Section D – Development of design prototypes(s) 25 Marks

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| Development of Design Prototype(s)  (25 marks) | Nothing worthy of credit | Little justification provided for selection of materials and components and proposed techniques and processes, not all of which may be appropriate, only a basic understanding of material  properties demonstrated which may lead to the production of an inadequate prototype(s). | | | | | | Adequate justification provided for selection of appropriate materials  and components and proposed techniques and processes demonstrating an adequate understanding of material properties to  ensure adequate quality prototype(s) that are mostly fit for purpose. | | | | | | Good justification provided for selection of appropriate materials and components and proposed techniques and processes demonstrating a good understanding of material properties to ensure good quality prototype(s) that are fit for purpose. | | | | | | Excellent justification provided for selection of appropriate materials and components and proposed techniques and processes, demonstrating an excellent understanding of material properties to ensure excellent quality prototype(s) that are fit for purpose. | | | | | | |
| The development of the prototype(s) offers little in the way of complexity or challenge, only basic manufacturing skills are demonstrated, showing little understanding of the need for accuracy  and precision. | | | | | | There is some complexity or challenge within aspects of the prototype. The student demonstrates adequate manufacturing skills combined with some understanding of the need for dimensional  accuracy/precision. | | | | | | There is some complexity or challenge involved throughout the production of prototype(s). The student demonstrates good manufacturing skills combined with a generally sound understanding of the need for dimensional accuracy/precision. | | | | | | Significant complexity or challenge is involved throughout the production of prototype(s). The student demonstrates excellent manufacturing skills combined with an excellent understanding of  the need for dimensional accuracy and precision. | | | | | | |
| The student has selected and used appropriate tools, machinery and equipment, including CAM where required, but has worked with only a basic level of skill, precision and accuracy to produce their prototype(s). | | | | | | The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with an adequate level of skill, precision and accuracy to produce their prototype(s). | | | | | | The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with a good level of skill, precision and accuracy to produce their prototype(s). | | | | | | The student has selected and used appropriate tools, machinery and equipment, including CAM where required, and worked with a high level of skill, precision and accuracy to produce their  prototype(s). | | | | | | |
| Prototype(s) address only few parts of the design brief, and few of the major points of specification, they do not take into account amendments/modifications to their original design proposals. | | | | | | Prototype(s) partially address the design brief, satisfying some of the major points of specification, but do not always take into account amendments/modifications to their original design proposals. | | | | | | Prototype(s) mostly address the design brief, satisfying the majority of major points of specification and takes into account some amendments/modifications to their original design proposals as necessary. | | | | | | Prototype(s) fully address the design brief, satisfying all major points of the specification and take into account all amendments/ modifications to their original design proposals as necessary. | | | | | | |
| Student makes a few minor modifications to their prototype in light  of feedback from user trials and third party feedback and as a result  of testing and evaluation carried out against earlier iterations of the  prototype. | | | | | | Student makes some superficial modifications to their prototype(s)  in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. | | | | | | Student makes some well thought out modifications to their prototype in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. | | | | | | Student makes all required modifications to the prototype in a fully considered manner in light of feedback from user trials and third party feedback and as a result of testing and evaluation carried out against earlier iterations of the prototype. | | | | | | |
| Basic quality assurance is sporadic throughout the process and it is not always clear where quality control checks have been applied. | | | | | | Quality assurance is evident at stages in the process and it is clear where quality control checks have been applied to ensure  consistency and safety. | | | | | | Quality assurance is evident at most stages in the process and it is clear where planned quality control checks have been applied to ensure consistency and safety. | | | | | | Quality assurance is evident throughout and it is clear where planned quality control checks have been applied throughout the  process to ensure consistency and safety. | | | | | | |
| There is little evidence during the manufacturing process that appropriate health and safety processes have been both considered and employed. | | | | | | There is some evidence during the manufacturing process that appropriate health and safety processes have been both considered and employed. | | | | | | There is evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed. | | | | | | Clear evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed. | | | | | | |
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| Notes |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |