



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2009

Technology Tasks
Ordinary & Higher Level

Marking Scheme & Prompt Sheets

Security Bollard

A

Design and make a model of an electro-mechanically controlled security bollard which can be raised and lowered to prevent illegal parking in a restricted zone.

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Bollard which can be raised and lowered using electro-mechanical controls.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of bollards, etc., electro-mechanically controlled systems.	5
<i>Design Ideas</i>	Security bollard: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting bollard /electro-mechanically controlled system.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of bollard and electro-mechanically controlled system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of security bollard.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is the product a model of an electro-mechanically controlled security bollard?	5
<i>Suitability, Functional</i>	Does the security bollard function?	5
<i>Design/Inventiveness</i>	Inventive design of the security bollard and/or mock-up of all or part of the solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electro-mechanical components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Materials selected suited to their respective functions?	5
<i>Appropriate sub-system(s)</i>	Appropriate electro-mechanically controlled system?	5
<i>App. manufacturing processes</i>	Security bollard manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of security bollard after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

Security Bollard

A

Design and make a model of an electro-mechanically controlled security bollard which can be raised and lowered to prevent illegal parking in a restricted zone.

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? A. Design should incorporate the following features: Bollard which can be raised and lowered using electro-mechanical controls. (0-3) B. Design specification generated/list of objectives(0-2) (Restate brief: Total mark = 1)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Various types of bollards, etc.....(0-3) B. Electro-mechanically controlled systems.....(0-2)	5
<i>Design Ideas</i>	A. Model design 1 - well sketched & annotated(0-3) B. Model design 2 - well sketched & annotated(0-3)	6
<i>Criteria for selection of solution</i>	A. Selected design identified.(0-2) B. Valid justification of selected design idea(s)(0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of security bollard and sub-system(0-3) B. Drawing of circuit.....(0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the security bollard(0-2) B. Materials list with sizes and costing.....(0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.....(0-3) B. Possible improvements identified(0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly(0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks)....(0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is the product a model of a security bollard?(0-3) B. Does it incorporate an electro-mechanically controlled system?(0-2)	5
<i>Suitability, Functional</i>	A. Does the security bollard function?.....(0-3) B. Does the security bollard open when operated?.....(0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of security bollard and/or mock-up of all or part of the solution? (model = 2)(0-5)	5
<i>Originality, commercial comp.</i>	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components?(0-5)	5
<i>Appropriateness of materials</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.).....(0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate electro-mechanically controlled sub-system, reliable?(0-5) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Security bollard manufactured using appropriate processes?(0-3) B. Control system manufactured using appropriate processes?.....(0-2)	5
<i>Quality of processes</i>	A. Quality of security bollard after manufacture using stated processes?(0-3) B. Quality of the control circuit after manufacture?(0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>) ... (0-3) B. Quality of assembly(0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards?(0-3) B. All parts well finished?(0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (model)(0-3) B. High level of skill/technological competence? (sub-system).....(0-2)	5
<i>Overall presentation</i>	A. Attractive well presented security bollard?(0-3) B. Instructions for use (if needed), controls labelled?(0-2)	5

B**Animated Display**

Design and make an animated display for a movie of your choice which would be suitable for the foyer of a cinema (the display should be scaled down appropriately).

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Scaled model of an animated display suitable for a movie cinema foyer.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of displays and animated systems.	5
<i>Design Ideas</i>	Display: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting design / sub-system.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of display.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of display.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is the product an animated display for a movie and is it complete?	5
<i>Suitability, Functional</i>	Does display function using the animated system?	5
<i>Design/Inventiveness</i>	Inventive design of display and/or model or mock-up of all or part of the solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electronic components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Materials selected suited to their respective functions?	5
<i>Appropriate sub-system(s)</i>	Appropriate animated system?	5
<i>App. manufacturing processes</i>	Display manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of display after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

B

Animated Display

Design and make an animated display for a movie of your choice which would be suitable for the foyer of a cinema (the display should be scaled down appropriately).

