



**Coimisiún na Scrúduithe Stáit**  
**State Examinations Commission**

**Junior Certificate 2014**

**Marking Scheme**

**Technology Tasks**

**Ordinary and Higher Level**

## **Note to teachers and students on the use of published marking schemes**

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

## **Future Marking Schemes**

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.



*Coimisiún na Scrúduithe Stáit*  
State Examinations Commission

*Junior Certificate Examination 2014*

***Technology Tasks***  
***Ordinary & Higher Level***

***Marking Schemes & Prompt Sheets***

***Confidential***

*Examiner's Name:* \_\_\_\_\_

# Aeroplane Launcher

# A

**Design and make a launching device for a paper aeroplane/glider. Your device must include an electro-mechanical or electronic element.**

## Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: A launching device for a paper aeroplane/glider. Incorporate an electro-mechanical or electronic element.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of launching device and/or relevant mechanical/electronic systems	5
<i>Design Ideas</i>	Launching device incorporating electro-mechanical/electronic system: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 launching device with an electro-mechanical/electronic sub system?	5
<i>Suitability, Functional</i>	Do all the necessary elements of the launching device function?	5
<i>Design/Inventiveness</i>	Inventive design of the Launching device and sub-system?	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-mechanical/electronic sub-system?	5
<i>App. manufacturing processes</i>	Complete launching device and sub-system manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of the product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly.	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skillss</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

**A**

# Aeroplane Launcher

**Design and make a launching device for a paper aeroplane/glider. Your device must include an electro-mechanical or electronic element.**

## Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units?	5
	A. Design should incorporate the following features: Launching device with an electro-mechanical/electronic element ..... (0-3) B. Design specification generated/list of objectives..... (0-2) (Restate brief: Total mark = 1)	
<i>Investigation of possible solutions</i>	Evidence of investigation/identification/research: (sketches, photos, etc.)	5
	A. Various types of launching device, etc. .... (0-3) B. electro-mechanical sub-system/electronic system. .... (0-2)	
<i>Design Ideas</i>	A. Launching device Design 1 - well sketched & annotated ..... (0-3) B. Launching device Design 2 - well sketched & annotated ..... (0-3)	6
	A. Selected design identified ..... (0-2) B. Valid justification of selected design idea and sub-system..... (0-2)	
<i>Criteria for selection of solution</i>	A. Selected design identified ..... (0-2) B. Valid justification of selected design idea and sub-system..... (0-2)	4
	Dimensioned/scaled drawings-sketches associated with manufacture.	
<i>Sketches /drawings for manufacture</i>	A. Detailed drawings of the chosen solution ..... (0-3) B. Circuit drawings/Flowchart ..... (0-3)	6
	A. Sequence of events for manufacture of the chosen solution ..... (0-2) B. Materials list with sizes and costing ..... (0-3)	
<i>Manufacturing sequence/processes</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
	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)	
<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
	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)	
<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 launching device?..... (0-3) B. Does it incorporate an electro-mechanical/electronic sub-system ..... (0-2)	5
	A. Does the launching device function? ..... (0-3) B. Does the electro-mechanical/electronic system work? ..... (0-2)	
<i>Suitability, Functional</i>	A. Inventive design of the launching device and subsystem and/or mock-up of all or part of the solution? (model = 2)..... (0-5)	5
	A. Creative use of materials/recycled parts/electronic components, mechanisms, colour, shape. Acceptable use of commercial components?..... (0-5)	
<i>Design/Inventiveness</i>	A. Materials selected suited to their respective functions? (strong, robust, rigid, etc.) ..... (0-5)	5
	A. Appropriate electro-mechanical/electronic sub-system, reliable? ..... (0-5) (Not working max. mark 4)	
<i>Originality, commercial comp.</i>	A. Launching device manufactured using appropriate processes? ..... (0-3) B. sub-system manufactured using appropriate processes?..... (0-2)	5
	A. Quality of launching device after manufacture using stated processes?..... (0-3) B. Quality of the sub-system after manufacture? ..... (0-2)	
<i>Appropriateness of materials</i>	A. Appropriate methods of assembly used? ..... (0-3) B. Quality of assembly ..... (0-2)	5
	A. No sharp edges or other safety hazards?..... (0-3) B. All parts well finished?..... (0-2)	
<i>Appropriate sub-system(s)</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (launching device) ..... (0-3) B. High level of skills/technological competences? (sub-system) ..... (0-2)	5
	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	
<i>App. manufacturing processes</i>	A. Quality of launching device after manufacture using stated processes?..... (0-3) B. Quality of the sub-system after manufacture? ..... (0-2)	5
	A. Appropriate methods of assembly used? ..... (0-3) B. Quality of assembly ..... (0-2)	
<i>Quality of processes</i>	A. No sharp edges or other safety hazards?..... (0-3) B. All parts well finished?..... (0-2)	5
	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (launching device) ..... (0-3) B. High level of skills/technological competences? (sub-system) ..... (0-2)	
<i>Assembly</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	5
	A. Quality of launching device after manufacture using stated processes?..... (0-3) B. Quality of the sub-system after manufacture? ..... (0-2)	
<i>Detailed finish/Safety Considerations</i>	A. No sharp edges or other safety hazards?..... (0-3) B. All parts well finished?..... (0-2)	5
	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (launching device) ..... (0-3) B. High level of skills/technological competences? (sub-system) ..... (0-2)	
<i>Tech. competences/ Application of skillss</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	5
	A. Quality of launching device after manufacture using stated processes?..... (0-3) B. Quality of the sub-system after manufacture? ..... (0-2)	
<i>Overall presentation</i>	A. No sharp edges or other safety hazards?..... (0-3) B. All parts well finished?..... (0-2)	5
	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (launching device) ..... (0-3) B. High level of skills/technological competences? (sub-system) ..... (0-2)	

