

# Mark Scheme (Results)

## Summer 2007

GCSE

### GCSE Engineering & Manufacturing (5318/01)

**Printing and Publishing, Paper and Board (5318/01)**  
**SECTION A**

<i>Question</i>			<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q01a			Tick the two boxes below where the products belong to the printing and publishing sector		
1	(a)		<ul style="list-style-type: none"> <li>• Chocolate bar wrapper (1)</li> <li>• Paperback book (1)</li> </ul> <p><i>If three boxes ticked max marks = 1 mark.</i> <i>If 4 boxes or more ticked no marks.</i></p>	2x1	(2)
5318_01_Q01b			Tick the two boxes below where the products belong to the paper and board sector		
1	(b)		<ul style="list-style-type: none"> <li>• CD booklet (1)</li> <li>• Business Card (1)</li> </ul> <p><i>If three boxes ticked max marks = 1 mark.</i> <i>If 4 boxes or more ticked no marks.</i></p>	2x1	(2)
<b>(Total 4 marks)</b>					

Question			Expected answers	Mark allocation	
5318_01_Q02a1			Naming each piece of drawing equipment		
2	(a)	1	<ul style="list-style-type: none"> <li>• 30cm rule</li> <li>• Rule</li> <li>• Ruler</li> <li>• Shatterproof ruler</li> <li>• Rules</li> </ul> <p><i>(accept any answer that makes reference to a specific rule/ruler)</i></p> <p><i>Do not accept set squares or straight edge as given in question</i></p>	1x1	(1)
5318_01_Q02b1			Explaining what each piece of drawing equipment is used for:		
2	(b)	1	<p>An answer that makes reference to TWO of the following points:</p> <ul style="list-style-type: none"> <li>• A straight edge (1)</li> <li>• for drawing lines (1)</li> <li>• with a scale (mm) (1)</li> <li>• for accurate measurement (1)</li> <li>• Shatterproof (1)</li> <li>• so that it can be twisted and bent (1)</li> <li>• without shattering (1)</li> </ul> <p><i>E.g. A straight edge for drawing lines.</i></p> <p><i>If the equipment named in part 2(a) is incorrect, or there is no answer, no marks for part 2(a), but if it is a equipment from the Printing and Publishing, Paper and Board sector allow follow, through for a correct answer to 2(b) up to 2 marks.</i></p> <p><i>Do not accept explanation of use of SET SQUARE as given in question</i></p>	2x1	(2)

Question			Expected answers	Mark allocation	
5318_01_Q02a2			Naming each piece of drawing equipment		
2	(a)	2	<ul style="list-style-type: none"> <li>• Compii</li> <li>• Compass</li> <li>• Pair of Compasses</li> <li>• Giant Bow/Compass</li> <li>• Divider</li> <li>• Cutter</li> <li>• Compass cutter</li> </ul> <p><i>(accept any answer that makes reference to a specific compass or cutter)</i></p> <p><i>Do not accept stationary or pen as given in question</i></p>	1x1	(1)
5318_01_Q02b2			Explaining what each piece of drawing equipment is used for:		
2	(b)	2	<p>An answer that makes reference to TWO of the following points:</p> <ul style="list-style-type: none"> <li>• For drawing circles and arcs</li> <li>• accurate geometrical construction</li> <li>• measurement</li> <li>• for curved lines</li> <li>• for cutting circles / arcs</li> <li>• for constructing geometrics shapes i.e. triangles</li> <li>• set at different sizes / diameters</li> </ul> <p><i>E.g. for drawing circles or measuring</i></p> <p><i>If the equipment named in part 2(a) is incorrect or no answer, no marks for part 2(a), but if it is a equipment from the Printing and Publishing, Paper and Board sector allow follow though, for a correct answer to 2(b)</i></p> <p><i>Do not accept use of set squares as given in question.</i></p> <p><i>Do not accept cutting only.</i></p>	2x1	(2)
(Total 6 marks)					

Question		Expected answers		Mark allocation	
5318_01_Q03		Draw a straight line to link each term listed below to a key area. Each key area can be used more than once.			
3		<i>No mark awarded where 2 lines or more are drawn from a term. Lines do not have to be straight but term and key area must be clearly linked.</i>			
		Term	Key area		
				6x1	(6)
(Total 6 marks)					

