

# Mark Scheme

## Sample Assessment Material

Principal Learning

### Manufacturing and Product Design (MP302/01)

## 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)	<p>Description to include reference to <b>two</b> of the following points:</p> <ul style="list-style-type: none"> <li>• Can be postal or electronic</li> <li>• Can be tailor made to ask specific questions</li> <li>• Sent out to target groups</li> <li>• Can be computer analysed</li> <li>• Will identify specific product needs</li> <li>• Other suitable point</li> </ul> <p>Award 1 mark per point up to a maximum of 2 marks.</p> <p>For example It can include specific questions (1) to identify a special feature of a proposed product (1).</p>	(2)

Question Number	Answer	Mark
1(b)	<p>Description to include reference to <b>two</b> of the following points:</p> <ul style="list-style-type: none"> <li>• Can identify whether an existing product needs altering</li> <li>• Can show developing market movements</li> <li>• Helps establish competitor involvement in the market</li> <li>• Indicates total market demand</li> <li>• Other suitable point</li> </ul> <p>Award 1 mark per point up to a maximum of 2 marks.</p> <p>For example They can show market trends (1) and help identify a total market demand (1).</p>	(2)

Question Number	Answer	Mark
1(c)	<p>People are recruited to serve on focus group (1) They fill out questionnaires (1) that identify their demographic group (1) Age, lifestyle, attitudes, politics etc (1) are used to categorise members of group into segments of society(1) The focus groups are shown the product (1) and are questioned on their reaction to it. (1)</p>	(2)

Question Number	Answer	Mark
1(d)	<p>Make reference to one (or a combination of two) of the following points:</p> <ul style="list-style-type: none"> <li>• Parallel development</li> <li>• Design department fully aware of market potential</li> <li>• Team approach to problem solving</li> <li>• Marketing and sales aware of technical issues which may delay launch of product</li> <li>• All buy into the design solution</li> <li>• Marketing can carry out trials with the new product eg beta testing</li> <li>• More effective utilisation of labour</li> <li>• Other suitable point</li> </ul> <p>Award up to 2 marks for each description</p> <p>For example  By adopting a team approach to problem solving (1) people can bounce ideas off each other and will have ownership (1) of the development process.</p> <p>or</p> <p>The marketing department will carry out field trials with the new product eg beta testing with existing customers(1) and feedback to product development so that possible design modifications can be made (1).</p>	(2)

Question Number	Answer	Mark
2(a)	<p>Description of <b>one</b> method of capturing market research data</p> <p>1 mark for method and 1 mark for how it works:</p> <ul style="list-style-type: none"> <li>• Profiling customers (1) by looking at sales data (1) eg tracking buying habits from loyalty card use (1) at points of sale (1)</li> <li>• Looking at customers profiles (1) giving feedback on existing products eg complaints (1)</li> <li>• Analysing third party research data (1) relating to market predictions for new products (1) eg the age/person profile of people buying hitech sports equipment</li> <li>• Analysing the product/service preferences of people (1) by tracking their online buying transactions (1) eg encouraging people to set up 'favourites' profiles</li> <li>• Any other appropriate answer</li> </ul>	(2)

Question Number	Answer	Mark
2(b)	<p>Description of <b>one</b> technique used to analyse research data</p> <p>1 mark for technique and 1 mark for how it works:</p> <ul style="list-style-type: none"> <li>• Presenting trends (1) in graphical form/on a computer/as a spreadsheet (1)</li> <li>• Comparing (1) like for like sales (1)</li> <li>• Spreadsheet modelling eg "what if" scenario (1) against know norms (1)</li> <li>• Discussion/brainstorming ideas (1) during a product development meeting (1)</li> <li>• Any other appropriate answer</li> </ul>	(2)

Question Number	Answer	Mark
2(c)	<p>Pictograms (1)</p> <p>Pie charts (1)</p> <p>Simple bar charts (1)</p> <p>Component bar charts (1)</p> <p>Percentage component bar charts (1)</p> <p>Compound bar charts (1)</p> <p>Histograms (1)</p> <p>Explanation (1)</p> <p>Frequency Polygons (1)</p> <p>Frequency Curves (1)</p> <p>Cumulative Frequency Curves (Ogives) (1)</p>	(2)

Question Number	Answer	Mark
3(a)	<ul style="list-style-type: none"> <li>• Use of closed questions which are focused and carry no bias</li> <li>• MR carried out by a specialist company</li> <li>• Client group is of a sufficient size and is relevant</li> <li>• Links to sales records</li> <li>• Has been carried out recently</li> <li>• Use an existing customer database</li> <li>• Other suitable point</li> </ul> <p>Award 1 mark per point up to a maximum of 2 marks.</p> <p>For example A business which manufactures high quality/value audio equipment would use a specialist MR company (1) to gather data from a client group (1).</p> <p>or</p> <p>Data from a client group (1) is used to identify information from sales records (1) held by shops that sell their products.</p>	(2)