## Rocking Cradle

# B

**Design and make a suitably scaled model of an electro-mechanically controlled rocking cradle for a baby. Your solution must incorporate variable speed control.**

### Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Rocking cradle, electro-mechanically controlled with variable speed control.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of rocking cradles and rocking mechanical systems.	5
<i>Design Ideas</i>	Rocking cradle : Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 rocking cradle and is it complete?	5
<i>Suitability, Functional</i>	Does the rocking cradle function? Does it have an electro-mechanical subsystem?	5
<i>Design/Inventiveness</i>	Inventive design of rocking cradle 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 electro-mechanical sub-system?	5
<i>App. manufacturing processes</i>	Complete rocking cradle manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of the product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly.	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skills</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

# B

## Rocking Cradle

**Design and make a suitably scaled model of an electro-mechanically controlled rocking cradle for a baby. Your solution must incorporate variable speed control.**

### Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Rocking cradle, electro-mechanical control, variable speed ..... (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 rocking cradles, ..... (0-3) B. Mechanical sub-systems to provide a rocking motion..... (0-2)	5
<i>Design Ideas</i>	A. Rocking cradle design 1 - well sketched & annotated..... (0-3) B. Rocking cradle 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 and sub-system..... (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawings of the chosen solution ..... (0-3) B. Circuit drawings/Flowchart ..... (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the chosen solution. .... (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 rocking cradle and is it complete?..... (0-3) B. Is it electro-mechanically controlled with variable speed?..... (0-2)	5
<i>Suitability, Functional</i>	A. Is the rocking cradle suitable for use? ..... (0-3) B. Does it have a working sub-system? ..... (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the Rocking cradle 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-mechanical subsystem? ..... (0-3) B. Appropriate speed controller? ..... (0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Product manufactured using appropriate processes? ..... (0-3) B. Control system manufactured using appropriate processes? ..... (0-2)	5
<i>Quality of processes</i>	A. Quality of rocking cradle after manufacture..... (0-3) B. Quality of the control system after manufacture?..... (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? ..... (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. competences/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (rocking cradle) ..... (0-3) B. High level of skills/technological competences? (control system)..... (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	5

