

Mark Scheme (Results)

January 2012

Principal Learning

Manufacturing & Product Design
MP302 Paper 01

Customer Needs and Market
Requirements in Manufacturing

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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) (i)	<p>One mark for identification one mark for justification.</p> <p><i>Population:</i> All the members of the group (1) that the researchers are interested in (1)</p> <p style="text-align: right;">(1 x 2)</p>	(2)

Question Number	Answer	Mark
1 (a) (ii)	<p>One mark for identification one mark for justification.</p> <p><i>Sample:</i> The subset/small group (1) of the population that the researchers are sampling (1)</p> <p style="text-align: right;">(1 x 2)</p>	(2)

Question Number	Answer	Mark
1 (a) (iii)	<p>One mark for identification one mark for justification.</p> <p><i>Respondent:</i> The subset/sample/person (1) that actually completes/returns the questionnaire (1).</p> <p style="text-align: right;">(1 x 2)</p>	(2)

Question Number	Answer	Mark
1(b)(i)	<p>One mark for statement of what open question is. One mark for expansion</p> <p><i>Open Questions:</i></p> <ul style="list-style-type: none"> • Allows the respondent to use their own words (1), which is often difficult to analyse (1) • Take longer to answer (1) and may put some people off (1) • No pre-defined answers (1) so responses can be misinterpreted (1) <p style="text-align: right;">(1 x 2)</p>	(2)

Question Number	Answer	Mark
1(b)(ii)	<p>One mark for statement of what closed question is. One mark for expansion</p> <p><i>Closed Questions:</i></p> <ul style="list-style-type: none"> • A closed question gives the respondent pre-defined options (1) which can mean quicker response rate (1) • More straight forward to process (1) and easier to present using statistical/graphical interpretation techniques (1) <p style="text-align: right;">(1 x 2)</p>	(2)

Question Number	Answer	Mark
1(c)	<p>Any four of the following:</p> <ul style="list-style-type: none"> • Can demonstrate products being discussed (1) • Can see instinctive/instant reactions (1) • Can ensure that person being interviewed does not "cheat" (1) • Can introduce further/extended questions (1) • Can explore further product lines (1) • Can target questions to a particular response (1) • Can elaborate questions (1) • Personality of interviewer can influence response (1) <p style="text-align: right;">(4 x 1)</p>	(4)

Question Number	Answer	Mark
2	<p>One mark for identification, one mark for expansion Accept any justified correct response</p> <ul style="list-style-type: none"> • A manufacturer might look at the information from existing customers (1) in order to remodel the product (1) • They might consider age ranges (1) to assist with next generation design (1) • They might investigate responses from older customers (1) to address changing demographics (1) • They would consider negative responses (1) in order to prioritise products (1) • They might look at personal choices(1) and remodel/change product to satisfy particular preferences (1) <p style="text-align: right;">(4 x 2)</p>	(8)

Question Number	Answer	Mark
3(a)	<p>Two marks for high quality justification to include statement plus justification</p> <ul style="list-style-type: none"> • Market saturation is a term used to describe a situation in which a product has become distributed within a market (1) and consequently very few of that product can be sold (1) • Market saturation is the point at which a market is no longer generating new demand for a firm's products(1) this is due to competition/ decreased need/ obsolescence/ or some other factor.(1) <p style="text-align: right;">(2 x 1)</p>	(2)

Question Number	Answer	Mark
3(b)	<p>Two points given with two justifications stated.</p> <p>Specific examples may be given for example:</p> <ul style="list-style-type: none"> • For example: In an advanced society a high percentage of households own fridges (1). If there are a large number of households owning fridges, eventually the number of new fridges being sold begins to drop (1) (This could apply to virtually all consumer goods) • In advanced western households, and depending on the economy, the number of a particular product per family may be greater than 1 (1) to the extent that further growth of demand is constrained (1) • If the main buyers already own a particular product (1) and there is little chance of them replacing it (1) Future sales of a product depend on several factors including the rate of obsolescence (1), population growth (1), technological developments (1) and societal changes such as the spread of multi-car families (1) • obsolescence (1) or factors such as societal change/population growth (1) • range of promotions (1) indicating difficulty in direct sales (1) <p><i>Note: accept examples from any manufacturing situation</i></p> <p style="text-align: right;">(1 x 2) (1 x 2)</p>	(4)

