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Mark Scheme (Results)

June 2012

GCSE Engineering/Manufacturing
(5EM03) Paper 3A

Printing & Publishing, Paper & Board

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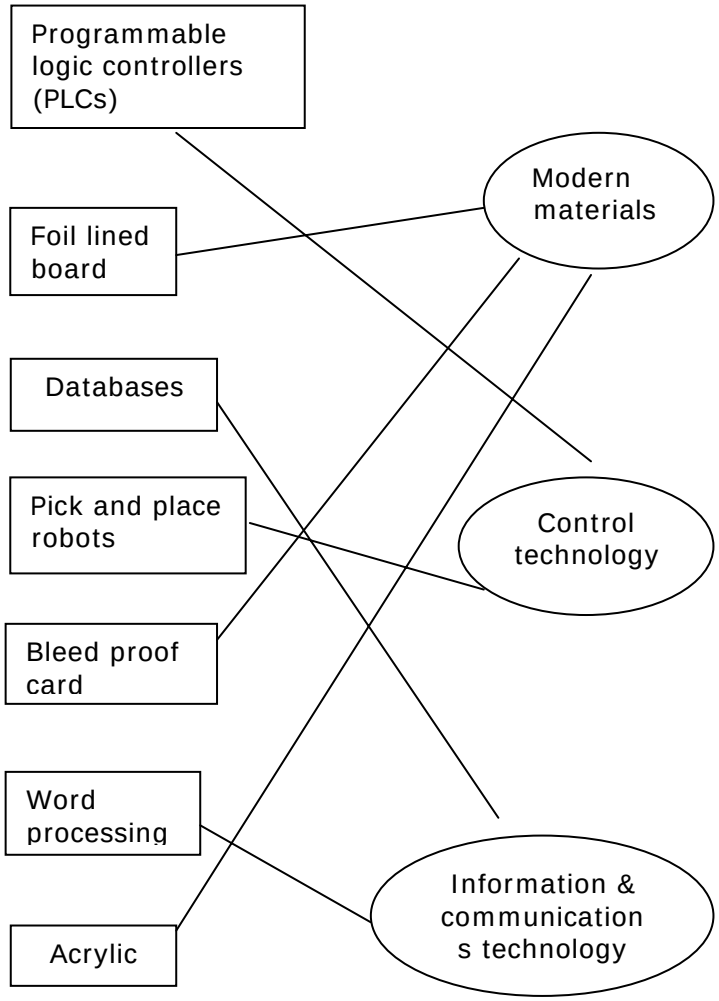
General Marking Guidance

- 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	Answer	Mark
1(a)	• Cinema ticket • Magazine *If 3 boxes or more crossed - no marks.* (2 x 1)	**(2)**
1(b)	• Lever arch file • Self-adhesive label *If 3 boxes or more crossed - no marks.* (2 x 1)	**(2)**
(Total 4 marks)		

Question	Answer	Mark
2(a)	Accept any of the following answers: • Stapler • Staple gun • long reach stapler • booklet stapler • heavy duty stapler *Do not accept 'staple' on its own* *Accept any recognisable spelling (phonetic) of the answer above.* (1 x 1)	
	Accept any of the following answers: • Self–adhesive tape • Adhesive tape • Sticky tape Accept any answer that makes reference to an appropriate trade name, e.g. • Sellotape • Scotch tape *Do not accept 'duct tape', 'masking tape', 'insulation tape' or 'tape' on its own* *Accept any recognisable spelling (phonetic) of the answer above.* (1 x 1)	**(2)**

Question	Answer	Mark
2(b)	An answer that makes reference to two of the following points: • Cutting paper • Accurate cutting/cutting to correct dimensions • Cutting in multiples • Cutting a straight edge Accept any other appropriate response e.g. Used to cut paper (1) to accurate dimensions (1) (2 x 1)	
	An answer that makes reference to two of the following points: • Drawing curved lines • Consistent drawing of curved lines • Can be bent to desired shape • For special lines • For drawing irregular shapes Accept any other appropriate response e.g. For drawing curved lines (1) in a consistent manner (1) (2 x 1)	**(4)**
(Total 6 marks)		

Question	Answer	Mark
3	Award 1 mark for each key term correctly linked to a key area. **Key Term** **Key Area**  *No mark awarded where 2 or more lines are drawn from a key term. Lines do not have to be straight but key term and key area must be linked.*	**7**
(Total 7 marks)		