Question Number	Answer	Mark
3(b)	<p>Business functions will be triggered after a company has carried out market research with its customers. For example:</p> <ul style="list-style-type: none"> <li>• Having established a requirement for a new product a design team (1) will carry out a feasibility study (1)</li> <li>• Manufacturing department (1) review and assess its production capability</li> <li>• Design department (1) produce prototypes to bring a new product to the market (1)</li> <li>• Marketing department (1) will investigate the full market potential (1)</li> <li>• Customer support (1) will assess whether there are enough resources (1) to support a new product when it hits the marketplace eg service technicians (1)</li> <li>• Any other appropriate answer</li> </ul> <p>Award 1 mark for department and 1 mark for appropriate activity</p>	(2)

Question Number	Answer	Mark
4(a)	<ul style="list-style-type: none"> <li>• Customers will feel that they can trust the business and not be 'ripped off'</li> <li>• Increased sales because customers with a conscience will buy the products</li> <li>• Less exposure to criticism of its business practices</li> <li>• Can feature in advertising campaigns</li> <li>• Any other appropriate answer</li> </ul>	(3)

Question Number	Answer	Mark
4(b)(i)	<p>Responsibilities regarding the environment.</p> <ul style="list-style-type: none"> <li>• Producing products which are fully recyclable</li> <li>• Using manufacturing processes which have reduced carbon footprints</li> <li>• Reducing the amount of packaging used with finished products</li> <li>• Packaging to be biodegradable</li> <li>• More sophisticated recycling of waste materials</li> <li>• Designing products which use less non-renewable energy when in service</li> <li>• Reducing the distances that raw materials have to travel eg buying locally</li> <li>• Any other appropriate answer</li> </ul>	(3)

Question Number	Answer	Mark
4(b)(ii)	<p>Responsibilities regarding disability discrimination.</p> <ul style="list-style-type: none"> <li>• Producing products which comply with the Disability Discrimination Act (DDA)</li> <li>• Recruitment, training and employment strategies that comply with the DDA</li> <li>• Adapting working conditions in order to be DDA compliant</li> <li>• Equal opportunity recruitment policies</li> <li>• Any other appropriate answer</li> </ul>	(3)

Question Number	Answer	Mark
4(b)(iii)	<p>Responsibilities regarding non-exploitation of labour.</p> <ul style="list-style-type: none"><li>• Setting wage rates which are fair and adequately reflect workers' contributions to the business</li><li>• Providing working conditions which meet H&amp;S and other defined standards</li><li>• Not outsourcing to manufacturers in countries which exploit their labour forces so that manufacturing costs are driven down</li><li>• If manufacturing is outsourced then working conditions are monitored by the parent company</li><li>• Any other appropriate answer</li></ul>	(3)

Question Number	Answer	Mark
5(a)	<ul style="list-style-type: none"> <li>• If a customer accepts compensation from a business because a product or service is not fit for purpose they can still invoke procedures (1) laid out in legislation relating to the sale of goods and services (1) eg the Sale of Goods Act 1979 (1)</li> <li>• Buyer has recourse to statutory law (1)</li> <li>• The seller cannot 'buy them off' by offering inducements (1) such as money back and a replacement (1) product</li> <li>• Any other appropriate answer</li> </ul>	(3)

Question Number	Answer	Mark
5(b)	<p>Any goods sold should be satisfactory in quality (1)</p> <p>Any goods sold should do the job intended (1)</p> <p>Should do everything that it says on the box (1)</p> <p>Should do everything the salesman told the customer it would do. (1)</p>	(2)

Question Number	Answer	Mark
5(c)(i)	<ul style="list-style-type: none"> <li>• Sale of Goods Act 1979</li> <li>• Sale and Supply of Goods to Consumers Regulations 2002</li> <li>• Safety standards- Electro-Magnetic Compliance (EMC) and European conformity (CE marking)</li> </ul> <p>Any other appropriate answer</p>	(3)

Question Number	Answer	Mark
5(c)(ii)	<p>An explanation which makes reference to the following stages:</p> <ul style="list-style-type: none"> <li>• The customer should prepare a <b>detailed account</b> of the problem and steps taken to resolve it- discussions with the retailer, telephone conversations, correspondence</li> <li>• The onus is on the <b>retailer to solve</b> the problem</li> <li>• The customer does not have to prove fault as the product is less than 6 months old</li> <li>• As the store is not able to resolve the problem the customer should contact head office</li> <li>• If still no success the next step is to involve trading standards</li> <li>• Using the services of an ombudsman eg the FSA if there is a dispute over reclaiming payments made to the retailer</li> <li>• Customer could instigate small claims court action</li> <li>• Complainant should keep a detailed record of conversations, correspondence etc.</li> </ul> <p>1 mark per stage included up to a maximum of 4</p>	(4)