Question Number	Answer	Mark
4(a)	<p>Two points made with two justifications</p> <ul style="list-style-type: none"> • A perceived high quality product (1) can mean that the customer can depend on the manufacturer's product (1) • Customers feel that any product from a manufacturer will be reliable (1) and that it will last (1) • Customer has feeling of security (1) and that they can rely on not only the product but the company as a whole (1) • Customer feels that they can complain (1) and that their complaint will be fairly dealt with (1) • Loyalty schemes (1) saves customer money or offers other benefits (1) <p>One mark for each advantage One mark for each expansion</p> <p style="text-align: right;">(1 x 2) (1 x 2)</p>	(4)

Question Number	Answer	Mark
4(b)	<p>Two points made with two justifications</p> <ul style="list-style-type: none"> • Communication with customers (1) to inform them about up and coming products (1) • Bogofs (1) to encourage them to purchase more of same product from company (1) • Loyalty cards/points/promotions (1) to encourage customers to return (1) • Emphasise reliability (1) to ensure customers buy more from the company (1) • Good customer service (1) to encourage customers to have faith in company products (1) • Ethical/environmental policies (1) leading to competitive advantage (1) <p style="text-align: right;">(1 x 2) (1 x 2)</p>	(4)

Question Number	Indicative Content	
5(a)	<p>Level 3 It is a legal requirement for any manufacturer to think about the Disability Discrimination Act from two points of view. Firstly, they must consider the workforce of the factory. The owners of the factory are bound by law to undertake certain actions to ensure the well being and safety of disabled employees. For example, they must make adjustments to the premises such as putting wheelchair ramps in place. The owners of the factory should also think about acquiring or modifying equipment to enable disabled employees to work in the factory. They should be giving or arranging for training or mentoring for disabled employees and they should modify any literature to enable disabled workers such as those with poor eyesight to read manuals or instructions. They should be seen to provide supervision and support. Secondly, it is a legal requirement for any manufacturer to consider the Disability Discrimination Act when developing new products. All new products should be able to be used by all people. For instance, a train designer would need to think carefully about such factors as easy access for wheelchairs. Wheelchairs should be safely and securely accommodated.</p> <p>Level 2 It is a legal requirement for any manufacturer to consider the Disability Discrimination Act. Firstly, they must consider how they design new products. For example, new trains must be designed so that disabled people can use them with access to toilets and access to the doors via ramps. They should also consider how disabled people are able to actually work in the factory. Doors should be wide enough for wheelchairs and ramps should be provided.</p> <p>Level 1 It is important that manufacturers consider disabled people when designing new products. For instance, train designers should think about how disabled people can get on and off. They should also think about how disabled people are going to work in their factory.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-2	A very generic statement with just the bare facts being presented with no examples given.
2	3-4	A statement of the importance of how, by law, manufacturers should take into account the Disability Discrimination Act from both the manufacturing and consumer point of view.
3	5-6	An in-depth statement explaining the Disability Discrimination Act with some very sound justified examples of how the Act might be applied in both the factory situation and from the consumer's point of view.