Question	Answer	Mark
4(a)(i)	Appropriate **products** such as e.g. • Cereal packaging • Fast food packaging • Blister packaging • CD/DVD packaging • Forehead thermometer • Greeting card • Board game • Tetrapak • Cinema ticket • A brand name of any other specific brand product *Do not accept 'card'* *This list is not exhaustive; accept any product associated with the printing and publishing paper and board sector that contains a polymer including polymers printing materials.* (2 x 1)	**(2)**
4(a)(ii)	Accept any appropriate polymer suitable for the product named in Product 1 e.g. • Cereal packaging - LDPE • Fast food packaging - polystyrene • Blister packaging - LDPE • CD/DVD packaging – acrylic/ polycarbonate • Forehead thermometer - polystyrene • Greeting card - LDPE • Board game - HDPE • Tetrapak - HDPE • A brand name of any other specific brand product, for example 'Perspex' Do not accept rubber or any other elastomer or composite. Do not accept the term thermoplastic, thermosets or plastic. (1 x 1)	**(1)**
4(a)(iii)	One mark for identifying each reason, one mark for each explanation • Better functional characteristics (1) – weight (1) / size (1) / shelf life (1) / protection (1) / rigidity (1) • Better mechanical characteristics (1) –	

Question	Answer	Mark
	strength (1) / durability (1) • Better aesthetic characteristics (1) - surface finish (1 texture (1) / colour (1)/ appearance (1) • Meets requirements of intended markets (1) – appeal to target audience (1) • Better quality standards (1) – consistency (1) / reliability (1) • Reduced weight (1) – better strength to weight atio (1) • Reduced cost (1) – quicker / quicker to assemble (1) • Better manufacturing characteristics – low softening temperature (1) / easily formed (1) / suitable for standard processes (blow/injection moulding, vacuum forming) (1) • Any other appropriate functional / mechanical / aesthetic characteristic relating to the reason(1) e.g. fast food packaging – improves insulation characteristics (1) allowing items to be kept warm for longer (1) If answer in 4(a) (ii) is a general term 'thermoset', 'thermoplastic' or 'plastic' allow follow through up to 4 marks. If answer in 4 (a) (ii) is an incorrect material allow follow through up to 1 mark for each of the two answers. If there is no answer or the answer is a product in 4(a)(ii), no marks for 4(a)(iii). (2 x 1) (2 x 1)	**(4)**
4(b)(i)	• production planning (1) • materials supply & control (1) • processing / production (1) • assembly / finishing (1) • packaging / dispatch (1) (1 x 1)	**(1)**

Question	Answer	Mark
4(b)(ii)	One mark for identifying advantage One mark for why Appropriate advantage to the manufacturer e.g. **production planning, materials supply & control, processing / production, assembly / finishing, packaging / dispatch** **production planning** • speed (1) – faster than human application (1) • accuracy (1) – reliability of data (1) • integrates with other software systems (1) giving a more accurate plan (1) **materials supply & control** • buy best available materials (1) – use of internet (1) • waste control (1) – by monitoring processes and quality control of processes (1) **processing / production** Answer could relate to the application of CAM and control technology such as: • energy conservation (1) – by control of energy into process (1) • waste control (1) – by monitoring processes and quality control of processes (1) • competitiveness (1) – faster rates of production / application of CAM techniques (1) • product consistency (1) – by control of processes (1) • cost control (1) – by less waste / faulty parts (1) • efficiency (1) – by less waste / faulty parts (1) • speed (1) – faster than human application (1) **assembly / finishing** Answer could relate to the application of CAM and control technology such as: • energy conservation (1) – by control of energy into process (1) • waste control (1) – by monitoring processes and quality control of processes (1) • product consistency (1) – by control of processes (1) • cost control (1) – by less waste / faulty parts (1)	

Question	Answer	Mark
	• efficiency (1) – by less waste / faulty parts (1) • speed (1) – faster than human application (1) **packaging / dispatch** Answer could relate to the application of CAM and control technology such as:– • packaging consistency (1) – by control of processes (1) • cost control (1) – by less waste / faulty parts (1) • efficiency (1) – by less waste/faulty parts (1) • speed (1) – faster than human application (1) • energy conservation (1) – by control of energy into process (1) • waste control (1) – by monitoring processes and quality control of processes (1) *Low response (1) or two low responses (2) or detailed response (2)* (2x1)	**(2)**
(Total 10 marks)		

