| **Question 4** |  |
| --- | --- |
|  | **AO3** | **AO4** | **Mark** |
| *(a)* | Explain what you understand by the term galvanising and state the advantages of using this process in the manufacture of the chassis. |  | ✓ | 4 |
| *Answers that indicate an understanding of galvanising steel and its advantages can be awarded up to 4 marks based on:**Hot-dip galvanizing is a common process of immersing steel in a bath of molten zinc to produce a corrosion resistant coating for the metal.  While the steel is immersed in the zinc, a metallurgical reaction occurs between the iron in the steel and the molten zinc. The coating adheres to all surfaces creating a uniform thickness throughout the part.*Advantages to the manufacturing process: * Produces a high-quality anti rust protection for the steel.
* Can be stored outside once manufactured – in preparation for assembling the body of the trailer.
* It is a high-volume production process.
* The trailer’s product life extended greatly.
* No maintenance is required once the process is completed.
* It is excellent protection against the elements i.e. cold weather conditions, salty weather conditions or very hot conditions.
* Aesthetics – many consumers like the fact that the galvanising finish is something that is appealing.

**Guidance to markers:** |  |
|  | Incorrect/no answer | 0 |
|  | Brief description with little detail or reference to galvanizing for example:*It is a basic coating for the mild steel, so it will not rust.* | 1 |
|  | Some detail in description, with some understanding of galvanizing and its advantages for example: *It is a coating of zinc on to mild steel to provide a long-term coating to protect the steel from the elements.* | 2 |
|  | A more detailed understanding with clear understanding of galvanizing and its advantage for example: *Galvanizing is using hot zinc in which steel is dipped into. This provides a permanent coat to protect the steel for the elements.* | 3 |
|  | Fully detailed description with clear understanding of galvanizing and its advantage as a process for protection for example: *Hot dip galvanizing is used to coat mild steel and provide a permanent protective layer for the steel. The advantages during manufacture is that it is a quick process and in this case the trailer chassis can be left outside for storage until it is ready for the remainder of the assembly process.* | 4 |
| *(b)* | Describe how the manufacturer has incorporated a different surface finish to each of the labelled parts on the garden tools shown below and explain the benefits of both surface finishes to the user. |  | ✓ | 8 |
| *Answers that indicate an understanding of surface finishing processes can be awarded up to 8 marks based on:**Using an Injection moulded handle** This allows for a variety of shaped handles and can be formed for easy grip.
* Process: The polymer is injected into a prepared mould tool that defines the shape of the moulded part (handle).
* Using this process allows the designer/manufacturer to design suitable not slip handles and considers good anthropometric features.
* Benefits the user in form, grip and also provides colour variations.

*Surface coating for steel* * Primed and painted to protect the steel for rusting
* Enamelled steel provides a more permanent coating to protect the fork from the elements
* Benefits the user with not having to use a protective layer once purchased.
* Enamelled or stove enamelled coating will be permanent and require very little or no maintenance.

*Accept descriptions that could be related to wood/metal handles/rubber handles/rubber sleeves.*

|  |  |
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| **Guidance to markers:** |  |
| * Candidate has a simplistic knowledge.
* The use of terminology and technical language is basic.
* The candidate has little understanding of surface finishes
 | 0-2 |
| * The candidate has a basic understanding of the issues associated with the question.
* The use of terminology and technical language is variable.
* The candidate understands some of the general elements of two areas of surface finishes and the benefits to the user.
 | 3-4 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* The use of terminology and technical language is reasonably accurate.
* The candidate understands the general elements of surface finishes and the benefits to the user.
 | 5-6 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* Uses correct terminology and technical language.
* The candidate clearly understands the main features of surface finishes and the benefits to the user.
 | 7-8 |

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|  | **Total** | **12** |

| **Question 8** |  |
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|  | **AO3** | **AO4** | **Mark** |
| *(a)* | Explain how quality control and quality assurance ensure the production of high quality products. |  | ✓ | 6 |
| *Answers that indicate an understanding of quality control and quality assurance can be awarded up to 6 marks based on:** Although QA and QC are closely related they are both aspects of quality management, they are fundamentally different in their focus: QA is the process of managing for quality and QC is used to verify the quality of the output or product.
* Quality control means checking during the making of a product to make sure that it is being made to the required standard.
* Quality assurance means making sure that a product is of the best quality that can be achieved. At all stages from the designer to the user, checks will be made to ensure that everything is of the highest possible quality.
* QA/QC is the combination of quality assurance, the process or set of processes used to measure and assure the quality of a product, and quality control, the process of ensuring products and services meet consumer expectations.
* Quality assurance is process oriented and focuses on defect prevention, while quality control is product oriented and focuses on identifying defects in the product i.e. dimensions, material quality, weight or surface finish.
* Simply put, Quality Assurance focuses on the process of quality, while Quality Control focuses on the quality of output.

