scheme responses only
L2	L2	Level 2	Use in banded mark scheme responses only
L3	L3	Level 3	Use in banded mark scheme responses only
REP	REP	Repeat	Use when additional response seen, but is restating the previous point
SEEN	SEEN	Noted but no credit given	Only to be used to acknowledge additional answer sheets or when an answer has been seen, but warrants no marks
✔	Tick	Tick	Ticks must be used to show where a mark has been awarded. Marks awarded must be equal to the number of ticks show. (This does not apply to banded questions).
BP	Blank Page	Blank Page	Blank pages seen

Question			Answer	Marks	Guidance
1			(a) The ozone layer	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) Electrical items	1	
3			(d) Changing the design	1	
4			(b) Light	1	
5			(a) A carbon footprint	1	
6			Garden ornament, bird scarer, coaster, mirrored ornament, decoration	1	Accept reasonable and suitable answers for an **unplayable** CD. DO NOT ACCEPT: Reusing the CD again, stencil
7			Tidal/wave, wind, hydropower, geothermal	1	DO NOT ACCEPT: Solar
8			They take many years to biodegrade (*allow not biodegradeable*), can harm animals/wildlife, made from oil/finite materials.	1	DO NOT ACCEPT: Harmful/bad for the environment, cannot be recycled
9			(Rubber/car/bike/lorry) tyres, rubber matting, rubber, bark, wood chips	1	Accept suitable products/materials, must be able to be **recycled**, suitable for **outdoor** use and safe for children. DO NOT ACCEPT: Wood shavings, Foam
10			So not to cause offence to others	1	Accept variations relating to offense, racism, sexism, exploitations, worker's rights, Fairtrade, culture, disability, gender-neutral, age discrimination, child appropriate DO NOT ACCEPT: Environmental issues on their own
11			True	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			True	1	
15			True	1	

Question			Answer	Marks	Guidance
16	(a)	(i)	Card, board, cardboard, pulpboard, paper, boxboard, corrugated cardboard, HIPS	1	Do not Accept: Plastic, acrylic, laminated card, foamboard, polystyrene (on it's own)
	(a)	(ii)	Can be cut, folded, printed onto, cost effective, able to be recycled after use, lightweight, flexible	1	Accept suitable answers relating to their chosen material in a(i) even if 16ai is incorrect No marks for 'cheap', strong, sturdy, renewable
	(b)		Ergonomics	1	
	(c)		One mark for each; 1. **<u>Sketch</u>** shows any modification 2. Sketch/Notes show that the modification improves comfort or ease of use eg. handle, waisting, finger holes, easier to grip/hold with one hand 3. A well drawn sketch	3	

Question	Answer	Marks	Guidance
(d)	Popcorn bucket is printed, die cut and glued Cardboard/popcorn bucket is sent to recycling factory for re-processing Popcorn bucket is despatched to retailer flat-packed LIFE-CYCLE OF THE POPCORN BUCKET ***Popcorn bucket is thrown in the bin*** ***Popcorn bucket is assembled and filled with popcorn*** Customer purchases and eats popcorn	**2**	1 mark for each correct answer Stage three must refer to **assembly** of the popcorn bucket Stage five must refer to the **disposal** of the popcorn bucket or <u>recycling of the popcorn bucket by the customer.</u>
(e)	Definition: Carbon Offsetting is where the manufacturer **balances out** or **reduces** their production of carbon. Examples: Planting new trees to replace those cut down. Using renewable energy Reducing business travel Reducing waste created through manufacture Financial contributions to low carbon schemes/recycling	**2**	Look for two aspects to this answer; 1. An explanation of Carbon offsetting, look for the words <u>balancing or reducing</u> 2. A suitable <u>example</u> of carbon offsetting

Question			Answer	Marks	Guidance
	(f)		Symbol doesn't rely on text/words (1) Whole logo contained within a specific geometric shape (circle, square, hexagon etc) (1) Sketch or notes showing a link to <u>balancing/cancelling</u> out carbon emissions (1) eg. scales/balancing out of carbon emissions such as trees being planted vs emissions produced by transport/manufacture Good quality sketch/message clearly communicated (linked to carbon offsetting/carbon footprint <u>not just recycling on its own</u>) (1)	**4**	No marks 1 mark 2 marks 3 marks 4 marks