Question			Expected answers	Mark allocation	
5318_01_Q04					
Name one other product from this sector, apart from blister packaging, that utilises in its manufacture control technology and modern materials.					
4	(a)	i	<p>Appropriate product such as e.g.</p> <ul style="list-style-type: none"> <li>• CD case</li> <li>• Food and drink packaging</li> <li>• Forehead thermometer</li> <li>• Greeting card</li> <li>• Business card</li> <li>• Chocolate bar wrapper</li> <li>• Paperback book</li> <li>• Point of sale display</li> <li>• Board game</li> <li>• Tetrapak</li> <li>• A brand name of a specific product</li> </ul> <p><i>This list is not exhaustive; accept any product associated with the printing and publishing paper and board sector.</i></p> <p><i>Do not accept 'Card'</i></p>	1x1	(1)
Explain how the product can be used.					
4	(a)	ii	<p>Appropriate explanation of what the product does, may include reference to features and function</p> <ul style="list-style-type: none"> <li>• CD case: it protects CDs (1) and provides information (1)</li> <li>• Greeting card: to send to people (1) on an occasion (1)</li> <li>• Point of sale display: to advertise (1) to provide information (1)</li> </ul> <p><i>If product given in 4a(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through, up to one mark.</i></p> <p><i>No answer to 4(a)(i) no mark for 4(a)(ii)</i></p>	2x1	(2)

Question			Expected answers	Mark allocation	
State one stage in the manufacture of the product you named in 4(a)(i) where control technology is used					
4	(b)	i	<ul style="list-style-type: none"> <li>production planning (1) materials - supply and control (1) processing/production (1) assembly/finishing (1) packaging/dispatch (1)</li> </ul> <p><i>If product given in 4(a)(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through.</i></p> <p><i>No answer to 4(a)(i) no marks for 4(b)ii</i></p> <p><i>Accept a process that is within any of the stages e.g. Vacuum forming / die cutting / automatic packaging / web fed off set litho printing must be appropriate to the product stated in 4(a)(i)</i></p>	1x1	(1)
Explain one advantage to the manufacturer of using control technology at this stage.					
4	b	ii	<p>One mark for identifying advantage One mark for why</p> <p>Appropriate advantage to the manufacturer e.g.</p> <p><b>production planning, materials - supply and control, processing/production, assembly/finishing, packaging/dispatch</b></p> <p><b>Production planning</b></p> <ul style="list-style-type: none"> <li>speed (1) - faster than human application (1)</li> </ul> <p><b>materials - supply and control</b></p> <ul style="list-style-type: none"> <li>cost control (1) - by less waste/faulty parts (1)</li> <li>waste control (1) - by monitoring processes and quality control of processes (1)</li> </ul> <p><b>processing/production</b></p> <ul style="list-style-type: none"> <li>energy conservation (1) - by control of energy into process (1)</li> <li>waste control (1) - by monitoring processes and quality control of processes(1)</li> <li>competitiveness (1) - faster rates of production (1)</li> <li>product consistency (1) - by control of processes (1)</li> <li>cost control (1) - by less waste/faulty parts (1)</li> <li>efficiency (1) - by less waste/faulty parts (1)</li> <li>speed (1) - faster than human application (1)</li> </ul>		

Question			Expected answers	Mark allocation	
Explain one advantage to the manufacturer of using control technology at this stage.					
4	(b)	ii	<p><b>assembly/finishing</b></p> <ul style="list-style-type: none"> <li>energy conservation (1) - by control of energy into process (1)</li> <li>waste control (1) - by monitoring processes and quality control of processes(1)</li> <li>product consistency (1) - by control of processes (1)</li> <li>cost control (1) - by less waste/faulty parts (1)</li> <li>efficiency (1) - by less waste/faulty parts (1)</li> <li>speed (1) - faster than human application (1)</li> </ul> <p><b>packaging/dispatch</b></p> <ul style="list-style-type: none"> <li>packaging consistency (1) - by control of processes (1)</li> <li>cost control (1) - by less waste/faulty parts (1)</li> <li>efficiency (1) - by less waste/faulty parts (1)</li> <li>speed (1) - faster than human application (1)</li> <li>energy conservation (1) - by control of energy into process (1)</li> <li>waste control (1) - by monitoring processes and quality control of processes (1)</li> </ul> <p><i>Low response (1) or two low responses (2) or detailed response (2). If the answer in part (i) is a Manufacturing stage allow follow through up to 2 marks.</i></p> <p><i>No answer to 4(b)(i) no marks for 4(b)(ii)</i></p>	1x1 1x1	(2)