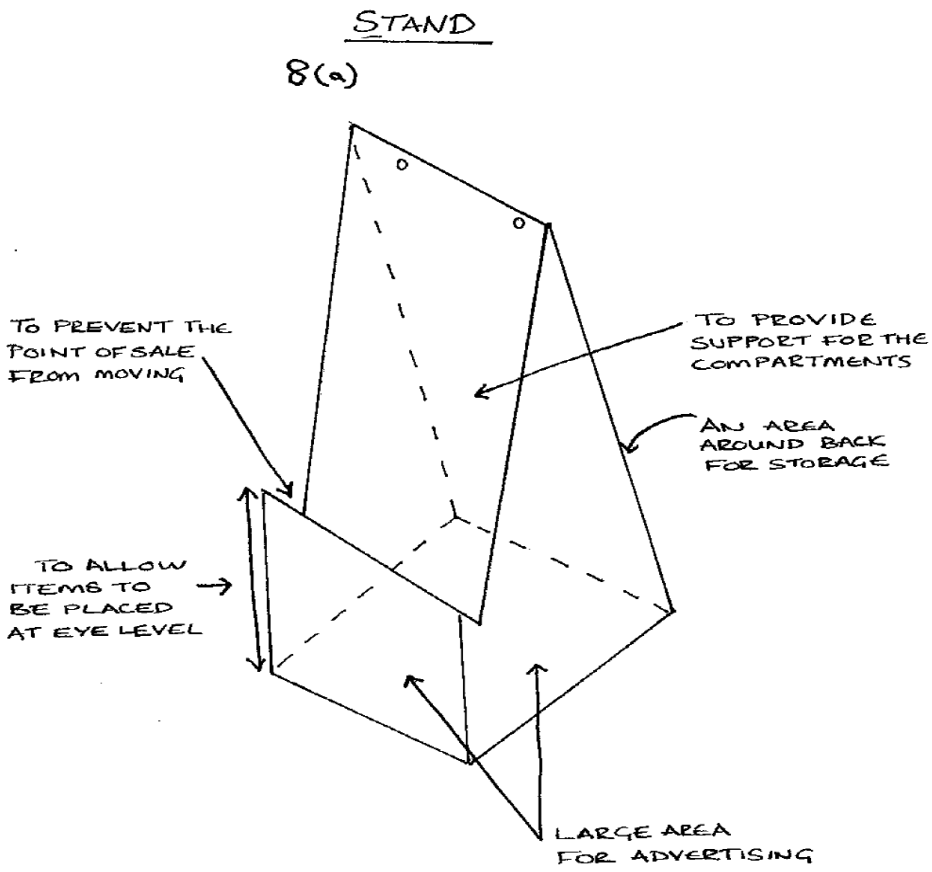
Question	Answer	Mark
5(a)	One mark for each identification One mark for each extension • Accurate drawings (1) – through entry of accurate data on sizes (co-ordinates) (1) • Quicker development time (1) – through simulation (1) • Easier to communicate, i.e. ICT (1) – for transfer of data (1) • Easy to make modifications/edit/change (1) – no paper hard copies (1) / computer data (1) • Lower initial development costs (1) – concurrent design processes (1) • Easier storage of data / information and retrieval (1) – interaction with databases (1) • Ability to convert from 2D to 3D (1) for modelling (1) *Do not accept repetitive responses* *Low response (1) or 2 low responses (1) e.g. its quicker and more accurate – only one mark or detailed response (2)* *Do not accept 'easier' without explanation* (2 x 1) (2 x 1) (2 x 1)	**(6)**
5(b)	One mark for reason One mark for extension • Reduced ordering times (1) – automatic monitoring (1) • Improved quality / accuracy (1) – control of processes (1) • Reduced wastage (1) – optimise production methods (1) • Improved efficiency (1) – faster / quicker throughput (1) • Better process control (1) – in process monitoring (1) • Reduced labour (1) – automated processes (1) • Lower costs (1) – reduced wastage / faster / continuous production (1) • Faster processes (1) – less manual input (1) Safer/cleaner (1) – more suitable for hazardous environment (1) *Do not accept 'easier' or 'faster' / 'quicker' without explanation* *Low response (1) or two low responses (2) or detailed response (2)* (2 x 1)	**(2)**
(Total 8 marks)		

