



Mark Scheme (Results)

Summer 2019

Pearson Edexcel GCE
In D&T: Graphic Products
6GR02/01

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General Marking Guidance

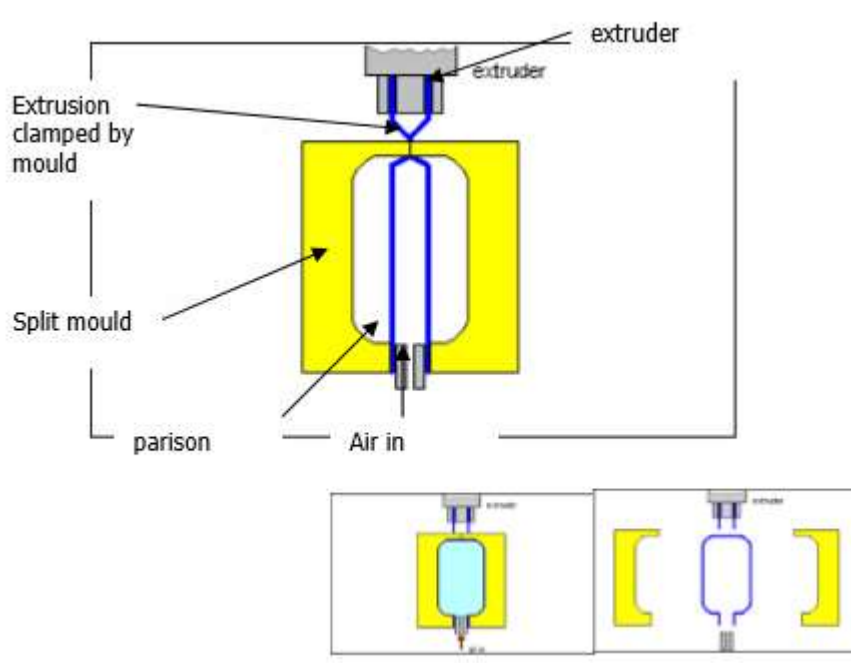
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)	Award one mark for each property up to a maximum of 2 marks • Transparent (1) • Tough/durable/does not break when dropped (1) • Inert/does not affect the liquid (taste/safety) (1) • Impermeable (1) • Recyclable (1) • Lightweight/does not add weight to product (1)	(2)
1(b)	Award one mark for each appropriate point • Ink can change colour (1) • Reacts with heat/cold (1) • Shows correct temperature (1) • Can be used for decoration (1) • Could be a marketing gimmick (1) (1x2)	(2)

1(c)				(4)
	Problem	Effect of the problem	Quality control mark	
	Bad register	- Image will look out of focus/blurred/not aligned (1) - Colours/printing will not be correctly lined up (1) - Colours/printing will overlap and protrude (1)	 <i>accept</i>  (1)	
	Greyscale variation	- Ink density varies throughout the print run/density incorrect (1) - Shades do not match the proof (1)	 (1)	

1(d)

Describe, using annotated sketches, the blow moulding process

(4)

- Split Mould is opened (1)
- Heated plastic tube (parison) feed into mould / preform inserted (1)
- Tube/parison clamped in split mould (1)
- Hot air forced in to the parison (1)
- Parison expands to fill the mould (1)
- Mould is cooled (1)
- Split mould opens to release product (1)

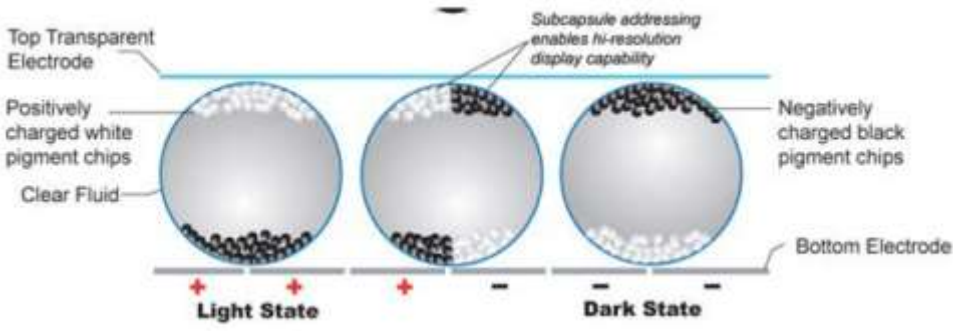
(4 x 1)