Question			Expected answers	Mark allocation	
State one modern material used in the manufacture of the product you named in 4(a)(i)					
4	(c)	i	<ul style="list-style-type: none"> <li>thermochromic inks (1), phosphorescent pigments (1)</li> <li>polymorph (1)</li> <li>laminate (1)</li> <li>holographic card (1), packaging laminates (1)</li> <li>Various thermoplastics (PP, HDPE, PVC etc) (1)</li> <li>other appropriate materials / a material currently used for the given application</li> </ul> <p>accept 'card' or 'cardboard', 'thermoplastic'</p> <p><i>If product given in 4(a)(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through.</i></p> <p><i>No answer to 4(a)(i) no marks for 4(c)(i)</i></p>	1x1	(1)
Describe how this modern material improves the characteristics of the product.					
4	(c)	ii	<p>One mark for identifying improvement One mark for how</p> <ul style="list-style-type: none"> <li>Functional characteristics - weight (1) / size (1) / shelf life (1) / protection (1) / rigidity (1)</li> <li>Mechanical characteristics - strength (1) / durability (1)</li> <li>Aesthetic characteristics - surface finish (1) / texture (1) / colour (1)/ appearance (1)</li> <li>Reduced weight (1) - better strength to weight ratio (1)</li> <li>Reduced cost (1) - quicker / quicker to assemble (1)</li> <li>Better appearance (1) - brighter (1) / attractive finish (1)</li> <li>Any other appropriate functional / mechanical / aesthetic characteristic relating to the improvement (1)</li> </ul> <p><i>If answer in part 4(ai) is inappropriate but the material given in 4(ci) is appropriate allow follow through up to 2 marks. If no answer is given in part 4(ai) but the answer to part 4(cii) relates to the material stated in part 4(ci) allow follow through up to 1 mark. If no answer or incorrect answer given in part 4(ci) no marks awarded for 4©(ii)</i></p>	1x1 1x1	(2)
(Total 9 mark)					

Question			Expected answers	Mark allocation	
5318_01_Q05a					
Give one example of where computer aided manufacture (CAM) is used by a manufacturer.					
5	(a)	i	<ul style="list-style-type: none"> <li>materials supply / purchasing (generating orders)</li> <li>materials control (MRP1, automatic material issuing)</li> <li>stages in production / processing (vacuum forming / die cutting etc)</li> <li>process control (data logging)</li> <li>storage (automated warehouse)</li> <li>distribution (automatic order picking)</li> <li>packaging (automatic labelling)</li> </ul>	1x1	(1)
Explain the benefits to the manufacturer of using Computer-aided manufacture (CAM) relating to the example given in 5(a)(i)					
5	(a)	ii	<p>One mark for identifying the benefit One mark for how</p> <ul style="list-style-type: none"> <li>reduced ordering times (1) - automatic monitoring (1)</li> <li>improve quality / accuracy (1) - control of processes (1)</li> <li>reduced wastage (1) - optimise production methods</li> <li>improved efficiency (1) - faster throughput (1)</li> <li>better process control (1) - in process monitoring (1)</li> <li>reduced labour (1) - automated processes (1)</li> <li>lower costs (1) - reduced wastage/faster/continuous production (1)</li> <li>safer processes (1) - less manual input (1)</li> </ul> <p><i>Low response (1) or two low responses (2) or detailed response (2)</i> <i>If answer in part 5(ai) is inappropriate allow follow through up to 2 marks. If no answer given in part 5(ai) allow follow though up to 1 mark.</i></p> <p><i>Do not accept 'easier' without explanation</i></p>	1x1 1x1	(2)

Question			Expected answers	Mark allocation	
5318_01_Q05b					
Give one example of how Computer-aided design (CAD) is used by a manufacturer					
5	(b)	i	<ul style="list-style-type: none"> <li>to create virtual products / drawings / 2 or 3D designs</li> <li>modelling</li> <li>show ideas</li> <li>show new product concepts</li> <li>modify existing products</li> </ul> <p><i>Do not accept 'software' without explanation e.g. 2D design software / package.</i></p>	1x1	(1)
Explain the benefits to the manufacturer of using Compute-aided design (CAD) relating to the example given in 5(b)(i)					
5	(b)	ii	<p>One mark for identifying benefit One mark for how</p> <ul style="list-style-type: none"> <li>accurately drawn (1) entry of accurate date on sizes (co-ordinates) (1)</li> <li>quicker development time (1) - through simulation (1)</li> <li>easier to communicate i.e. ICT (1) - transfer of data (1)</li> <li>easy to make modifications / edit / change (1) - no paper hard copies (1) / computer data (1)</li> <li>lower initial development costs (1) - concurrent design processes (1)</li> <li>easy storage of data/information and retrieval (1) - interaction with databases (1)</li> <li>conversion from 2D to 3D (1) for modelling (1)</li> </ul> <p><i>Low response (1) or 2 low responses (1) e.g. its quicker and more accurate - only one mark or detailed response (2)</i> <i>If answer in part 5(b)(i) is inappropriate allow follow through up to 2 marks. If no answer given in part 5(b)(i) allow follow though up to 1 mark.</i></p> <p><i>Do not accept 'easier' without explanation</i></p>	1x1 1x1	(2)