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| * Incorrect/no answer
 | 0 |
| * Candidate has a simplistic knowledge.
* The use of terminology and technical language is basic.
* Brief description of how quality control and quality assurance ensure the production of high-quality products.
 | 1-2 |
| * The candidate has a basic understanding of the issues associated with the question.
* The use of terminology and technical language is reasonably accurate.
* More detailed description of how quality control and quality assurance ensure the production of high-quality products.
 | 3-4 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* Uses correct terminology and technical language.
* Fully detailed understanding of how quality control and quality assurance ensure the production of high-quality products.
 | 5-6 |

  |  |
| *(b)* | Discuss the importance of quality control to the manufacturer and consumer. |  | ✓ | 6 |
| *Answers that indicate an understanding of QC to the manufacturer and consumer and can be awarded up to 6 marks based on:*Manufacturer:* Quality control is a process that ensures customers receive products free from defects and meet their needs.
* Manufacturers also have accredited safety tests applied to products shown by approved certification.
* A quality control system based on a recognised standard, such as ISO 9001, provides a strong foundation for achieving a wide range of marketing and operational benefits.
* Building confidence in a product brand ensures steady sales for the manufacturer.

Consumer: * Consumer service operations are designed to keep customers satisfied while protecting the organisation.
* Kite marks may be applied to products.
* In manufacturing, quality control is a process that ensures customers receive products free from defects and meet their needs. When done the wrong way, it can put consumers at risk and may result in product recalls.

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| * Incorrect/no answer
 | 0 |
| * Candidate has a simplistic knowledge.
* The use of terminology and technical language is basic.
* Brief description of how quality control is important to the manufacturer and consumer.
 | 1-2 |
| * The candidate has a basic understanding of the issues associated with the question.
* The use of terminology and technical language is reasonably accurate.
* More detailed description of how quality control is important to the manufacturer and consumer.
 | 3-4 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* Uses correct terminology and technical language.
* Fully detailed understanding of how quality control is important to the manufacturer and consumer.
 | 5-6 |

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|  | **Total** | **12** |

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| **Question 9** |  |
|  | **AO3** | **AO4** | **Mark** |
| *(a)* | Describe what you understand by the term ‘market segmentation’ and explain its importance in the development of new products. |  | ✓ | 8 |
| *Answers that indicate an understanding of the term market segmentation can be awarded up to 8 marks based on:** *Market segmentation is the term to describe the division of a market of potential customers into groups, or segments, based on different characteristics.*
* *The segments created are composed of consumers who will respond similarly to marketing strategies.*
* *The segments share traits such as similar interests, needs, or locations.*
* *Its objective of market segmentation is to design a marketing mix that precisely matches the expectations of customers in the targeted segment.*
* *They are important to the design of new products as segments may be targeted to suit the product – providing vital information to its future success.*
* *Manufacturers or companies will not survive if the marketing strategy is dependent upon targeting an entire mass market - the importance of market segmentation is that it allows a business to precisely reach a consumer with specific needs and wants*

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| **Guidance to markers:** |  |
| * Candidate has a simplistic knowledge.
* The use of terminology and technical language is basic.
* The candidate has little understanding of the term market segmentation and dos not explain its importance in the development of new products.
 | 0-2 |
| * The candidate has a basic understanding of the issues associated with the question.
* The use of terminology and technical language is variable.
* The candidate understands some of the general benefits of the term market segmentation and explain its importance in the development of new products.
 | 3-4 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* The use of terminology and technical language is reasonably accurate.
* The candidate understands the term market segmentation and explains its importance in the development of new products.
 | 5-6 |
| * The candidate demonstrates a clear understanding of the issues associated with the question.
* Uses correct terminology and technical language.
* The candidate clearly understands clearly the term market segmentation and explain its importance in the development of new products.
 | 7-8 |

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|  | **Total** | **8** |