



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

**Leaving Certificate Applied 2012**

**Marking Scheme**

**Graphics and Construction Studies**

**Common Level**





# Coimisiún na Scrúduithe Stáit

## State Examinations Commission

*Leaving Certificate Applied, 2012*

## Vocational Specialism

### Graphics and Construction Studies

**(240 marks)**

Sample solutions shown are presented as example answers.  
All other valid solutions are acceptable and are marked accordingly.

*Tuesday 12<sup>th</sup> June, Morning, 9:30 - 11:00*

### General Directions

1. Write your examination number in this space:

2. There are two sections in this paper.

**Section 1** - Answer **both** questions.

**105 marks**

**Q1** - Short answer questions

**Q2** - Graphic Communication

**Section 2** - Five questions - answer **any three**.

**135 marks**

**Q1** - Construction

**Q2** - Building Services

**Q3** - Woodcraft

**Q4** - Design and Manufacture  
of Educational Toys

**Q5** - Computer Aided Design

3. Write your answers in the spaces provided and include sketches as appropriate.

For the Examiner only		
1.	Total of end of page totals	
2.	Aggregate total of all disallowed question(s)	
3.	Total mark awarded (1 minus 2)	
4.	Bonus mark for answering through Irish (if applicable)	
5.	Total mark awarded if Irish Bonus (3 plus 4)	
<b>Note:</b> The mark in row 3 (or row 5 if Irish bonus is awarded) must equal the mark in the Total mark box on the script.		

For the Superintendent only			
Centre Stamp			
Marking Scheme			
Section		Question	Mark
1	(Both)	1	
		2	
2	(Any 3)	1	
		2	
		3	
		4	
		5	
Total			

## Section 1

## COMPULSORY QUESTION 1

(60 Marks)

1. Answer any TWELVE of the following FIFTEEN short questions.

- (a) The diagram shows a woodworking device.  
Name this device.

Name: \_\_\_\_\_ **3 Marks**

What is the function of the part labelled **A** in the diagram?

Function: \_\_\_\_\_ **2 Marks**



- (b) In the space provided, sketch **ONE** wood jointing technique you used during your practical work in Graphics and Construction Studies.

**5 Marks**  
(Deduct 1 mark if not in pencil)

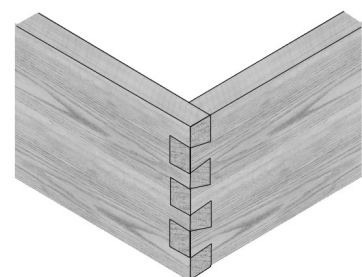


- (c) Name **ONE** woodworking hand tool that could be used for each of the following:

Marking Out: \_\_\_\_\_ **2 Marks**

Processing: \_\_\_\_\_ **2 Marks**

Assembly: \_\_\_\_\_ **1 Mark**



- (d) The diagrams show five safety symbols associated with the construction industry. Explain what is meant by **each** symbol.



1 Mark



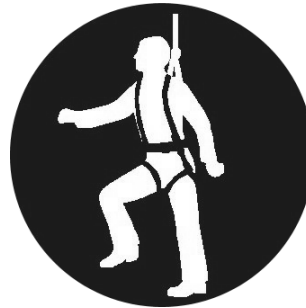
1 Mark



1 Mark



1 Mark



1 Mark

- (e) Name the **TWO** construction components labelled **A** and **B**.

**A**

3 Marks

**A**

**B**

2 Marks

**B**



- (f) Convert the following measurements to millimetres.

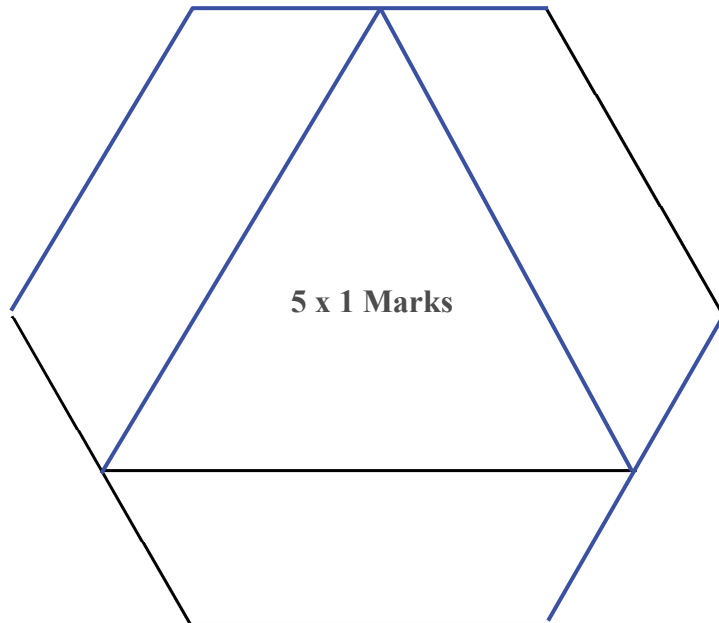
2.8 cm =  mm 2 Marks

10 m =  mm 2 Marks

65 cm =  mm 1 Mark



- (g) The logo below is based on an equilateral triangle inside a hexagon.  
Complete the drawing of the logo on the right.  
(You need not include the text surrounding the logo.)