Question		Expected answers	Mark allocation	
5318_01_Q05c		Explain one benefit to the retailer of the manufacturer using Computer-aided manufacture (CAM)		
5	(c)	<p>One mark for identifying benefit One mark for how</p> <ul style="list-style-type: none"> <li>• better control (of stock) (1) - computer links to manufacturer (1)</li> <li>• less returns (1) - more consistent products (1)</li> <li>• lower purchase price (1) - increased sales (1)</li> <li>• shorter order times (1) - greater use if ICT (1)</li> <li>• more sales (1) - better quality (1)</li> <li>• increased sales (1) - more profit (1)</li> <li>• better reputation / customer satisfaction (1) - more reliability (1)</li> <li>• increased profits (1) - less waste product (1)</li> </ul> <p><i>Benefit must relate to retailer Low response (1) 2 low responses (1) e.g. cheaper and quicker - only one mark</i></p>	1x1 1x1	(2)
(Total 8 marks)				

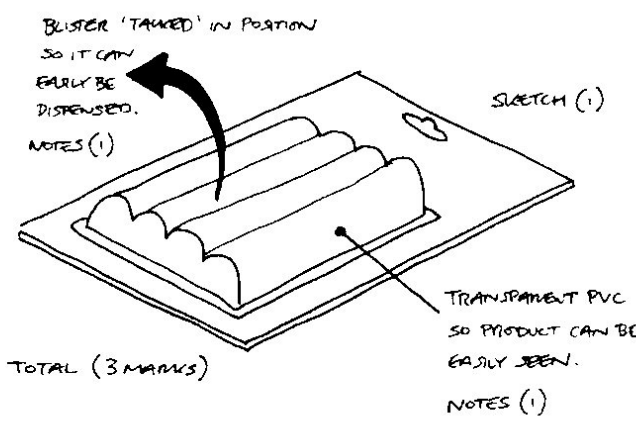
Question		Expected answers		Mark allocation	
5318_01_Q06					
Name two examples of communications technology.					
6	(a)	<p><i>One mark per relevant example x 2</i></p> <ul style="list-style-type: none"> <li>• Fax</li> <li>• Mobile phone / infra -red / blue tooth</li> <li>• Email / messaging</li> <li>• Internet / wireless / WI-FI</li> <li>• Video conferencing</li> <li>• Electronic point of sale (EPOS)</li> <li>• EDI</li> <li>• ISDN</li> <li>• Texting</li> <li>• Phone</li> <li>• Walkie Talkie</li> </ul> <p><i>Do not accept: TV, CAD, Radio, database, computer, laptop, spreadsheets</i></p>	1x1 1x1	(1) (1)	
Describe the traditional communications method it has replaced.					
6	(b)	<p><i>One mark per relevant example x 2</i></p> <ul style="list-style-type: none"> <li>• Fax - letters / memos / post</li> <li>• Mobile phone - Landline, Pager, Public address system</li> <li>• Email - Fax, Letter, memo, report sheets, telephone</li> <li>• Internet - Books, journals, buyers guides, catalogues, brochures</li> <li>• Video conferencing - Travel to central location</li> <li>• Electronic point of sale (EPOS) - Stock taking, manual ordering, income calculations</li> <li>• EDI - postal documents</li> <li>• ISDN - analogue transmission</li> <li>• Texting - phone / conversation</li> <li>• Phone - telegrams</li> <li>• Walkie talkie - face to face</li> </ul> <p><i>Mark allocation 1 per relevant example must relate to technology given in 6(a) and the manufacturer</i> <i>If part (a) not answered no mark awarded.</i> <i>2 low responses 1 mark only.</i></p>	1x1 1x1	(1) (1)	

Question		Expected answers	Mark allocation	
5318_01_Q06		Explain one benefit to the manufacturer of using this replacement.		
6	(c)	<p>An explanation that makes reference to:</p> <ul style="list-style-type: none"> <li>• Fax - hard copy record</li> <li>• Mobile phone - flexibility / roaming location</li> <li>• Email - immediate permanent record</li> <li>• Internet - immediate vast access to information</li> <li>• Video conferencing - no travel expenses / less time wasted in travelling</li> <li>• Electronic point of sale (EPOS) - faster / more accurate</li> <li>• EDI - immediate transfer of information / no hard copies needed / less storage space</li> <li>• ISDN - more data transferred in parallel</li> <li>• Texting - stored record of transaction</li> <li>• Phone - immediate two way conversation</li> <li>• Walkie Talkie - flexibility / roaming location / cost</li> </ul> <p>Other benefits may be seen in the light of:</p> <p>Speed, accuracy, JIT, information retrieval, meets consumer demands, quicker, increased sales, reduced stock levels, reduced running costs, reduced lead times, calculation of sales, stock taking quicker/easier, storage space reduced or any other appropriate response</p> <p><i>Benefits must relate to the manufacturer If only the replacement or original technology is given and the benefit is appropriate allow follow through up to 1 mark. 2 low responses 1 mark only.</i></p>	2x1 2x1	(2) (2)
(Total 8 marks)				