**C****Airboat**

**Design and make a working model of an airboat. Your solution must be capable of left/right and forward/reverse movement.**

**Ordinary Level Folder**

<i>Analysis of brief</i>	Design should incorporate the following features: Airboat with forward/reverse and left/right control.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of airboats and control systems.	5
<i>Design Ideas</i>	Airboat: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 airboat with directional control?	5
<i>Suitability, Functional</i>	Is the product suitable for travelling on water and does it have a functioning directional control system.	5
<i>Design/Inventiveness</i>	Inventive design of the airboat and control system 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 propulsion and directional control system?	5
<i>App. manufacturing processes</i>	Complete airboat and control system manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of the product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly.	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skills</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5



C

## Airboat

**Design and make a working model of an airboat. Your solution must be capable of left/right and forward/reverse movement.**

### Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Airboat, with four way directional control system..... (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 airboats, etc. .... (0-3) B. Propulsion systems and directional control systems..... (0-2)	5
<i>Design Ideas</i>	A. Airboat design 1 - well sketched & annotated..... (0-3) B. Airboat 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 and sub-system ..... (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawings of the chosen solution..... (0-3) B. Circuit drawings/Flowchart ..... (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the chosen solution. .... (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 airboat and is it complete? ..... (0-3) B. Is there a propulsion and directional control sub-system?..... (0-2)	5
<i>Suitability, Functional</i>	A. Will the airboat travel on water? ..... (0-3) B. Does the directional control system operate? ..... (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the airboat and 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, weather proof, etc.) ..... (0-5)	5
<i>Appropriate Sub-system</i>	A. Appropriate propulsion system? ..... (0-3) B. Appropriate directional control system?..... (0-2) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Airboat manufactured using appropriate processes? ..... (0-3) B. Control system manufactured using appropriate processes? ..... (0-2)	5
<i>Quality of processes</i>	A. Quality of the Airboat after manufacture using the stated processes? ..... (0-3) B. Quality of the control system after manufacture?..... (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? ..... (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. competences/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (Airboat) ..... (0-3) B. High level of skills/technological competences? (Control system) ..... (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	5

## Motorised Ride

# D

**Coin operated rides involving secondary motion are commonly used to entertain children in shopping centres and other public places. Design and make a motorised working model of such a ride. Your solution should incorporate either:**

**Lights that switch on automatically when a child is seated  
or A timer circuit to control the period for which the motor operates.**

### Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Motorised ride, secondary motion, auto lights or timer.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of motorised rides, secondary motion mechanisms, circuitry.	5
<i>Design Ideas</i>	Motorised ride: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 ride involving secondary motion with automatic lights or a timer.	5
<i>Suitability, Functional</i>	Does the motorised ride function as it should and is it suitable for use?	5
<i>Design/Inventiveness</i>	Inventive design of the motorised ride 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 sub-systems?	5
<i>App. manufacturing processes</i>	Complete motorised ride manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of the product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly.	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skills</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

## Motorised Ride

# D

**Coin operated rides involving secondary motion are commonly used to entertain children in shopping centres and other public places. Design and make a motorised working model of such a ride. Your solution should incorporate either:**

Lights that switch on automatically when a child is seated  
or A timer circuit to control the period for which the motor operates.

### Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? A. Motorised ride with secondary motion & automatic lights or a timer..... (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 motorised rides, ..... (0-3) B. Possible mechanisms and circuitry..... (0-2)	5
<i>Design Ideas</i>	A. Motorised ride design 1 - well sketched & annotated..... (0-3) B. Motorised ride 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 and sub-system..... (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawings of the chosen solution ..... (0-3) B. Circuit drawings/Flowchart ..... (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the chosen solution..... (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 ride? ..... (0-3) B. Does it incorporate secondary motion and appropriate circuit? ..... (0-2)	5
<i>Suitability, Functional</i>	A. Is the motorised ride functional? ..... (0-3) B. Does it have a functional electronic system?..... (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the motorised ride and control systems 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-mechanical sub-system ..... (0-5) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Motorised ride manufactured using appropriate processes? ..... (0-3) B. Control system manufactured using appropriate processes? ..... (0-2)	5
<i>Quality of processes</i>	A. Quality of motorised ride after manufacture using the stated processes?..... (0-3) B. Quality of the control circuit after manufacture?..... (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? ..... (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. competences/ Application of skillss</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (Motorised ride)..... (0-3) B. High level of skills/technological competences? (Control circuit)..... (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled?..... (0-1)	5

## Giro d'Italia

**E**

**The Giro d'Italia 2014 is starting in Ireland for the first time. Design and make an artefact to commemorate this event coming to Ireland. The artefact should incorporate an electro-mechanical system and should light up automatically in low lighting conditions.**

### Ordinary Level Folder

<i>Analysis of brief</i>	Design should incorporate the following features: Giro d'Italia artefact and automatic lighting system.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various commemorative sporting artefacts, mechanisms, control circuitry.	5
<i>Design Ideas</i>	Giro d'Italia artefact : Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 electro-mechanically controlled Giro d'Italia artefact?	5
<i>Suitability, Functional</i>	Does the Giro d'Italia artefact work? (allowing for complexity of the solution)	5
<i>Design/Inventiveness</i>	Inventive design of the Giro d'Italia artefact 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 mechanical sub-system?	5
<i>App. manufacturing processes</i>	Complete Giro d'Italia artefact 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.	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skills</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

## Giro d'Italia

# E

**The Giro d'Italia 2014 is starting in Ireland for the first time. Design and make an artefact to commemorate this event coming to Ireland. The artefact should incorporate an electro-mechanical system and should light up automatically in low lighting conditions.**

### Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Giro d'Italia artefact to commemorate the Giro coming to Ireland etc. ....(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. Sporting commemorative artefacts, mechanical sub-systems .....(0-3) B. Automatic lighting sub-system.....(0-2)	5
<i>Design Ideas</i>	A. Giro d'Italia artefact - Design 1 - well sketched & annotated.....(0-3) B. Giro d'Italia artefact - 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 and sub-system .....(0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawings of the chosen solution.....(0-3) B. Circuit drawings/Flowchart .....(0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the chosen solution .....(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 Giro d'Italia commemorative artefact ? .....(0-3) B. Does it incorporate a mechanical/electro-mechanical sub-system?.....(0-2)	5
<i>Suitability, Functional</i>	A. Will this product function as a Giro d'Italia commemorative artefact? .....(0-3) B. Does it have a functional sub-system?.....(0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the Giro d'Italia artefact 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. Suitability of the materials selected for the Giro d'Italia artefact and sub-system.....(0-5)	5
<i>Appropriate sub-system(s)</i>	A. Appropriate mechanical/electro-mechanical sub-system .....(0-5) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Giro d'Italia artefact manufactured using appropriate processes.....(0-3) B. Control system manufactured using appropriate processes .....(0-2)	5
<i>Quality of processes</i>	A. Quality of the artefact after manufacture using stated processes? .....(0-3) B. Quality of the control system? .....(0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? .....(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. competences/ Application of skills</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (Giro d'Italia artefact) .....(0-3) B. High level of skills/technological competences? (control system).....(0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? .....(0-4) B. Instructions for use (if needed), controls labelled? .....(0-1)	5

**F****Swimming Pool Lift**

**Design and make a working model of an electro-mechanical device that could be used to assist a person with a physical disability when getting into and out of a swimming pool.**