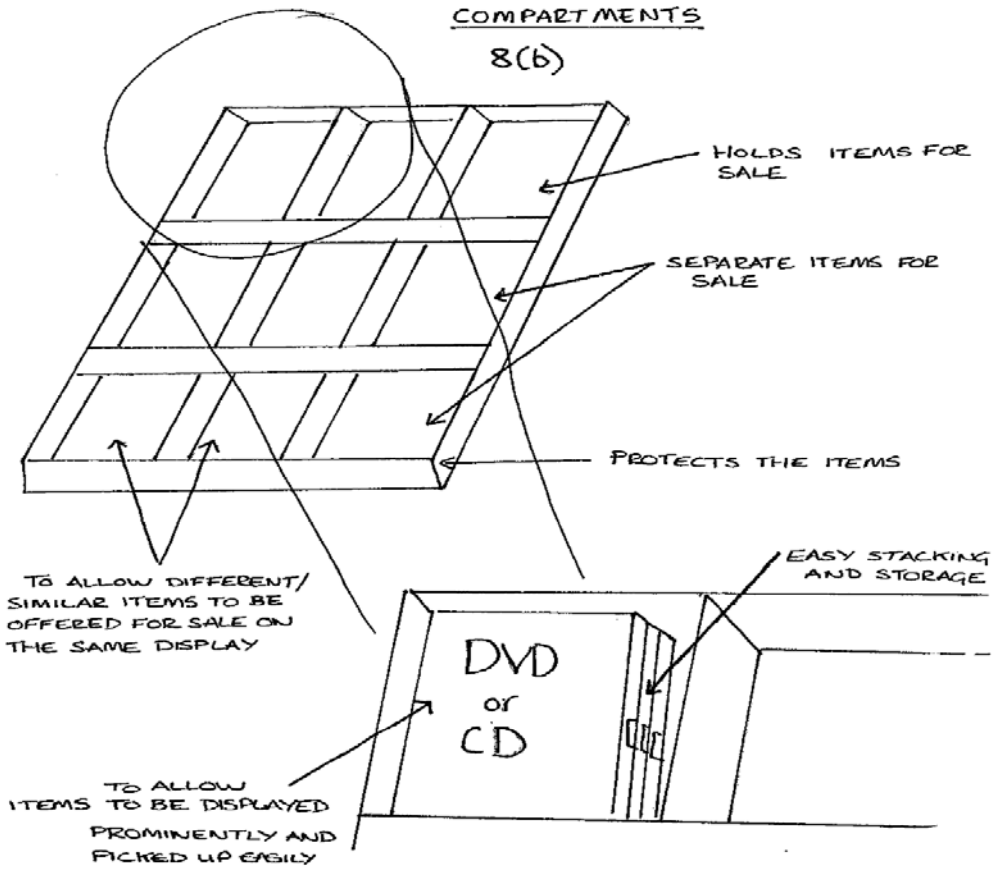
Question	Answer	Mark
6(a) (i)	• A method of exchanging digital messages (1) across the Internet (1) • A protocol (1) for sending, receiving and storing messages (1) • The exchange of computer-stored messages (1) by telecommunications (1) • A quick method (1) which allows functions such as attachments / read receipts (1) *Accept any other appropriate response* *Low response (1) or two low responses (2) or detailed response (2)* (2 x 1) (1 x 2)	**(2)**
6(a)(ii)	1 mark for identification 1 mark for why • Messages go to Junk mail (1), issues with accessing the message (1) • Insecure (1), loss of confidential data (1) • Mail boxes can be full (1), mail not received (1) • Inefficient (1) intended recipient doesn't always receive the message (1) • Hard to translate (1) could receive incorrect meaning (1) • Restriction on size of message (1), unable to send large files (1) • Recipient doesn't always receive the message immediately (1), delay in access to computer software (1) *Do not accept any answer that is not directly related to email or lower costs.* *Low response (1) or two low responses (2) or detailed response (2)* *Do not accept repetitive responses* (2 x 1) (1 x 2)	**(2)**
6 (b)(i)	• Face to face meeting/meeting (1) • Telephone (1) • Conference (1) *Accept any appropriate response* (1 x 1)	**(1)**