Question Number	Indicative Content	
5(b)	<p>Level 3 It is vital that all staff have a full understanding of the importance of safety in the workplace. This could include posters around the workshop with full details of the machinery in use and the safe working practices of those machines. Staff should be well trained before being allowed to work on machines and they should be checked and tested regularly to stop bad working practices from being introduced. They should undertake regular risk assessments of all the machinery and tools that are used and take into consideration the latest regulations including COSSH. Workers should be made to wear personal protective equipment. All manufacturers should appoint safety officers who are responsible for making sure that all the rules and regulations are followed.</p> <p>Level 2 It is vital that all staff have a full understanding of the importance of safety in the workplace. This could include posters around the workshop with full details of the machinery in use and the safe working practices of those machines. Staff should be well trained before being allowed to work on machines and they should be checked and tested regularly to stop bad working practices from being introduced.</p> <p>Level 1 Staff should be encouraged to follow the safety rules. They must wear safety equipment for all the machines and understand the importance of risk and risk assessment. They should know and understand the safety precautions of the machines they operate.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-3	A very simple statement suggesting that poster could be placed around the workshop to warn workers of the dangers.
2	4-6	A statement that includes details of posters around the workshop plus comments about the importance of training when it comes to safety.
3	7-8	A statement that includes details of posters within the workshop together with comments on training and the importance of keeping training up to date with regular testing to ensure that safety is maintained over time. Reference to factors such as COSSH.

Question Number	Answer	Mark
6 (a)	<p>Any four of the following (or 4 marks for a detailed response):</p> <ul style="list-style-type: none"> • Able to store large number of music tracks (1) • Can be used with speakers (1) • Can be listened to by a number of people (1) • Can include other extras (1) • Can be connected to a computer/internet (1) • Interconnectivity with other products (1) • Constantly evolving product (1) • New technological features / further storage / miniaturisation (1) • Aesthetically pleasing design (1) • Range of models (1) <p>Accept any relevant comment provided it is justified in terms of the ipod.</p> <p style="text-align: right;">(4 x 1) (1 x 4)</p>	(4)

Question Number	Indicative Content	
6(b)	<p>Level 3 A company should firstly develop a marketing plan that sets out clear objectives and lists the actions that will be needed to successfully market the new product. The strategy should include such things as deciding which customers to target and how to reach them, how to win their business and keep them happy afterwards, as well as continually reviewing and improving everything you do to stay ahead of the competition. Things that might be included in the strategy might be how to target the right potential customers? Are there groups that can be targeted more effectively? What's the best way of communicating with them? Could customer service be improved? What is the best way of distributing and selling the product? How best can products be promoted? Options might include advertising, direct marketing, exhibiting at trade fairs, PR or marketing on the web.</p> <p>Level 2 The company should think about a marketing plan that takes into account actions that must be taken to market the new product. They should look at the market and how best to sell the product to that market. They should think about advertising strategies and how best to target the appropriate market. They should also consider how to best promote the new product. Options might include advertising, direct marketing, exhibiting at trade fairs, PR or marketing on the web.</p> <p>Level 1 The company should think about the market and who might purchase the new product and then consider the best approach to advertising the product and selling it. They might consider advertising, direct marketing, exhibiting at trade fairs, PR or marketing on the web.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-3	A very basic explanation that might state a reason for developing a strategy and one way of gathering information on which to base such a strategy.
2	4-6	There should be a reasonable explanation that explains why a strategy should be developed with some indication as to what issues might be looked at and developed.
3	7-8	A good understanding of the need to plan a marketing strategy and an understanding of the importance of staying ahead of the competition. Sound examples should be presented with some justification.

Question Number	Answer	Mark
7	<p>One mark for comment, one mark for justification (2 marks) or 4 mark for a detailed response</p> <ul style="list-style-type: none"> • Transport costs (1) can fluctuate and can therefore affect the cost of the final product (1) • Manufacturing processes (1) often require energy and this can go up and down as the market or time of year changes (1) • Lighting /Heating (1) of factories can affect the final cost because of fluctuation of fuel bills (1) <p><i>Any other sensible response</i></p>	<p>(1 x 2) (1 x 2) (1 x 4) (4)</p>