Question	Answer	Marks	Guidance
(g)*	Read through candidates answer decide on the level of response, then decide whether it just meets that level or clearly meets that level. **Maximum of 2 marks for a list of separate points** Points to consider; • Re-processing materials can help to **protect the environment** by **reducing the need to extract limited/finite** quantities of Earth's natural resources • **Deforestation** is reduced as paper/card can be recycled many times reducing the need for new virgin trees • **Reduces energy consumption**, raw materials require large amounts of energy to process and is expensive to manufacturers. Reprocessing can reduce **energy consumption and cost compared** to processing raw materials • **Reduces pollution**. Waste/landfill can be reduced as existing products can be recycled into new products Harmful Industrial waste such as cans, chemicals and plastics can be re-used/re-processed into new products. • **Reduces global warming**. The reduction in waste being burned helps to minimise greenhouse gas emissions such as **CO_2 and CFC's** being released. The burning of fewer fossil fuels also reduces greenhouse gases from being released into the atmosphere • **Moral choice. People feel better** if they can see that we are protecting the Earth's resources for future generations, people may be more interested in products made from reprocessed materials • **Jobs** are created because of the increase of recycling and re-processing, **science and technology** is used in **researching new ideas** and uses for reprocessed materials	**Level 3 (5 - 6 marks)** **Level 2 (3-4 marks)** **Level 1 (1 -2 marks)** **0**	**Thorough discussion**, showing clear understanding of the advantages of reprocessing materials. Can provide clear examples of issues **with examples**. **Specialist terms** will be used **appropriately and correctly**. The information will be presented in a **structured f**ormat. The candidate will demonstrate the **accurate** use of spelling, punctuation and grammar. **Adequate discussion**, showing an understanding of the he advantages of reprocessing materials. 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. **Basic discussion**, showing some understanding of the advantages of reprocessing materials. 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. **Response worthy of no credit**

Question		Answer	Marks	Guidance
17	(a)		1	Letter E completed correctly, check width
			1	Letter R completed correctly
	(b)	Lightweight, easy to cut/shape, easy to print/draw onto, rigid – does not easily bend, stiff, durable, impact resistant	1	Award 1 mark for any of the answers shown opposite. Do Not Accept: Strong, sturdy, cheap
	(c)	Extruded Polystyrene, Polystyrene foam	1	Do not accept polystyrene or foam on its own or polystyrene sheet.
		Card, card board, coated paper	1	Do not accept paper or board on its own
	(d)		1	Dark shading on outside edges fading as it goes towards centre of cup.
			1	Award second mark if shading gets closer to vertical as it reaches the centre (goes from angled parallel with edges to vertical) Maximum 1 mark if shading on one side only.

Question		Answer	Marks	Guidance
(e)		Sketches and notes show a V- fold being made in the foamboard.	1	Award 1 mark for showing the foamboard is **cut** in some way but not all the way through (do not allow score on its own.)
			1	Award second mark for a correct **v- shaped** cut through 1 layer of card and the foam allowing a 90 degree fold
(f)		1 mark for showing that foamboard is being used by showing some thickness	1	The **thickness** of the material is shown
		1 mark for a design that holds the sign in an upright position	1	The design must be different to the one in Fig.2
		1 mark for showing that the stand cannot fall over	1	The stand is locked into place and cannot easily collapse
				The pieces will fold flat
		1 mark for a design that is made from flat pieces that slot/flatten together	1	
		1 mark for showing how the stand will fix to the back of the sign	1	Suitable methods of joining are shown. Accept Velcro, double sided tape, slots and suitable named adhesive eg. PVA
				A clear, easy to understand design solution
		1 mark for the quality of the drawing and communication	1	
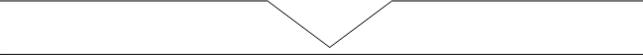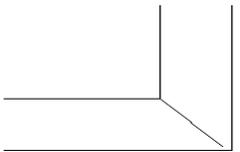
Question			Answer	Marks	Guidance
18	(a)			1	Award 1 mark for side A drawn correctly including inside cut lines
				1	Award 1 mark for side B drawn correctly
				1	Award 1 mark for 3 flaps C drawn correctly (same as existing flap)
				1	Award 1 mark for flap D drawn correctly (can be drawn on opposite side as shown
				1	Award 1 mark for correct use of 4 fold lines around side B. If flap D drawn on right, 3 fold lines, if no flap D award for 3 correct fold lines.
	(b)		Green shows the bulb is good for the environment/nature	1	Allow answers that relate to the colour 'green' being environmentally friendly. Do not accept Sustainable