Question		Expected answers			Mark allocation
5318_01_Q07		Explain the benefits information and data handling system have on:			
Production efficiency					
7	(a)	<p>One mark for benefit One mark for how</p> <ul style="list-style-type: none"> <li>• Accurate information (1) - updated regularly (1)</li> <li>• Detailed information (1) - high storage space (1)</li> <li>• Fast access to data (1) - search / sort / query (1)</li> <li>• Improved planning (1) - short lead times (1)</li> <li>• Forecasting (1) - collects volumes of data / modelling (1)</li> <li>• Cost of control (1) - better scheduling (1)</li> <li>• Waste control (1) - process monitoring / control (1)</li> <li>• Reduced stock holding(1) - tracks trends / JIT (just in time) (1)</li> <li>• Training records (1) - skills monitoring (1)</li> <li>• Wage information (1) - ease of cost monitoring (1)</li> <li>• Or any other appropriate answer</li> </ul> <p><i>Low response (1) or detailed statement (2)</i></p>	1x1 1x1	(2)	
Marketing					
7	(b)	<p>One mark for benefit One mark for how</p> <ul style="list-style-type: none"> <li>• Accurate sales information (1) - instant feedback (1)</li> <li>• Detailed customer information (1) - tailoring product to target market (1)</li> <li>• Information for marketing strategies/campaigns (1) - choosing correct media (1)</li> <li>• Information for advertising campaigns (1) - model sales versus demand (1)</li> <li>• Profit information available (1) - meeting demand (1)</li> <li>• Ordering to meet sales faster (1) meeting on demand- (1)</li> <li>• Or any other appropriate response</li> </ul> <p><i>Low response (1) or detailed statement (2)</i></p>	1x1 1x1	(2)	
					(Total 4 marks)
Total marks for Section A					45marks

SECTION B			
Question	Expected answers		Mark allocation
5318_01_Q08	In the boxes below, explain, using notes and sketches: (a) Function of the backing board		
8	(a)	<p>An answer that makes reference to three of the following points:</p> <ul style="list-style-type: none"> <li>• Help hold packing together (1)</li> <li>• Protection of product (1)</li> <li>• Provides a method of holding blister packed product in place when in transport (1)</li> <li>• Backing board provides a large surface area for promotion of product (1) contains branding (1) provides information about product (1)</li> <li>• Full colour printing possible (1) and printing effects (1) to provide visual imagery (1) to attract target market group (1)</li> <li>• Contains legal and safety warnings (1) bar code for stock control (1)</li> <li>• Backing board provides stiffness (1) 'euro slot' for hanging in retail outlets (1)</li> <li>• Or any appropriate answer</li> </ul> <p><i>Answer must contain both notes and sketches. Max two marks if only notes or only sketches used.</i></p> <p><b>Example</b></p> <p>TOTAL (3 MARKS)</p> <p><i>Diagrams up to 2 marks, notes up to 2 marks, max 3 marks</i></p>	
			3x1 (3)



Question	Expected answers	Mark allocation
5318_01_Q08	<p>In the boxes below, explain, using notes and sketches:</p> <p>(b) Functions of the blister</p>	
8	<p>(b)</p> <p>An answer that makes reference to three of the following points:</p> <ul style="list-style-type: none"> <li>• Blister contains (1) and protects (1) the product inside</li> <li>• Blister is 'tacked' to backing board (1) so it can be easily torn (1) from the backing board to dispense (1) the product</li> <li>• Blister is transparent (1) so the product can be seen (1) by the customer</li> <li>• Or any suitable</li> </ul> <p><i>Answer must contain both notes and sketches. Max two marks if only notes or sketches used.</i></p> <p><b>Example</b></p>  <p>TOTAL (3 MARKS)</p> <p><i>Note: do not accept responses referring to tablet blisters Diagrams up to 2 marks, notes up to 2 marks, max 3 marks</i></p>	<p>3x1 (3)</p>
(Total 6 marks)		