Question Number	Indicative Content	
8(a)	<p>Level 3 A manufacturing company could take a number of actions to reduce its carbon footprint. Firstly, it could reduce the efficiency of the heating system in the factory. For example, the latest gas fired boilers are designed to be far more efficient and give out less polluting carbon based gases. Added to this, the company can make the building itself more insulated by adding double glazing. This would reduce the heat loss and therefore reduce the amount of fuel that the boilers would burn and as a consequence reduce carbon emissions. Even simple actions like turning down the thermostat temperatures can reduce the amount of carbon being released into the atmosphere. Other actions could be to turn off lights and machines when not in use and to invest in more efficient new machinery. Added to these a company might consider the way in which their transport is operated. For example, might there be a more environmentally friendly method of having raw materials delivered to the factory and of distributing finished products around the country?</p> <p>Level 2 A manufacturer needs to take a number of actions to reduce the carbon footprint of the factory. Firstly, it could make the heating system in the factory more efficient. They could also fit double glazing into the factory to reduce heat-loss. A new system does not release so much carbon as old systems. They could also think about investing in new more efficient lorries to deliver products around the country.</p> <p>Level 1 A manufacturer might buy new heating equipment because it releases less carbon into the atmosphere. They might also look at ways of reducing the fuel consumption of their lorries to reduce the amount of carbon they release into the atmosphere.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-3	Some understanding of the link between consumption and release of carbon.
2	4-6	A more detailed account of how some systems used by a company do release carbon into the atmosphere and that improved systems might have a good effect and cut down the release of carbon.
3	7-8	A very sound understanding of all the various issues of the link between factory activity and the release of carbon and that a number of methods can be used to reduce the effects of processes in terms of carbon footprint.

Question Number	Indicative Content	
8(b)	<p>Level 3</p> <p>It is important for any manufacturer to consider its carbon footprint because the amount of carbon that is released into the atmosphere from manufacturing processes can have a profound effect on the planet and the world in which we live. Carbon can speed up global warming and cause climatic changes. For instance, processes that are being undertaken in one part of the world can create pollutants that can be spread across the world and pollute other countries. Acid rain is a good example of this. Manufacturing in the United Kingdom can harm the forests in Norway. All manufacturers have an obligation to reduce their carbon footprint because it can affect the whole planet.</p>	
	<p>Level 2</p> <p>It is vital that manufacturer considers its carbon footprint. The release of carbon can have far reaching effects on world ecological system. Acid rain is a good example of this. Manufacturing in the United Kingdom can harm the forests in Norway. All manufacturers have an obligation to reduce their carbon footprint because it can affect the whole planet.</p>	
	<p>Level 1</p> <p>Manufacturing processes can release carbon and this can have an effect on the whole world. It is important for companies to reduce their carbon output to save the world from global warming.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-3	A realisation that a company's carbon can have an effect on the planet.
2	4-6	An understanding of the fact that the carbon footprint produced can have an effect in faraway places and that it increases the possibility of global warming and climate changes.
3	7-8	A full understanding of the effects of a carbon footprint produced during manufacturing processes and that it can have far reaching consequences. Examples of issues raised should be presented.

Question Number	Indicative Content	
9	<p>Accept any sensible comment and justification that relates to the statistical information in the given table.</p> <p>The manufacturers of the super mini may advertise their car on the basis that you can get 53.3 Miles and 278 miles from a full tank of petrol. However, they might have a problem to justify 127 g/km in carbon emissions. This is not the highest so it might not be used in advertising. The 1.4 TDCi 4 may be advertised as a car with good fuel consumption and large range on a single tank of petrol and it has a medium range of carbon emissions.</p> <p>The electric car would be advertised as good for the environment because it has low emissions and does not use fossil fuels. However it does have a very limited range compared with petrol and diesel vehicles.</p>	
Level	Mark	Descriptor
	0	No rewardable content
1	1-3	Some acknowledgement that car manufacturers might use statistics in the selling of a vehicle and that some information might be useful to the consumer.
2	4-6	Acknowledgement that things like fuel consumption might be a useful selling ploy for car manufacturers.
3	7-8	A realisation that all kinds of information and statistics can be used to sell a vehicle but that sometimes that information might be related in such a way so as to "manipulate" information. For example, the electric car could be good for the environment so that would be stressed but it would not have a very great range.

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