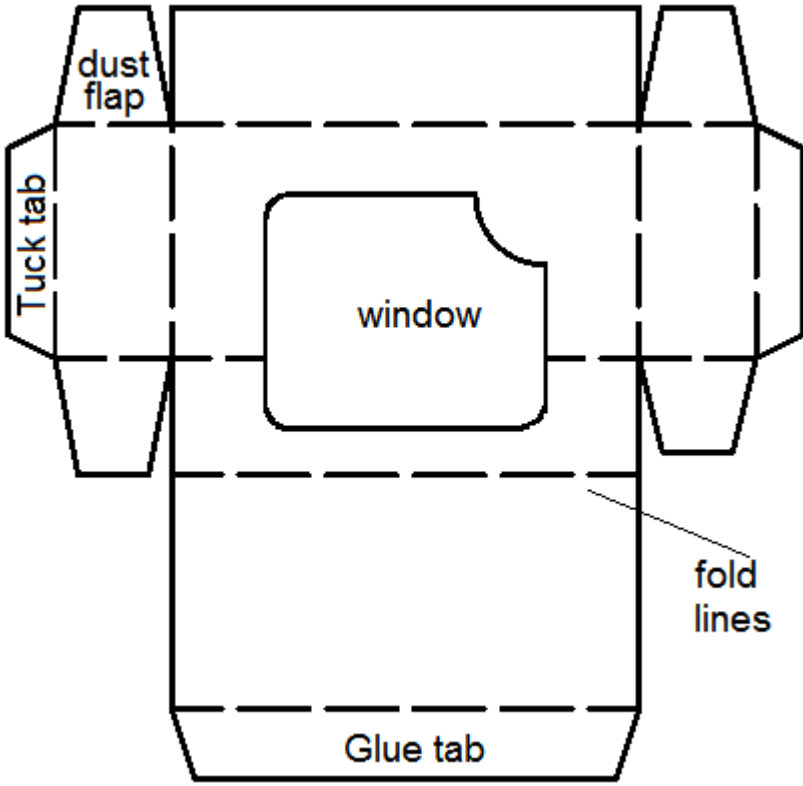
Total for question**12**

Question Number	Answer	Mark
2(a)	Award one mark for each valid advantage, up to a maximum of two marks • Protects the cards from handling/ingredients/heat (1) • Can be used with various thicknesses of paper (1) • Adds strength / durability to the recipe cards (1) • Transparent (1) • Smooth / wipe clean (1) • Increases the lifespan of the card (1) (2 x 1)	(2)
2(b)	Award one mark for an appropriate property, and one further mark for expansion, up to a maximum of four marks. • Ability to combine files/use image libraries/clipart (1) meaning greater flexibility in design (1) • Changes/editing can be easily completed (1) using various inbuilt tools (rotate/crop/trim/recolour etc) (1) • Files can be exported/emailed (1) meaning offsite printing /design can be sent for customer approval (1) • Grids/rulers/fonts/typefaces are included (1) allow short design time/enhance design capability (1) • Templates provide readymade layouts (1) removing the need to design layouts (1) • Pictures and files can be imported/copied and pasted from other documents (1) allowing personalised design (1) • Cost effective software (1) that doesn't need specialised computer/multiple different programs (1) • Able to zoom in and out/pan/scroll (1) allowing greater control of fine details (1) Must relate to the use of desk top publishing, rather than CAD in general. (2x1)+ (2x1)	(4)