Question			Answer	Marks	Guidance
18	(c)			1	'A' - Two lines from top and bottom of corner going to left VP.
				1	'B' – Vertical line between lines 'A', approx. same distance as opposite side
				1	'C' – Line from top of vertical line 'B' to right VP
18	(d)		Milling machine, 3D Miller, router	1	These are the only acceptable answers
18	(e)	(i)	Any material property eg. Tensile strength, compressive strength, weight, density, strength to weight ratio Ingredients, chemical makeup, chemical properties Physical properties eg. Solid, colour blue, odourless Health / safety precautions eg. Inhalation, flammability, safe handling	1	Accept any material, chemical or physical property. Accept any health and safety precautions Do not accept: Size, thickness, dimensions, if its recyclable Do not accept 'strength' on its own Do not accept answers relating to cost, use of material
18	(e)	(ii)	So that their employees can be safe (1) when using the product (1) So that people are not in any danger (1) when using the product (1) So that people buying it (1) know how to use it properly (1) So that they can check if it is suitable (1) for what it is being used for (1)	2	Award one mark for the benefit eg. Safety, not in danger, suitability Award second mark for explaining 'when the product is in use' of some kind. Do not accept: Answers relating to recycling

Question			Answer	Marks	Guidance
18	(f)		Nanotechnology is the use and control of tiny matter/nanoparticles	1	Award one mark for statements relating to small/tiny/extremely small
				1	Award one mark for statements relating to the **use/control/altering or manipulation**
19	(a)		Air hole/ To allow the pet or animal to breathe Ventilation	1	Allow answers relating to air getting to the animal allowing it to breathe or get adequate ventilation.
	(b)		Die cutter/press cutting/cutting press	1	These are the only acceptable answers
	(c)		File size can be too large (1) takes up more storage space (1) File size can be too large (1) so can't be e-mailed (1) Quality of image can decrease (1) when enlarged (1) Quality of image can decrease (1) when zoomed in (1) Not compatible (1) with some software (1) Need an appropriate graphics card (1) to see full colours in the image (1) Difficult to edit (1) individual pixels need to be changed/re-coloured (1)	2 2	Any two from those given
	(d)		Flexography, silk screen printing.	1	
	(e)		Promote OCR Vets to prospective clients Remind people about the business Advertise OCR Vets Quick way of passing on details instead of writing them down Give customers OCR Vets contact details	1	Award 1 mark for any valid **purpose**. Do not answers which just give one piece of information
	(f)		85 x 55	1	This is the only correct answer

Question			Answer	Marks		Guidance
19	(g)*		The description should focus on the different finishes that are available, how they are applied and how they would protect, preserve and/or enhance the appearance of the business card. Finishes which could be described: • Laminating – Cold & Thermal To add lustre, provide extra strength, protect the business card from liquid damage/ make wipe clean/ waterproof and extend its life. • Varnishing – UV, Aqueous, Spirit To produce gloss or matt finish, increase colour absorption, speed up drying process, 'lock in' the ink under a protective coat/prevent ink rubbing off. • Embossing To create raised/3D elements, alter texture, improve appearance. • Hot Foil Printing To produce gold/silver lettering, improve appearance, give impression of high quality, holographic / multicolour foils to add unusual and eye catching features.	**Level 3 (5-6 marks)** **Level 2 (3-4 marks)** **Level 1 (1-2 marks)** 0		Thorough description, showing detailed understanding of the different finishes available, their application and how they could be used to enhance the business card. 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. Description shows some understanding of the different finishes available and their uses and/or application. 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 Description shows limited understanding of the different finishes available or their application/ uses. 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. Response worthy of no credit

OCR (Oxford Cambridge and RSA Examinations)
The Triangle Building
Shaftesbury Road
Cambridge
CB2 8EA

OCR Customer Contact Centre

Education and Learning
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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