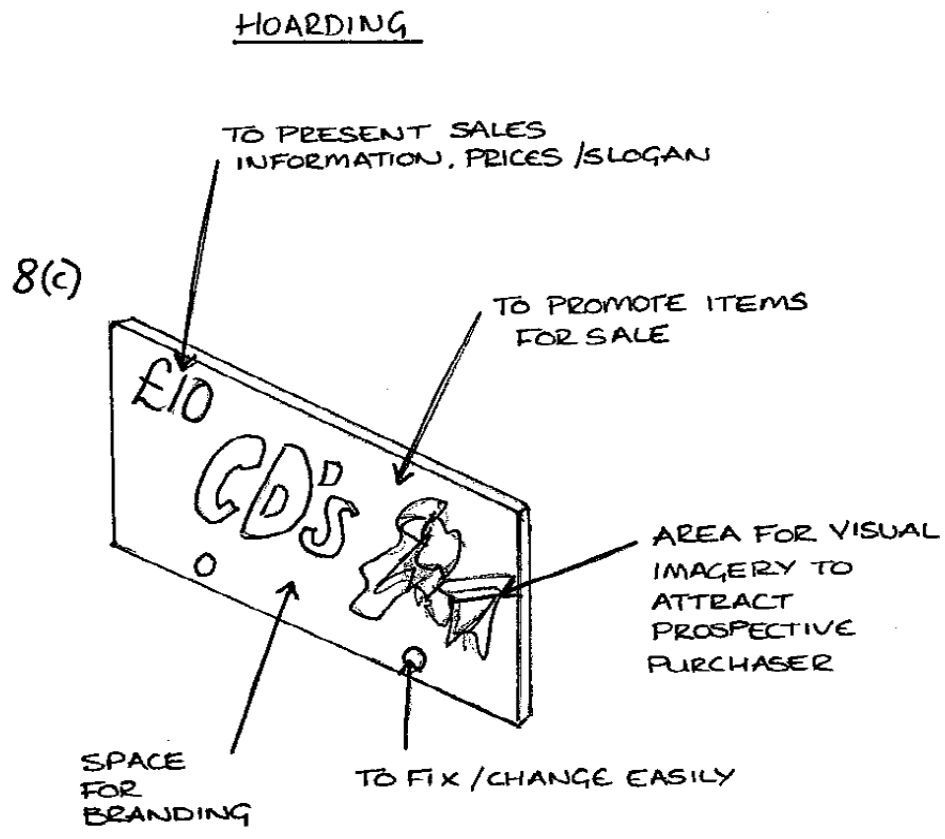
Question	Answer	Mark
6(b)(ii)	One mark for each identification One mark for each extension • Convenience (1) – don't have to travel to venue (1) • Cost savings (1) – travel costs reduced (1) • Time savings (1) – reduction in unproductive time (1) • 'Work environment' (1) – all material / information at hand (1) • Access to outside experts (1) – regular meetings to compare data etc (1) • Staff development (1) – encourages employees to keep up to date with modern technology (1) • Can be arranged at short notice (1) – avoids lengthy planning (1) • Can be recorded (1) – played back to remind/recall information (1) *Accept any appropriate response* *Do not accept repetitive responses* *Low response (1) or two low responses (2) or detailed response (2)* (2 x 1) (1 x 2)	**(4)**
(Total 9 marks)		

Question	Answer	Mark
7(a)	One mark for benefit One mark for extension • Accurate information (1) – updated regularly (1) • Detailed information (1) – high storage space (1) • Fast access to data (1) – search / sort / query (1) • Improved planning (1) – short lead times (1) • Forecasting (1) – collects volumes of data / modelling (1) • Cost of control (1) – better scheduling (1) • Waste control (1) – process monitoring / control (1) • Reduced stock holding (1) – tracks trends / JIT (Just-In-Time) • Training records (1) – skills monitoring (1) • Wage information (1) – ease of cost monitoring (1) *Accept any appropriate response* (1 x 2)	**(2)**
7(b)	One mark for each benefit One mark for each extension • Accurate orders (1) – updated regularly (1) • Detailed stock movement information (1) – efficient storage space (1) • Fast access to data (1) – search/sort/query (1) • Effective goods tracking (1) – barcoding/EPOS (1) • Fast distribution (1) – Fast delivery details • Improved stock control (1) – process monitoring/control (1) • Regulating drivers' workload (1) – to meet delivery demand/schedules (1) • Improved stock security (1) – less theft (1) • Less stock obsolescence (1) - efficient stock turnover (1) *Accept any other appropriate response* (1 x 2) (1 x 2)	**(4)**
(Total 6 marks)		

Section B

Question	Answer	Mark
8(a)	An answer that makes reference to any of the following points: • To allow the item/s for sale to be placed at eye level / in a ergonomic manner (1) • To provide support for the compartments (1) • To provide rigidity / stability to the point of sale display (1) • To provide an area for storage (1) • To provide a large surface area for advertising imagery (1) • To prevent the point of sale display from moving / sliding (1) Accept any other appropriate response *Answer must contain both notes and sketches.* *Max **two** marks if only notes or only sketches used.*  (3 x 1)	**(3)**

Question	Answer	Mark
8(b)	An answer that makes reference to any of the following points: • To hold the item/s for sale (1) • To separate the item/s for sale (1) • To enable easier stacking / storage of the item/s for sale (1) • To protect the item/s for sale (1) • To allow different / similar items to be offered for sale on the same display (1) • To allow the item/s for sale to be displayed prominently (1) • To allow the prospective purchaser to pick up the item/s for sale easily (1) Accept any other appropriate response *Answer must contain both notes and sketches.* *Max **two** marks if only notes or only sketches used.*  (3 x 1)	**(3)**

Question	Answer	Mark
8(c)	An answer that makes reference to any of the following points: • To promote items/s for sale (1) • To provide a space for branding (1) • To provide a large area for visual imagery to attract the prospective purchaser (1) • To enable the promotion / branding / imagery to be seen from a distance (1) • To present sales information about item/s – price/s (1) / tag line or slogan (1) / key selling points of item/s (1) • To be able to be fixed / changed easily (1) Accept any other appropriate response *Answer must contain both notes and sketches.* *Max **two** marks if only notes or only sketches used.*  (3 x 1)	**(3)**
(Total 9 marks)		