2(c)	Award one mark for a valid advantage, with a second mark for expansion; and one mark for a valid disadvantage, with a second mark for expansion. Advantages • Temporary binding (1) allows pages to be replaced (1) • Easy to complete after training (1) so can be completed by existing staff (1) • Lower cost than spiral binding (1) as parts can be reused (1) • Pages can be added/removed (1) when recipes are updated (1) • Suitable for small batch production (1) as costs are low (1) Disadvantages • Comb bindings are not as strong (1) therefore the binding could break (1) • Does not allow the cards to open 360° (1) so the recipes cannot be folded back on themselves (1) • Comb bindings can be large and bulky (1) making the document look unattractive (1) • not very durable/pages tend to separate (1) resulting in pages getting lost/poor impression (1) (2x1) (2 x 1)	(4)
	Total for question	10

Question Number	Answer	Mark
3(a)	Award one mark for identifying an advantage and a further mark for expansion up to a maximum of two marks. • Rapid process (1) therefore able to meet demand/tight deadlines (1) • Aluminium printing plates have lower costs (1) making it an economical method to produce high quality printing (1) • Offset printing produces sharp and clean images and type (1) produces a consistent high image quality (1) • Rubber blanket conforms to the texture of the printing surface (1) allowing posters to be produced on a range of materials (1) • Longer printing plate life than on direct litho presses (1) since there is no direct contact between the plate and the printing surface (1) • Suitable for batch production of posters (1) due to the quick and easy production of printing plates (1) • computer to plate technology CTP (1) removes the need for messy/dangerous chemical photo-etching process (1) (1 x 2)	(2)

3(b)	Award one mark for each of the following • Top transparent electrode (1) • Bottom electrode (1) Then award up to two further marks for any two of the following: • Clear fluid indicated (1) • Negatively charged black pigment/beads (1) • Positively charged white pigment/beads (1) • Labels for +/- charges on bottom electrode (1) Award up to a max of 3 for accurate sketch with no annotation or a written answer without sketches.  (4 x 1)	(4)
3(c)	A discussion covering any of the points below. • Displays are more comfortable to read (1) • They reflect light like paper (1) • Displays have a wide viewing angle (1) • Displays do not need a constant power supply (1) • Static images are held indefinitely (1) • Information can be updated centrally from a computer (1) • Allows instant changes to be applied (1) • no need for back-lighting (1) • flexible/durable screens (1)	(4)
	Total for question	10

Question Number	Answer	Mark
4(a)	 Award marks as follows: • Net drawn with 2 large panels, 2 smaller panels and closure panels (1) • Differentiation between cut lines and fold/score lines (could be annotations) (1) Then award marks as follows: • Window with corner details in the correct location (1) • Glue tab (1) • 2 x tuck tabs (1) • At least 2 dust flaps (1) The net may be orientated differently, with different tab arrangements/assembly methods, however it must be able to be assembled into the package. (5x1)	(5)

4(b)	Award one mark for an advantage, and a second mark for expansion. • Excellent scoring/bending properties (1) allows the package to be folded without splitting (1) • Made from high quality bleached virgin pulp (1) providing an excellent printing surface (1) • Middle layer is unbleached pulp (1) reducing the cost of the material (1) (1x2)	(2)
4(c)	Award one mark for an appropriate advantage, and one further mark for expansion • Can be applied by machinery (1) allowing automated production (1) • Does not leave any marks/residue (1) improving the appearance of the packaging (1) • Adhesive sets quickly (1) increasing production rates (1) • Thickness of adhesive can be controlled (1) ensuring tabs and flaps are secure (1) (1x2)	(2)
Total for question		9

Question Number	Answer	Mark
5(a)	Award one mark for any of the following, up to a maximum of 2 marks. • Lightweight (1) • Fine grain/texture/short fibres/ straight grain (1) • Easy to cut and work (1) • Glues well (1) • Good finish can be achieved (1) • Takes paint easily (1) • Soft/compliant material so easily shaped (1) (2x1)	(2)