**Ordinary Level Folder**

<i>Analysis of brief</i>	Design should incorporate the following features: A swimming pool lift, electro-mechanically controlled, to aid people with physical disabilities to get in and out of the pool.	5
<i>Investigation of possible solutions</i>	Evidence of investigation: (sketches, photos, etc.) Various types of swimming pool lifts, possible mechanisms and circuitry.	5
<i>Design Ideas</i>	Swimming pool lift: Sketch of one design shown.	6
<i>Criteria for selection of solution</i>	Valid justification of this idea (at least two reasons).	4
<i>Sketches /drawings for manufacture</i>	Manufacture drawing of the chosen solution and sub-system.	6
<i>Manufacturing sequence/processes</i>	Sequence of events for manufacture of the chosen solution.	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 swimming pool lift with suitable controls?	5
<i>Suitability, Functional</i>	Does the swimming pool lift work? If not, has it the potential to work?	5
<i>Design/Inventiveness</i>	Inventive design of the swimming pool lift 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>	Materials selected suited to their respective functions?	5
<i>Appropriate sub-system(s)</i>	Appropriate control system, reliable?	5
<i>App. manufacturing processes</i>	Complete swimming pool lift and electro-mechanical system manufactured using appropriate processes?	5
<i>Quality of processes</i>	Quality of the product after manufacture?	5
<i>Assembly</i>	Appropriate methods of assembly used? Quality of assembly?	5
<i>Detailed finish/Safety Considerations</i>	No sharp edges or safety hazards (loose parts, toxic paints etc.?)	5
<i>Tech. competences/ Application of skillss</i>	Appropriate level of skills/technological competences?	5
<i>Overall presentation</i>	Attractive, well presented product?	5

# F

## Swimming Pool Lift

Design and make a working model of an electro-mechanical device that could be used to assist a person with a physical disability when getting into and out of a swimming pool.

### Higher Level Folder

<i>Analysis of brief</i>	Problem posed by brief broken down into identifiable units? (Restate: mark = 1) A. Electro-mechanical swimming pool lift for the physically disabled..... (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 swimming pool lifts..... (0-3) B. Possible electro-mechanical sub-systems..... (0-2)	5
<i>Design Ideas</i>	A. Swimming pool lift design 1 - well sketched & annotated..... (0-3) B. Swimming pool lift 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 and sub-system..... (0-2)	4
<i>Sketches /drawings for manufacture</i>	Dimensioned/scaled drawings-sketches associated with manufacture. A. Detailed drawings of the chosen solution..... (0-3) B. Circuit drawings/Flowchart..... (0-3)	6
<i>Manufacturing sequence/processes</i>	A. Sequence of events for manufacture of the chosen solution..... (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 electro-mechanical swimming pool lift? ..... (0-3) B. Does the swimming pool lift have appropriate controls ..... (0-2)	5
<i>Suitability, Functional</i>	A. Does the swimming pool lift have a functioning control system? ..... (0-3) B. Is the control system reliable? ..... (0-2)	5
<i>Design/Inventiveness</i>	A. Inventive design of the swimming pool lift, 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 sub-system..... (0-5) (Not working max. mark 4)	5
<i>App. manufacturing processes</i>	A. Swimming pool lift manufactured using appropriate processes? ..... (0-3) B. Control system constructed using appropriate processes? ..... (0-2)	5
<i>Quality of processes</i>	A. Quality of the swimming pool lift after manufacture?..... (0-3) B. Quality of the electro- mechanical sub-system? ..... (0-2)	5
<i>Assembly</i>	A. Appropriate methods of assembly used? ..... (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. competences/ Application of skillss</i>	Does the product demonstrate that the candidate has a: A. High level of skills/technological competences? (swimming pool lift)..... (0-3) B. High level of skills/technological competences? (control system)..... (0-2)	5
<i>Overall presentation</i>	A. Attractive well presented product? ..... (0-4) B. Instructions for use (if needed), controls labelled? ..... (0-1)	5