Question	Answer	Mark
9(a)(i) 1	• Production planning • Planning • Planning for production *Do not accept 'production' on its own* (1 x 1)	
9 (a) (i) 2	• Production and processing • Production • Processing (1 x 1)	**(2)**
9(a)(ii)	• Design • Stage 1/stage one • One/1 • First/first stage/1st/1st stage (1 x 1)	**(1)**
9(b)(i)	Appropriate descriptions including three of the following points (statements must be applicable to the temporary point of sale display): • Gathering consumer/distributor/retailer opinion (1) • Calculating product costs (1) • Pricing for the target market (1) • Developing a marketing plan (1) • Using market research (1) • Developing a competitive edge (1) • Advertising through distributors (1) • Using trade/electronic (internet, e-mail) media (1) • Promoting the temporary point of sale display (1) • Carrying out questionnaires/surveys (1) • Contributes to sales activities (1) e.g. The stage where the manufacturer of point of sale displays would carry out market research (1) with consumers/distributors/retailers (1), to find out what they think of the display (1), so a suitable product can be developed (1), meaning retailers will want to buy it and place it in their stores (1). Accept any other appropriate response *Up to 3 marks* *1 x 1 mark low response, 3 x 1 mark 3 low responses or up to 3 for detailed response* (3 x 1)	**(3)**

Question	Answer	Mark
9(b)(ii)	Appropriate descriptions including three of the following points (statements must be applicable to the temporary point of sale display): • Availability of suitable materials (1) • Purchase of suitable materials (1) • Sourcing of bought-in assembly componentry (1) • Purchasing of bought-in assembly componentry (1) • Good inwards inspection/testing (1) • Quality control checks (1) • Coding checks (1) • Storage of materials (1) e.g. The stage where the manufacturer would use a database (1) to source suitable materials (1) and assembly componentry (1) for the point of sale display. These material could then be purchased (1) and inspected (1) on arrival at th company. *Accept any other appropriate response* *Up to 3 marks* *1 x 1 mark low response, 3 x 1 mark 3 low responses or up to 3 for detailed response* (3 x 1)	**(3)**
(Total 9 marks)		

Question	Answer	Mark
10(a)	• Corrugated plastic / corriboard / polypropylene corrugated board / a brand name of a specific product, i.e. corraflute or corriflute • Corrugated cardboard • Foam core / foamboard / foam core board *Accept any other appropriate response* *Do not accept 'card', 'board', 'cardboard' or 'polymer' on its own* (1 x 1)	**(1)**
10(b)(i)	Any three of the following: • Varnishing • Embossing • Die cutting • Guillotine cutting • Shearing • Scoring /creasing • Grooving /notching • Folding • Cutting • Heating • Gluing • Laminating *Accept any other appropriate response* *Do not accept 'printing'* *1 mark per response up to 3* *Accept any recognisable spelling (phonetic) of the answers above* (3x1)	**(3)**

Question	Answer	Mark
10(b)(ii)	An explanation that makes reference to three of the following points: • quick method / fast production rate • excellent print quality • prints four or more colours (CMYK) on a range of flat materials • aluminium printing plates are durable and can be replaced infrequently • unit costs are low for medium to high volume print runs • highly automated process • reliable process • minimal waste • not labour intensive • can be mass produced easily • products have consistent quality • can print on both sides e.g. a highly automated process (1) allowing components to be mass produced easily(1) with consistent quality (1) and minimal waste (1) *Accept any other appropriate response* *1 x 1 mark low response, or up to 3 marks for detailed response* (3 x 1) (1 x 3)	**(3)**
10(c)	An explanation that makes reference to three of the following points: • Aesthetics – high quality surface finishes, printing effects, colours textures etc • Efficient and cost-effective mass production techniques – low unit costs, increased profit, larger product range, increased availability etc • Functionality – weight, size, improved stability / rigidity, easier to assemble, easy to clean, ability to store more items etc • Mechanical characteristics – increased toughness, strength, durability etc • Environmental characteristics – biodegradability/ degradability, easier to disassemble etc e.g. Modern materials have developed and allowed manufacturers to improve product aesthetics (1) product functionality (1) and product durability (1)	**(3)**

Question	Answer	Mark
	Accept any other appropriate response *Up to 3 x 1 mark for low responses or up to 3 marks for a detailed response* (3 x 1) (1 x 3)	
(Total 10 marks)		