(Deduct 1 mark if not in pencil)

- (h) Explain what is meant by the term 'Flat-pack' furniture.

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5 Marks



- (i) Name the manufactured board shown on the right.

Name: \_\_\_\_\_ 2 Marks

This type of board is always made from an odd number of layers. Give a reason for this.

Reason: \_\_\_\_\_ 3 Marks

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- (j) Name the electrical component shown, which is found in most woodwork rooms.

Name: \_\_\_\_\_ **2 Marks**

Give a reason for having such a component in a woodwork room.

Reason: \_\_\_\_\_  
\_\_\_\_\_



- (k) Wood pellet stoves are an alternative to the traditional solid fuel stove.

List **THREE** advantages that wood pellets have over fossil fuels such as coal.

1. \_\_\_\_\_ **2 Marks**

2. \_\_\_\_\_ **2 Marks**

3. \_\_\_\_\_ **1 Mark**



- (l) Tiles of various shapes and sizes were used to create the picture on the right. Identify the three different shape types involved and count how many of each type were used.

Name: \_\_\_\_\_ **1 Mark**

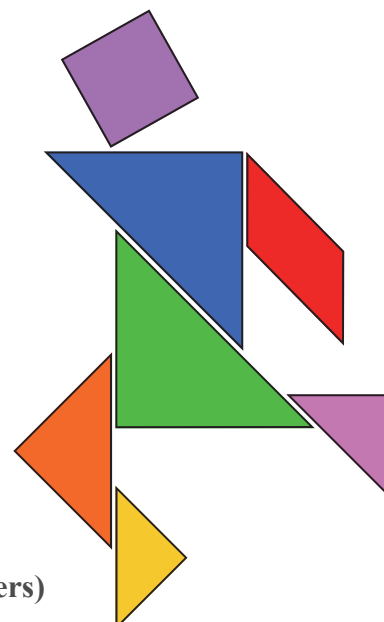
Number:  **1 Mark**

Name: \_\_\_\_\_ **1 Mark**

Number:  **1 Mark**

Name: \_\_\_\_\_ **1 Mark**

Number:  **(Award marks to the best 5 answers)**



- (m) A mini-company are considering producing garden benches such as the one shown on the right.

Wood for the garden bench costs €1.50 per metre and labour costs €10 per hour.

Calculate the cost of making a garden bench which consists of 8 metres of wood and will take five and a half hours to make.



$$€1.50 \times 8 = €12 \text{ (2 Marks)}$$

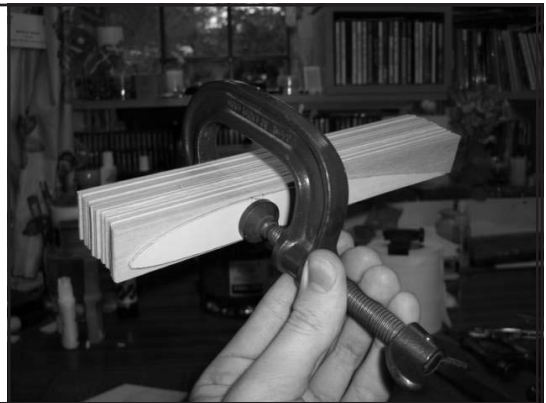
$$€10 / \text{hr} \times 5.5 = €55 \text{ (2 Marks)}$$

$$\text{TOTAL} = €67 \text{ (1 Mark)}$$

- (n) The diagram shows pieces of wood being held by a G-cramp while gluing.

What is the correct name for the force being applied by the G-cramp to the pieces of wood?

Force: \_\_\_\_\_ **5 Marks**



- (o) Evaluation is an important stage in a design process. Explain the term evaluation.