<i>Question</i>			<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q09ai			Write in the table above two missing stages in manufacturing blister packaging.		
9	(a)	i	<ul style="list-style-type: none"> <li>• Marketing (1)</li> <li>• Production / Processing / making (1)</li> </ul> <p>Must be in this order</p> <p><i>Do not accept production planning</i></p>	1x1 1x1	(2)
5318_01_Q09aii			State the stage where the blister is attached to the backing board:		
9	(a)	ii	<ul style="list-style-type: none"> <li>• Assembly / finishing (1)</li> <li>• Stage 6 / stage 6</li> <li>• Six / 6</li> </ul> <p><i>Do not accept any other answer</i></p>	1x1	(1)

Question			Expected answers	Mark allocation	
5318_01_Q09bi			Describe the following two stages in the manufacture of the blister packaging.  <b>Production planning</b>		
9	(b)	i	<p>Appropriate description to include three of the following points:</p> <ul style="list-style-type: none"> <li>• Health and safety (1)</li> <li>• Quality checks (1)</li> <li>• Control points (1)</li> <li>• Scheduling production (1)</li> <li>• Converting order to production (1)</li> <li>• Materials requirements (1)</li> <li>• Labour requirements (1)</li> <li>• Deadlines (1)</li> <li>• Throughputs (1)</li> <li>• Machinery / equipments requirement (1)</li> <li>• Storing (1)</li> <li>• Any other appropriate response</li> </ul> <p><i>E.g. - The stage where the specification of the blister packaging is used by the planning team to set out all operations and schedule (1) the blistering packaging through the production department to meet the required delivery deadlines (1). This could include ordering any special materials or tooling (1) for making the blistering packaging.</i></p> <p><i>1 x 1 mark low response, 3 x 1 mark 3 low responses or up to 3 for detailed response</i></p>	3x1	(3)

Question			Expected answers	Mark allocation	
5318_01_Q09bii			Packaging and dispatch		
9	(b)	ii	<p>Appropriate description to include three of the following points:</p> <ul style="list-style-type: none"> <li>• Application of protective packaging (1)</li> <li>• Collection of multiples of item (1)</li> <li>• Assembling orders (1)</li> <li>• Application of codes, dates, tech info (1)</li> <li>• Picking orders (1)</li> <li>• Assembly loads (1)</li> <li>• Packing into outer boxes (1)</li> <li>• Making records (1)</li> <li>• Application of labels to boxes (1)</li> <li>• Sending to client (1)</li> <li>• Final visual checks (1)</li> <li>• Quality checks (1)</li> <li>• Any other appropriate response</li> </ul> <p><i>E.g. - The stage where the blister packaging is boxed (1) and prepared for shipment by external labelling (1) The blister packaging is loaded on to the prepared method of dispatch and carrier to be sent to the customer for distributor (1)</i></p> <p><i>1 x 1 mark low response, 3 x 1 mark 3 low responses or up to 3 for detailed response</i></p> <p><i>Do not accept answers that relate to the assembly of the blister packaging.</i></p>	3x1	(3)
(Total 9 marks)					

Question			Expected answers	Mark allocation	
5318_01_Q10ai			Name the specific material commonly used in blister packaging to make the: <b>Backing board</b>		
10	(a)	i	<ul style="list-style-type: none"> <li>• Duplex cardboard (1)</li> <li>• Paperboard (1)</li> <li>• Carton-board (1)</li> <li>• Solid white board (1)</li> <li>• Folding boxboard (1)</li> <li>• Cardboard (1)</li> </ul> <p><i>Do not accept card, board or corrugated board/ card</i></p>	1x1	(1)
5318_01_Q10aai			Name the specific material commonly used in blister packaging to make the: <b>Blister</b>		
10	(a)	ii	<ul style="list-style-type: none"> <li>• PVC (1) or Poly Vinyl Chloride</li> <li>• PE or Polythene</li> <li>• LDPE or Low Density Polythene</li> <li>• HDPE or High Density Polythene</li> <li>• PS or Polystyrene</li> <li>• HIPS or High Impact Polystyrene</li> </ul> <p><i>Do not accept generic plastic or thermoplastic or Polypropylene (PP) or Acrylic</i></p>	1x1	(1)
5318_01_Q10bi			Name a suitable forming process for producing the blister.		
10	(b)	i	<ul style="list-style-type: none"> <li>• Vac forming</li> <li>• Vacuum forming</li> <li>• Thermoforming</li> <li>• Vac formed</li> <li>• Vac former</li> <li>• Thermoformer</li> </ul> <p><i>Do not accept injection moulding or any other moulding</i></p>	1x1	(1)