5(b)	Award one mark for a valid advantage, with a second mark for expansion; and one mark for a valid disadvantage, with a second mark for expansion Advantages: • Inexpensive joining method (1) therefore does not add to the cost of production (1) • Strong joint (1) making models robust (1) • Easy to use (1) because no mixing is needed (1) • Can be reversed/soaking in water (1) allowing for mistakes to be rectified (1) • Odourless/non-toxic (1) so can be used in a classroom / workshop (1) Disadvantage: • Work needs to be clamped (1) as it takes time to dry/not instant (1) • does not stick “non-like” materials (1) therefore cannot join plastics/metals to woods (1) • may come unstuck when in contact with water (1) because some types of PVA are water-based (1) • stains/marks wood (1) meaning sanding/finishes will be needed (1) • unless quick drying version is used (1) PVA takes a long time to dry /slows down making process (1) (2 x 1) (2 x 1)	(4)
5(c)	The five following points must be included for full marks: • Identify the hazard (1) • Identify the people at risk (1) • Evaluate the risks (1) • Decide appropriate control measures (1) • Record the risk assessment (1)	(5)
	Total for question	11

Question Number	Answer	Mark
6(a)	Award one mark for any of the following, up to a maximum of two marks • To provide performance standards/regulation/independent tests/approval (1) that ensure product quality/meets legal requirements (1) • So that the packaging is safe/hygienic/suitable to use (1) therefore providing customer peace of mind (1) • Products must comply with BSI standards (1) to have the BSI Logo/kite mark (1) • BSI writes specifications on behalf of consumers (1) because consumers are not able to / don't have the technical knowledge / don't have any input on the design (1) (1x2)	(2)

6(b)	Award one mark for a valid statement, with a second mark for expansion up to a maximum of four marks • Commitment to continuous improvement (1) with records at every stage to improve production and process/application for ISO 9000 (1) • Control over raw materials(1) to assist with quality of the complete product (1) • Quality built in with monitoring (1) in order to get the product right first time/within tolerance (1) • Works to ensure customer satisfaction (1) to allow the reputation of company to be enhanced (1) • Encourages a strategic/team building approach (1) resulting in higher /efficient levels of productivity/higher quality products (1) • Provides a high return on investment (1) by improving efficiency (1) • Continually improves process/products(1) and overall culture in which employees work (1) • Need to maintain an effective QC system (1) to eliminate faulty products/product returns (1)	(4)
6(c)	Any four points related to computer aided inspection, for upto 4 marks. • Measure/scan using probe/laser probe/densitometer (1) • Checks for colour density/smudges/colour bars/hickies (1) • Checks for alignment/registration marks (1) • Provides immediate feedback (1) • Determines if coordinates of specific points are within tolerance (1) • Probe controlled in three axis (X-Y-Z) (1) • machine vision technology can identify location of crop marks (1) (4 x 1)	(4)
	Total for question	10

Question Number	Answer	Mark
7	A balanced response should be put forward. Consideration of both the advantages and disadvantages of working drawings must be included for full marks. If only one is considered, award a maximum of 7 marks. Advantages • Includes all dimensions (1) • All parts are shown to scale (1) • There is no distortion of shapes, they are drawn exactly as they will be produced (1) • Can be used to demonstrate how something is assembled (1) • Able to visualise what the front/side/top will look like clearly (1) • Only shows 2 dimensions making it easier to interpret (1) • Notes provide information about the product (1) • Shows fine details of the product (1) • Can be used to explain how the product functions (1) • Conventions allow the drawing user to understand the arrangement of views (1) • CAD drawings can be emailed/made available online (1) Disadvantages • More complex than pictorial/isometric/perspective drawings (1) • Can be difficult to visualise in 3D (1) • Hidden detail can be confusing (1) • Complicated drawings may show too much information for the customer (1) • More than one view is needed to interpret the designs (1) • Conventions/line types may be unfamiliar (1) • Difficult to communicate surface finishes / colours / materials (1) • complex designs produce very large complex drawings which are difficult to use (1) • differing drawing standards e.g. BSI/ANSI causing confusion (1) (8 x 1)	
	Total for question	8