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Scaled model of an animated display suitable for a movie cinema foyer (0-3) B. Design specification generated/list of objectives (0-2)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Various types of displays suitable for movie foyers (0-3) B. Sub-systems to achieve animation. (0-2)	5
<i>Design Ideas</i>	A. Display design 1 - well sketched & annotated (0-3) B. Display design 2 - well sketched & annotated (0-3)	6
<i>Criteria for selection of solution</i>	A. Selected display design & sub-system identified. (0-2) B. Valid justification of selected design idea(s) & sub-system (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of display and sub-system..... (0-3) B. Detailed drawing of circuit (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the display. (0-2) B. Materials list with sizes and costing..... (0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation..... (0-3) B. Possible improvements identified (0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly (0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks).... (0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is the product an animated display for a movie and is it complete?..... (0-3) B. Is the scale of the product appropriate?..... (0-2)	5
<i>Suitability, Functional</i>	A. Is the display suitable for a use in a foyer? (0-3) B. Does the animation system function?..... (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of display, animated system and/or mock-up of all or part of the solution? (model = 2) (0-5)	5
<i>Originality, commercial comp.</i>	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components? (0-5)	5
<i>Appropriateness of materials</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.)..... (0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate animated system? (0-3) B. Reliable system? (0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Product manufactured using appropriate processes?..... (0-3) B. Animated system manufactured using appropriate processes? (0-2)	5
<i>Quality of processes</i>	A. Quality of display after manufacture using the stated processes? (0-3) B. Quality of the animated system after manufacture? (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>) ... (0-3) B. Quality of assembly (0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards? (0-3) B. All parts well finished? (0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (display) (0-3) B. High level of skill/technological competence? (animated system) (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product?..... (0-3) B. Instructions for use (if needed), controls labelled? (0-2)	5

C**Motorised Logo**

Design and make a working model of a motorised display of a car manufacturer's logo. The display should illuminate automatically at night.

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Motorised display for car logo that automatically lights up at night.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of motorised displays and lighting control systems.	5
<i>Design Ideas</i>	Motorised display: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting design / lighting control system.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of motorised display.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of motorised display.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is the product a motorised display for a car logo and is it complete?	5
<i>Suitability, Functional</i>	Does motorised display and the lighting control system function?	5
<i>Design/Inventiveness</i>	Inventive design of motorised display and/or model or mock-up of all or part of the solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electronic components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Materials selected suited to their respective functions?	5
<i>Appropriate sub-system(s)</i>	Appropriate lighting control system?	5
<i>App. manufacturing processes</i>	Motorised display manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of motorised display after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

C

Motorised Logo

Design and make a working model of a motorised display of a car manufacturer's logo. The display should illuminate automatically at night.

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Motorised display for car logo that automatically lights up at night (0-3) B. Design specification generated/list of objectives (0-2)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Various types of motorised displays, etc. (0-3) B. Lighting control systems (0-2)	5
<i>Design Ideas</i>	A. Motorised display design 1 - well sketched & annotated (0-3) B. Motorised display design 2 - well sketched & annotated (0-3)	6
<i>Criteria for selection of solution</i>	A. Selected motorised display design & lighting control system identified. (0-2) B. Valid justification of selected design idea(s) & lighting control system (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of motorised display and lighting control system (0-3) B. Circuit drawing of control system (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the motorised display. (0-2) B. Materials list with sizes and costing (0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation (0-3) B. Possible improvements identified (0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly (0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks) (0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is the product a motorised display for a car logo and is it complete? (0-3) B. Does the unit illuminate automatically at night? (0-2)	5
<i>Suitability, Functional</i>	A. Does the motorised display move? (0-3) B. Does the lighting control system operate? (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of motorised display, lighting control system and/or mock-up of all or part of the solution? (model = 2) (0-5)	5
<i>Originality, commercial comp.</i>	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components? (0-5)	5
<i>Appropriateness of materials</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.) (0-5)	5
<i>Appropriate lighting control system(s)</i>	A. Appropriate lighting control system, reliable? (0-3) B. Appropriate electrical/electronic system? (0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Display manufactured using appropriate processes? (0-3) B. Lighting control system manufactured using appropriate processes? (0-2)	5
<i>Quality of processes</i>	A. Quality of motorised display after manufacture using the stated processes? .. (0-3) B. Quality of the lighting control system after manufacture? (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>) ... (0-3) B. Quality of assembly (0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards? (0-3) B. All parts well finished? (0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (motorised display) (0-3) B. High level of skill/technological competence? (lighting control system) (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? (0-3) B. Instructions for use (if needed), controls labelled? (0-2)	5

D**Automatic Door System**

Design and make a door for a chicken coop which will automatically open in the morning and close at night.

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Door system that will open automatically in the morning and close at night.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of door systems, mechanisms and control systems.	5
<i>Design Ideas</i>	Door systems and control mechanism: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting door systems design / opening and closing sub-system.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of door systems / opening and closing sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the automatic door system.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is the product working model of a door systems that will automatically open at dawn and close at dusk?	5
<i>Suitability, Functional</i>	Does the model's opening and closing system function and is it suitable for a chicken coop?	5
<i>Design/Inventiveness</i>	Inventive design of the door system and/or mock-up of all or part of the solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electronic components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Materials selected suited to their respective functions?	5
<i>Appropriate sub-system(s)</i>	Appropriate opening and closing system?	5
<i>App. manufacturing processes</i>	Model manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of model after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented automatic door system?	5

D

Automatic Door System

Design and make a door for a chicken coop which will automatically open in the morning and close at night.