<i>Question</i>			<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q10bii			Explain two properties of thermoplastics which make them suitable for packaging.		
10	(b)	ii	<p>2 marks for properties:</p> <ul style="list-style-type: none"> <li>• Versatile/flexible (1)</li> <li>• Lightweight (1)</li> <li>• Decorative / aesthetic (1)</li> <li>• Low cost (1)</li> <li>• Energy saving (1)</li> <li>• Mechanical properties - tough / rigid / strong / durable (1)</li> <li>• Recyclable (1)</li> <li>• Good barrier to moisture (1)</li> <li>• Self - coloured / transparent (1)</li> </ul> <p>2 marks for reason why:</p> <ul style="list-style-type: none"> <li>• Suitable for high quantity production (1)</li> <li>• they can be thermoformed into a variety of interesting and complicated shapes (1)</li> <li>• for customer convenience (1) and reduction in transport costs (1)</li> <li>• available in a wide range of colours and crystal clear (1) so you can see the product inside (1)</li> <li>• granules and sheets are economical to purchase in bulk (1) therefore unit costs are low (1)</li> <li>• thermoforming processes in relation to other processes (1)</li> <li>• to increase reliability, product life span etc (1)</li> <li>• shredded, reheated and reformed into other useful products (1)</li> <li>• resistance to chemicals (1) to prevent product inside becoming spoilt (1)</li> <li>• No need for finishing (1)</li> </ul>	2x1	(4)

<i>Question</i>		<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q10c		Explain how the use of modern materials has helped the manufacturer of blister packaging develop new products:		
10	(c)	<p>An explanation that makes reference to three of the following points:</p> <ul style="list-style-type: none"> <li>• Aesthetics - high quality surface finishes, printing effects, colours, textures etc</li> <li>• Efficient and cost-effective mass production techniques - low unit costs, increased profit, larger product range, increased availability etc</li> <li>• Functionality - weight, size, increased shelf life etc</li> <li>• Mechanical characteristics - increased toughness, strength, durability etc</li> </ul> <p><i>Up to 3 x 1 mark low responses or up to 3 marks for a detailed response. Low responses max 2 marks</i></p>	3x1	(3)
<b>(Total 10 marks)</b>				

<i>Question</i>			<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q11			Describe two quality control procedures used at the production stage of the manufacture of the blister package that utilise monitoring control technology:		
11	(a)	i-ii	<p>One mark for identifying QC procedure One mark for how</p> <ul style="list-style-type: none"> <li>• Crop marks - Marks around the multiple printed sheet (1) to indicate where individual backing boards should be trimmed (1) to line up the guillotine for accurate cutting (1)</li> <li>• Registration marks - 'Target sight' marks around the multiple printed sheet (1) to line up the four colour separations (CYMK) exactly (1) so they do not print out of line (1)</li> <li>• Colour bars/greyscale - Colour strips around the multiple printed sheet (1) indicating process colours and tones (1) to take densitometer readings from (1) density of ink on printed page (1)</li> <li>• Inspection - examining components / machinery (vacuum formed blisters and colour printed backing boards) in batches (1) in order to check that they are within a specified tolerance (1)</li> <li>• Testing - of components and final product (1) to determine physical properties (1) i.e. Forces required to crack or destroy components or products (1)</li> </ul> <p><i>Must have relevant monitoring / control technology link</i></p>	2x1 2x1	(4)



Question			Expected answers	Mark allocation	
Explain one benefit of applying each quality control procedure, described in (a) above to the manufacturer.					
11	(b)	i-ii	<p>One mark for identifying benefit to the manufacturer One mark for how</p> <ul style="list-style-type: none"> <li>• Reduced customer complaints (1) - better products (1)</li> <li>• Control of costs (1) - cheaper product / more profit (1)</li> <li>• Avoids faulty parts being assembled (1) - early detection (1)</li> <li>• Increased sales (1) - consistent product / lower prices (1)</li> <li>• User confidence (1) - consistent product / less returns (1)</li> <li>• Reduced waste (1) - control of manufacturing processes (1)</li> <li>• Made to same quality standard (1)</li> <li>• Reliable product (1) - monitoring standards/testing (1)</li> <li>• Detection of broken machinery (1) - damaged product (1)</li> <li>• Any other appropriate response.</li> </ul> <p><i>2 x 1 mark for Low response or 2 x 2 marks for detailed responses</i> <i>If no answer or inappropriate answer is given in part 11(a) allow follow through up to 1 mark each benefit.</i></p>	2x1 2x1	(2) (2)

Question		Expected answers	Mark allocation
Explain one benefit of applying each quality control procedure, described above in (a) to the consumer:			
11	(c)	<p>One mark for identifying benefit to the consumer One mark for how</p> <ul style="list-style-type: none"> <li>• Safer product to use (1) - confidence in product reliability(1)</li> <li>• Consistent product (1) - ensures standards are met (1)</li> <li>• Longer useable life (1) - don't have to buy as often (1)</li> <li>• Product reliability (1) confidence in the company (1)</li> <li>• Lower prices (1) - less scrap / waste / more efficient (1)</li> <li>• Any other appropriate response</li> </ul> <p><i>2 x1 mark for low responses, 2 x 2 marks for detailed responses</i> <i>If no answer or inappropriate answer is given in part 11(a) allow follow through up to 1 mark each benefit.</i></p>	<p>2x1 (2) 2x1 (2)</p>
(Total 12 marks)			

<i>Question</i>			<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q12a			The utilisation of modern technology in the manufacture of blister packaging has brought changes. Explain these changes in:		
the types and size of workforce					
12	(a)	i	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> <li>• Smaller in size (1)</li> <li>• Higher level of skills (1)</li> <li>• Work patterns - shifts (1)</li> <li>• Better educated (1)</li> <li>• Higher level of development skills required (1)</li> <li>• Less employment for unskilled (1)</li> <li>• Updating and training often required (1)</li> <li>• Or any other appropriate response (1)</li> </ul>	2x1	(2)
the working environment					
12	(a)	ii	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> <li>• Cleaner (1)</li> <li>• Safety (1)</li> <li>• Quieter (1)</li> <li>• Healthier (1)</li> <li>• Any other appropriate response</li> </ul>	2x1	(2)
the global environment					
12	(a)	iii	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> <li>• Distribution - network increased (extra fuel) (1)</li> <li>• carbon emissions (1)</li> <li>• Operational efficiencies - less fossil fuels (1)</li> <li>• Recyclable materials (1)</li> <li>• Reduced waste - landfill (1)</li> <li>• Increased consumption of raw materials (1)</li> <li>• Any other appropriate response</li> </ul>	2x1	(2)

<i>Question</i>		<i>Expected answers</i>		<i>Mark allocation</i>	
5318_01_Q12bc					
Describe <u>one disadvantage</u> that modern technology has had on the workforce:					
12	(b)		<p>A description that makes reference to two of the following points:</p> <ul style="list-style-type: none"> <li>• Less staff required (1)</li> <li>• Re-training required (1)</li> <li>• Redundancy threat (1)</li> <li>• Increased travel to work / centralisation (1)</li> <li>• Working pattern / 24/7 operation (1)</li> <li>• Any other appropriate response</li> </ul>	2x1	(2)
Describe one advantage that modern technology has had on the global environment					
12	(c)		<p>A description that makes reference to two of the following points:</p> <ul style="list-style-type: none"> <li>• Plant more fuel efficient (1)</li> <li>• lower emissions &amp; less consumption (1)</li> <li>• Increased productivity (1)</li> <li>• less fuel used (1)</li> <li>• Reduced wastage (1)</li> <li>• product, packaging etc (1)</li> <li>• less landfill, incineration (1)</li> <li>• Improved manufacturing control (1)</li> <li>• less pollution (1)</li> <li>• Any other appropriate response</li> </ul>	2x1	(2)
<b>(Total 10 marks)</b>					

<i>Question</i>		<i>Expected answers</i>	<i>Mark allocation</i>	
5318_01_Q13a		Describe how CAD is used by the manufacturer to increase market share.		
13	(a)	<p>A description that makes reference to four of the following points:</p> <ul style="list-style-type: none"> <li>• To design new or improved products quickly (1)</li> <li>• better retailer acceptance (1)</li> <li>• improved consumer acceptance (1)</li> <li>• To design new or improved packaging (1)</li> <li>• quicker to market (1)</li> <li>• 2D, 3D modelling to show customers (1)</li> <li>• Any other appropriate response</li> </ul>	4x1	(4)
5318_01_Q13b		Describe how CAM is used to control manufacturing costs.		
13	(b)	<p>A description that makes reference to four of the following points:</p> <ul style="list-style-type: none"> <li>• Machine settings are ideal /accuracy / reducing waste (1)</li> <li>• Less energy lost / waste (1)</li> <li>• Only correct number manufactured (1)</li> <li>• Controlled environment uses less fuel / energy / utilities (1)</li> <li>• Correct ordering of materials (1)</li> <li>• Lower staffing requirement (1)</li> <li>• Costs more visible / easier traced (1)</li> <li>• Immediate alerts to out of standard performance (1)</li> <li>• Manufactured just in time (1)</li> <li>• Lower unit cost after initial investment (1)</li> <li>• Continuous operation (1)</li> <li>• Less downtime (1)</li> <li>• Any other appropriate response</li> </ul>	4x1	(4)
(Total 8 marks)				
Total Marks for Section B			55	
Total Marks for the whole Paper for section A and B			100	