Question	Answer	Mark
11(a)(i)	One mark for identifying each QC procedure One mark for each extension • Checking for physical damage on point of sale displays or p (1) – by visual inspection (1) • Packaging weight checks (1) – using packaging scales (1) • Packaging size checks (1) – by direct measurement or optical sensors (1) • Packaging security checks (1) – by optical scanning (1) • Checking quantities / batch size (1) – through bar coding (1) • Tracking of packaging (1) – by RFID (1) *Do not accept repetitive responses* *Must be within packaging and dispatch stage* *Low response (1) or two low responses (2) or detailed response (2) per example* (2 x 1) (2 x 1) (1 x 2) (1 x 2)	**(4)**
11(a)(ii)	One mark for identifying each automation used One mark for each extension • PLCs (1) to control processes in packaging and dispatch (1) • Automated wrapping of point of sale display packaging (1) • Automated labelling of point of sale display packaging (1) • Automated coding of point of sale displays (1) to allow automated order picking (1) • Use of conveyor systems (1) to move point of sale display packaging from one packaging and dispatch process to the next (1) • Embedded computers (1) to perform dedicated functions (1) • Remotely operated vehicles (1) moving point of sale display packaging to next stage / storage / dispatch (1) • Pick and place robots (1) moving point of sale display packaging to next stage / storage / dispatch (1) • Automated counting/weighing (1) carton erector (1) *Any other appropriate response* *Do not accept repetitive responses* *Do not accept 'CIM' or 'CNC' without links to automation* *Must relate to the packaging and dispatch stage*	**(4)**

Question	Answer	Mark
	Low response (1) or two low responses (2) or detailed response (2) per example (2 x 1) (2 x 1) (1 x 2) (1 x 2)	
11(b)	One mark for identifying advantage to the manufacturer One mark for how • Reduced customer complaints (1) – accurate products (1) • Control of costs (1) – cheaper product / more profit (1) • Avoids further processing of faulty product (1) – early detection of rejects (1) • Increased sales (1) – consistent product / lower prices (1) • User confidence (1) – consistent product / less returns (1) • Reduced waste (1) – control of manufacturing processes (1) • Made to same quality standard (1) – increased customer satisfaction/company reputation (1) • Reliable product (1) – monitoring standards / testing (1) • Detection of broken machinery (1) – less damaged product (1) • Increased output/productivity (1) - increased profit (1) • Less expensive to operate (1) – fewer manual checks (1) *Any other appropriate response* *Low response (1) or two low responses (2) or detailed response (2)* (2 x 1) (1 x 2)	**(2)**
(Total 10 marks)		

Question	Answer	Mark
12(a)(i)	One mark for impact, 2 marks for extension An explanation that makes reference to three of the following points: • Smaller in size (1) • Increased competition for fewer jobs (1) • Higher level of skills (1) • Work patterns – shifts (1) • Need to retrain (1) • Better educated (1) • Higher level of development skills required (1) • Less employment for unskilled (1) • Updating and training often required (1) • Team working more important(1) • Improved promotion prospects (1) • Reduced income/standard of living (1) • Cleaner workplace (1) • Safer workplace (1) • Less physically demanding tasks (1) • Job insecurity (1) e.g. Employees would need to retrain (1) and there would be increased competition for jobs (1) and there would be less employment opportunities for unskilled people(1) *Accept any other appropriate response* *Up to three low responses (3), detailed response (3)* *(3 x 1)* *(1 x 3)*	**(3)**
12(a)(ii)	One mark for impact, 2 marks for extension An explanation that makes reference to three of the following points: Positive answers • Reduced carbon emissions (1) • Operational efficiencies – less fossil fuels (1) • Reduced waste – landfill (1) • Healthier local environment(1) • Improved quality – less waste(1) Negative answers • Distribution - network increased (extra fuel) (1) • Increased consumption of raw materials (1) • Over production(1)	**(3)**

Question	Answer	Mark
	• Increased energy consumption(1) • Increased pollution (1) Accept combinations of the above that are positive or negative. e.g. Changes in the working environment could lead to reduced waste going into landfill (1) and would create a healthier local environment (1). However over production (1) could result in increased energy consumption (1). Up to 3 marks Accept any other appropriate response Up to three low responses (3), detailed response (3) *(3 x 1)* *(1 x 3)*	
12(b)(i)	Any two of the following: • Analysing market research data in database (1) • Costing the resource requirements for point of sale displays in spreadsheets (1) • Pricing products in spreadsheets (1) • Plan marketing campaign using DTP software (1) • Use of internet / website / social networking for marketing purposes (1) • Use of e-mails for marketing purposes (1) • Video conferencing to discuss marketing + research proposals (1) • Assists with profit analysis/predictions (1) • Assists with 'pitching'/powerpoint presentations (1) • Provides legal information (1) *Any other appropriate response* *1 mark per response up to 2 marks* *Do not accept generic responses with no link to marketing or a marketing context.* (1 x 1) (1 x 1)	**(2)**
12(b)(ii)	One mark for identifying the use, one mark for how: • To communicate with client/customer (1) via e-mail etc (1) • Use of websites / internet (1) to investigate existing designs (1) • To draft possible solutions (1) and then model them (1) • To produce final design drawings (1) and convert from 2D to 3D (1)	**(2)**