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? A. Door system that will open automatically in the morning and close at night.. (0-3) B. Design specification generated/list of objectives (0-2) (Restate brief: Total mark = 1)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Various types of door systems, mechanisms, etc. (0-3) B. Opening and closing control sub-systems (0-2)	5
<i>Design Ideas</i>	A. Model design 1 - well sketched & annotated (0-3) B. Model design 2 - well sketched & annotated (0-3)	6
<i>Criteria for selection of solution</i>	A. Selected design identified. (0-2) B. Valid justification of selected design idea(s) (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of door system and opening and closing sub-system (0-3) B. Circuit drawing of sub-system (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the door system (0-2) B. Materials list with sizes and costing (0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation (0-3) B. Possible improvements identified (0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly (0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks) (0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is the product a working model of a door systems? (0-3) B. Does it incorporate an automatic control system? (0-2)	5
<i>Suitability, Functional</i>	A. Does the door systems automatically open and close? (0-3) B. Is the design suitable for a chicken coop? (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of automatic door system and/or mock-up of all or part of the solution? (model = 2) (0-5)	5
<i>Originality, commercial comp.</i>	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components? (0-5)	5
<i>Appropriateness of materials</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.) (0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate opening and closing sub-system, reliable? (0-5) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Automatic door system manufactured using appropriate processes? (0-3) B. Sub-system manufactured using appropriate processes? (0-2)	5
<i>Quality of processes</i>	A. Quality of door system after manufacture using the stated processes? (0-3) B. Quality of the sub-system after manufacture? (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>) ... (0-3) B. Quality of assembly (0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards? (0-3) B. All parts well finished? (0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (door system) (0-3) B. High level of skill/technological competence? (sub-system) (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? (0-3) B. Instructions for use (if needed), controls labelled? (0-2)	5

E**Wind Generator**

Design and make a working model of a wind generator which powers a small electrical system.

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Working model of a wind generator to power a small electrical system.	5
<i>Investigation of possible solutions</i>	Wind operated generators; type, shape, size, etc.	5
<i>Design Ideas</i>	Wind operated generator & electrical system: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting generator system.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of wind operated generator and electrical system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of wind operated system.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is the product a model of a wind operated generator system and is it complete?	5
<i>Suitability, Functional</i>	Can the design power a small electrical system?	5
<i>Design/Inventiveness</i>	Inventive design of wind generator and/or mock-up of all or part of the solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electronic components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Good materials selection for the working model ?	5
<i>Appropriate sub-system(s)</i>	Appropriate wind generator, reliable and easily operated?	5
<i>App. manufacturing processes</i>	Wind generator manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented wind generator.	5

E

Wind Generator

Design and make a working model of a wind generator which powers a small electrical system.

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? A. Working model of a wind generator to power a small electrical system..... (0-3) B. Design specification generated/list of objectives..... (0-2) (Restate brief: Total mark = 1)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Wind generator; type, shape, size, etc..... (0-3) B. Sub-system solutions (0-2)	5
<i>Design Ideas</i>	A. Wind generator - Design 1 - well sketched & annotated (0-3) B. Wind generator - Design 2 - well sketched & annotated (0-3)	6
<i>Criteria for selection of solution</i>	A. Selected wind generator and housing identified (0-2) B. Valid justification of selected design idea(s) (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of wind generator and housing (0-3) B. Drawing of sub-system and circuit (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of housing and generating system..... (0-2) B. Materials list with sizes and costing (0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation (0-3) B. Possible improvements identified (0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly (0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks).... (0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is product a working model of wind generator and is it complete? (0-5)	5
<i>Suitability, Functional</i>	A. Will this product function as a generator? (0-3) B. Does it power an electrical system? (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of wind generator system and/or mock-up of all or part of the solution (model = 2)..... (0-5)	5
<i>Creativity</i>	A. Creative use of materials/re-cycled parts/electronic components/mechanisms/colour/shape. Acceptable use of commercial components (0-5)	5
<i>Appropriateness of materials</i>	A. Materials selection for wind generator: (strong, robust, transparent) (0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate wind generator, reliable and easily operated..... (0-3) B. Appropriate and reliable mechanical system (0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Wind generator system manufactured using appropriate processes (0-3) B. Sub-system manufactured using appropriate processes (0-2)	5
<i>Quality of processes</i>	A. Quality of wind generator after manufacture using stated processes? (0-3) B. Quality of sub-system? (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>) ... (0-3) B. Quality of assembly (0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards? (0-3) B. Has an attractive durable finish been applied? All parts well finished?..... (0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (Housing) (0-3) B. High level of skill/technological competence? (wind generator)..... (0-2)	5
<i>Overall presentation</i>	A. Attractive, well presented wind generator?..... (0-3) B. Attractive, well presented mechanical system & housing? (0-2)	5

F**Buggy**

Design and make a working model of a buggy which automatically executes an avoidance routine when it comes close to or bumps into an object.

Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Buggy with automatic sensor and control system used to avoid objects in its path.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of buggy, model making, etc.	5
<i>Design Ideas</i>	Buggy: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Two reasons for selecting buggy.	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of buggy.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the buggy.	5
<i>Testing and Evaluation</i>	Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.	5
<i>Presentation of folder</i>	Layout: use of diagrams, sketches, photographs, neat and orderly.	4

Ordinary Level Product

<i>Product satisfies brief</i>	Is product a model of a controlled device used to automatically avoid objects in its path? Is it complete?	5
<i>Suitability, Functional</i>	Does the buggy automatically avoid objects?	5
<i>Design/Inventiveness</i>	Inventive design of buggy and/or mock-up of solution?	5
<i>Originality, commercial comp.</i>	Creative use of materials/recycled parts/ electronic components/ mechanisms/colour/shape. Acceptable use of commercial components?	5
<i>Appropriateness of materials</i>	Appropriate material selection for the buggy?	5
<i>Appropriate sub-system(s)</i>	Appropriate control system, reliable?	5
<i>App. manufacturing processes</i>	Buggy manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of buggy after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly. (available resources considered)	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competence/ Application of skills</i>	Appropriate level of skill/technological competence?	5
<i>Overall presentation</i>	Attractive, well presented product with clear instructions.	5

F**Buggy**

Design and make a working model of a buggy which automatically executes an avoidance routine when it comes close to or bumps into an object.

Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: Total = 1) A. Buggy with automatic sensor and control system used to avoid objects in its path.....(0-3) B. Design specification generated/list of objectives.....(0-2)	5
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.) A. Various types of buggy, model making, etc.....(0-3) B. Control systems, circuitry & mechanisms.....(0-2)	5
<i>Design Ideas</i>	A. Buggy design 1 - well sketched & annotated.....(0-3) B. Buggy design 2 - well sketched & annotated.....(0-3)	6
<i>Criteria for selection of solution</i>	A. Selected buggy and control system identified.....(0-2) B. Valid justification of selected design idea(s).....(0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawing of buggy and interface/control system.....(0-3) B. Circuit drawings, computer program.....(0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the Buggy.....(0-2) B. Materials list with sizes and costing.....(0-3)	5
<i>Testing and Evaluation</i>	A. Evidence of testing/modification during manufacture and/or evaluation against the brief/design specification and/or third party evaluation.....(0-3) B. Possible improvements identified.....(0-2)	5
<i>Presentation of folder</i>	A. Layout: use of diagrams, sketches, photographs, neat and orderly.....(0-3) B. Correct sequence of presentation as outlined in form S.67 (Design Tasks)....(0-1)	4

Higher Level Product

<i>Product satisfies brief</i>	A. Is product a model of a controlled device used to automatically avoid objects in its path? Is it complete?.....(0-3) B. Does the buggy execute an avoidance routine?.....(0-2)	5
<i>Suitability, Functional</i>	A. Does the buggy automatically avoid objects?.....(0-3) B. Is the system stable?.....(0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the buggy, control system and/or mock-up of all or part of the solution? (model = 2).....(0-5)	5
<i>Creativity</i>	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components?.....(0-5)	5
<i>Appropriateness of materials</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.).....(0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate electro-mechanical system, reliable?.....(0-3) B. Appropriate computer control system?.....(0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Buggy manufactured using appropriate processes?.....(0-3) B. Control system/interface constructed using appropriate processes?.....(0-2)	5
<i>Quality of processes</i>	A. Quality of product after manufacture using the stated processes?.....(0-3) B. Quality of the electro-mechanical sub-system?.....(0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? (<i>available resources considered</i>)....(0-3) B. Quality of assembly.....(0-2)	5
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards?.....(0-3) B. All parts well finished?.....(0-2)	5
<i>Tech. competence/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skill/technological competence? (Buggy).....(0-3) B. High level of skill/technological competence? (control system).....(0-2)	5
<i>Overall presentation</i>	A. Attractive, well presented buggy.....(0-3) B. Clear instructions for use, controls labelled, software details?.....(0-2)	5