Question Number	Answer	Mark
6(a)	<ul style="list-style-type: none"> <li>• A satisfied customer is more likely to come back and buy again- brand loyalty, repeat business</li> <li>• A satisfied customer will tell their friends and this can generate new business through word of mouth</li> <li>• Meeting customer service standards will give the business a good rating in independent surveys, for example 'Which' reports</li> <li>• Survey results can be used positively in advertising campaigns</li> <li>• Providing the customer with ongoing support after the sale maintains a good relationship, for example servicing and repair</li> <li>• Paying suppliers (customers) on time to ensure smooth flow of materials</li> <li>• Any other appropriate answer</li> </ul>	(3)

Question Number	Answer	Mark
6(b)	<p>1 mark for the feature and 1 mark for why it is important, with alternatives, and extra marks for developing answers further:</p> <ul style="list-style-type: none"> <li>• Customer service staff empowered to make decisions (1) direct action (1)</li> <li>• Set time frames for resolving customer issues (1) people get annoyed if they are kept hanging around (1) and a timescale allows them to make contingency plans (1)</li> <li>• An easily identifiable point of contact in the department (1) provides one-on-one support (1)</li> <li>• Free or local rate telephone calls to a non-outsourced call centre (1) customers feel more supported talking directly to the business which made the sale (1)</li> <li>• Product issues fed back to the design and manufacturing departments (1) future modifications to designs (1)</li> <li>• A stated company after sales support policy (1) so that customers and employees are up to speed with how it operates (1)</li> </ul> <p>Award up to 2 marks per feature</p>	(6)

Question Number	Answer	Mark
7(a)	<p>Some degree of pre-dispositional commitment toward a brand (1)  Customers' perceived value of replacements (1)  Brand trust/trust in existing manufacturer (1)  Customers' satisfaction with present mobile phone (1)  Repeat purchase behaviour (1)  Commitment (1)</p> <p>Any three of these elements of brand loyalty linked to a mobile phone</p>	(3)

Question Number	Answer	Mark
7(b)	<p>1 mark for element and 1 mark for why it is significant.</p> <ul style="list-style-type: none"> <li>• Technical superiority (1) over its competitors (1)</li> <li>• Reliability and performance (1) claims backed up by success with previous products (1)</li> <li>• A 'must have' item (1) meeting the demands of fashion (1)</li> <li>• Third party promotion, for example featuring as a news item in the media (1) 'free' advertising (1)</li> <li>• Sports sponsorship (1) focuses on a specific target audience (1)</li> <li>• Cash back incentives (1) ties consumer into a contract (1)</li> <li>• Any other appropriate answer</li> </ul> <p>Award up to 2 marks for each point covered.</p>	(4)

Question Number	Answer	Mark
8(a)(i)	<p>Description up to 3 marks for how. No marks for identification of suitable product.</p> <p>Products such as:</p> <ul style="list-style-type: none"> <li>• Dyson® vacuum cleaner (0) very technically advanced compared to other types (1) and looks exciting (1)</li> <li>• eBay® (1) online shopping is a major growth industry (1), as domestic travel costs increase more people will conduct their business from home (1)</li> <li>• iPod® music downloading is a huge growth industry and people want to store and access this data easily (1) in a portable format for use on the move (1) with equipment which makes a fashion statement (1)</li> <li>• Nintendo® Wii fitness and brain training are currently high profile (1). The games market (in general) is seeing growth (1) compared to other leisure products (1) such as music</li> </ul> <p>Any other appropriate product or service</p>	(3)

Question Number	Answer	Mark
8(a)(ii)	<p>Description up to 3 marks for how. No marks for identification of suitable product.</p> <ul style="list-style-type: none"> <li>• Toyota Prius® fuel efficient(1) and more environmentally friendly (1) than mainstream vehicles (1)</li> <li>• Google® the change in people's habits about where to source data (1) eg information on demand (1)</li> <li>• iPod® the user can build up their own portable (1) library of music tracks and photographs (1). They gain access to it whenever they like and can link to other equipment such as an amplifier and speaker system (1)</li> <li>• Boeing 747® provides access to 'low cost' long distance travel for the general public (1), airlines have lower operating costs (1), has a higher passenger comfort level than narrow bodied aeroplanes (1)</li> </ul> <p>Any other appropriate product or service</p>	(3)

Question Number	Answer	Mark
8(b)	<ul style="list-style-type: none"><li>• Convince the audience of the technical merit of the product</li><li>• Give a working demonstration of the product</li><li>• Explain its superiority over a similar product made by a competitor</li><li>• Promote the product's 'green credentials'</li><li>• Present data which backs up the claim that there is a market for the product</li><li>• Be 'on top of the numbers' ie projected sales, revenue from sales, return on investment</li><li>• Present evidence of customer orders</li><li>• Confirm entitlement to Intellectual Property (IP) rights eg the product has been patented</li><li>• Any other appropriate answer</li></ul> <p>Award 1 mark per point outlined</p>	(2)

Question Number	Answer	Mark
9(a)	<p>An explanation which makes reference to <b>two</b> of the following points:</p> <ul style="list-style-type: none"> <li>• Increases in utility costs (1) which leave consumers with smaller disposable incomes (1)</li> <li>• Interest rate changes (1) and their impact on the cost of borrowing to finance development of new products (1)</li> <li>• Fluctuations in exchange rates (1) which affect the cost of imported raw materials (1)</li> <li>• Energy costs (1) and continuity of supplies of raw materials (1)</li> <li>• Consumer confidence (1)</li> <li>• World trading activity (1)</li> <li>• Variations in exchange rates (1) which make products cheaper/costlier to overseas purchasers (1)</li> <li>• Any other appropriate answer</li> </ul>	(4)

Question Number	Indicative content	
9(b)	<p>An explanation which includes references to:</p> <ul style="list-style-type: none"> <li>• Redesigning products so that they conform with new safety legislation design and manufacturing costs</li> <li>• Global targets to meet emissions and environmental targets redesign products to make them more fuel efficient</li> <li>• Government incentives to encourage the development of renewable energy products eg solar power and insulation for domestic properties increased revenues for companies involved with this market</li> <li>• Political pressure to make people use more public transport so improving the profitability of businesses which manufacture buses and trains</li> </ul>	
Level	Mark	Descriptor
0	0	No rewardable material
1	1-2	Some appreciation of the way in which profitability can be affected by political and environmental issues
2	3-4	Some explanation of the way in which profitability can be affected by political and environmental issues. Max 4 if only one of political or environmental addressed.
3	5-6	Detailed explanation of the way in which profitability can be affected by political and environmental issues

Question Number		Indicative content
9(c)		<ul style="list-style-type: none"> <li>• The current proportions of different products sold will this be the pattern in the future?</li> <li>• How much money will people have to spend after paying for essentials such as mortgages, rent, utilities etc?</li> <li>• General consumer confidence in the home and world market</li> <li>• Environmental and other types of tax which work in the favour of smaller, 'greener' vehicles</li> <li>• Competition from overseas manufacturers who are bringing out very cheap/budget cars eg Tata of India.</li> <li>• The growth of business done using the internet and 'e' systems there will be less people travelling around in company vehicles</li> <li>• Government initiatives on car sharing eg financial incentives</li> </ul>
Level	Mark	Descriptor
0	0	No rewardable material
1	1-2	Some appreciation of trends that car manufacturing business would be looking for.
2	3-4	Some analysis of trends that a car manufacturing business would be looking for.
3	5-6	Detailed discussion and analysis of trends that a car manufacturer would be looking for. Should cover all details.

Question Number	Answer	Mark
10(a)	<p>An analysis which includes references to:</p> <ul style="list-style-type: none"> <li>• The cost of bank borrowing will be the lowest in the Czech Republic (3.5%)</li> <li>• Inflation is higher in the Czech Republic (6.5%) than in the UK- base rates might be increased to control it</li> <li>• The Chinese borrowing rate is high (16%) as is factory gate inflation (7%)</li> <li>• Building the factory in the Czech Republic is an option which should be considered because the cost of borrowing the money needed to set it up will be lower</li> <li>• The inflation rate in the Czech Republic could result in higher wage demands and the knock on effect to factory gate prices</li> <li>• The cost of transporting finished products to wholesalers is lower if the factory is built in the UK</li> <li>• Any other appropriate answer</li> </ul> <p>1 mark per point</p>	(4)

Question Number	Answer	Mark
10(b)	<p>An analysis which includes references to:</p> <ul style="list-style-type: none"> <li>• The Chinese base rate is high (16%)</li> <li>• Factory gate inflation in China is high (7%)</li> <li>• The Chinese economy is growing fast and there will be upward pressure on wage rates so increasing production costs</li> <li>• The price of oil has increased by about 40%, resulting in higher transport costs</li> <li>• Consumer electronic products, such as flat screen TVs, contain many parts made from polymers. The increased oil price will result in higher raw material costs</li> <li>• A purpose built, state of the art factory in Europe would be closer to the sales base meaning lower transportation costs.</li> </ul> <p>1 mark per point</p>	(4)