Question	Answer	Mark
	• Use of websites / internet (1) to source materials / supplies / consumables (1) • Costing the resource requirements for point of sale displays (1) in spreadsheets (1) • Easy storage and retrieval of data / information (1) through interaction with databases *Any other appropriate response* *Low response or two low responses (1), detailed response (2)* (2 x 1)	
12(b)(iii)	One mark for identifying the benefit, one mark for how: • Establishes a market database (1) shared with the manufacturer (1) • Has accurate costing information (1) shared with the manufacturer (1) / that can be manipulated easily (1) • Gives distributors the opportunity to match the retailer needs (1) with the production of point of sale dis • Gives distributors sales data fast (1) possibly leading increased sales/profits (1) • Accurate sales data (1) leads to accurate pricing (1) • Advertising/selling online (1) leads to wider market (1) • Assists with stock rotation (1) leading to less waste (1) • Navigation software (1) planning routes to reduce costs (1) • Efficient tracking/monitoring (1) leads to fewer product losses (1) *Low response or two low responses (1), detailed response (2)* (2 x 1)	**(2)**
(Total 12 marks)		

Question	Answer	Mark
13	An explanation that makes reference to four of the following points: • Guards / sensors on machinery (1) so machinery can shut down automatically (1) • Automated machinery (1) can operate in hazardous environments (1) • Less human input at the production stage (1) reduces errors (1) and results in fewer accidents (1) • Fewer problems with fatigue (1) enables continuous processing (1) • Sensors can monitor safety parameters safe zones (1) and trigger audio/visual alarms (1) • Cleaner environment (1) air quality improved (1) e.g. Control technology is now used to prevent machines from starting when guards are not in place (1), and to shut down machines when something goes wrong (1), which means that accidents are less likely to happen (1) and therefore people won't get hurt (1). *Any other appropriate response* *Up to 4 marks* *Up to 4 low responses (4) or detailed response (up to 4)* (4 x 1) (1 x 4)	**(4)**
(Total 4 marks)		

Question	Answer	Mark
14 **QWC i, ii, iii**	**Indicative content** Discussion may address the following issues: • *Issue -reduce energy consumption* ▪ The point of sale display could be made from locally sourced materials • *Development* ▪ Less need for transportation over long distances ▪ Review of distribution networks and frequencies • *Issue - reduce energy consumption* ▪ The point of sale display could be manufactured using less / recycled materials and other materials / fittings that need less processing • *Development* ▪ Using recycled materials reduces the need for energy intensive primary processing ▪ The point of sale display could be made using materials that are strong enough to be assembled without extra knock-down fittings • *Issue - reduce energy consumption* ▪ Use of modern processes / machinery and equipment / technology enabling more energy efficient production • *Development* ▪ Minimise high temperature operations ▪ Contain heated air ▪ Use of automation and control systems ▪ Retrofit existing machinery rather than buy new • *Issue - reduce energy consumption* ▪ Use of sustainable sources of energy and producing as little waste as possible when manufacturing the point of sale display • *Development* ▪ Generating own energy through solar / wind power ▪ Using combined heat and power / energy recovery systems ▪ Minimising overproduction ▪ Lean manufacturing *Any other appropriate response* (6 x 1)	**(6)**
(Total 6 marks)		

Level	Mark	Descriptor
	0	No material deserving of reward
1	**1-2**	The learner identifies at least two methods for reducing energy consumption or gives a brief description of one method. The learner uses everyday language and the response lacks clarity and organisation. Spelling, punctuation and the rules of grammar are used with limited accuracy.
2	**3-4**	The learner gives a brief description of at least two methods for reducing energy consumption or a detailed description of one method. The learner uses some technological / manufacturing / environmental terms and shows some focus and organisation. Spelling, punctuation and the rules of grammar are used with some accuracy. Some spelling errors may still be found.
3	**5-6**	The learner gives a detailed explanation of at least two methods for reducing energy consumption. The learner uses a range of appropriate technological / manufacturing / environmental terms and shows good focus and organisation. Spelling, punctuation and the rules of grammar are used with considerable accuracy.
(Total 6 marks)		

Total Marks for Section B	**60**
Total Marks for the whole paper for Section A & B	**110**

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