Answer: \_\_\_\_\_ **5 Marks**

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## Section 1

## COMPULSORY QUESTION 2

(45 Marks)

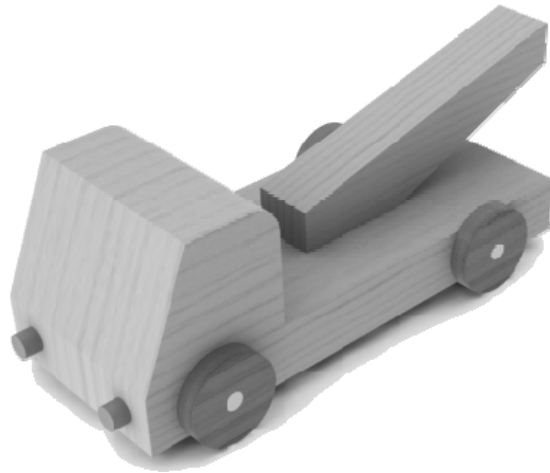
### 2. Graphic Communication

- (a) The graphic on the right shows a pictorial view of a Toy Truck.

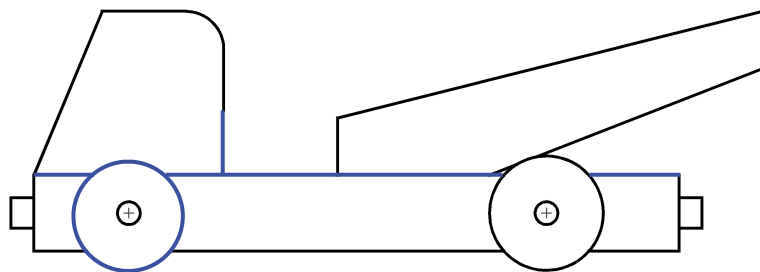
- (1) Complete the Elevation, Plan and End View of the Toy Truck on the drawing below.

*(Hidden detail need not be shown.)*

- (2) Apply appropriate colour or shading to the **Plan** view, to represent wood grain.

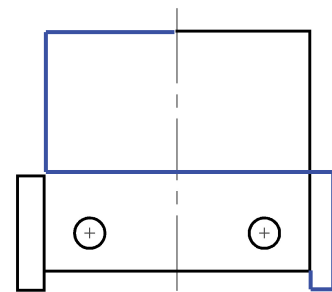


4 Marks in Total  
(Deduct 1 if not in pencil)

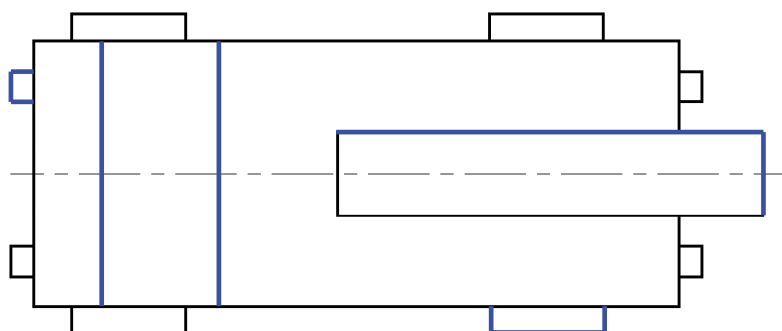


Elevation

4 Marks in Total  
(Deduct 1 if not in pencil)



End View



Plan

6 Marks in Total  
(Deduct 1 if not in pencil)

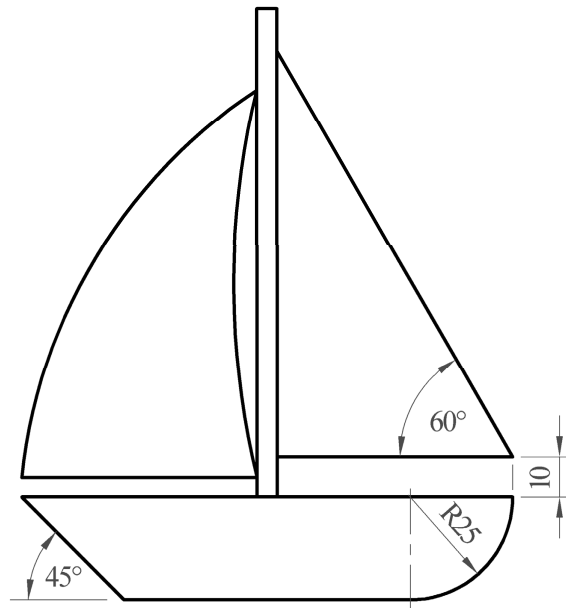
1 Mark for  
Colour/Shading



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- (b) The **Volvo Ocean Race** finishes this Summer in Galway.

A company called “**Key Golf Supplies**” has sponsored a boat for such a yacht race.



- (1) Using the dimensions on the right, complete the drawing of the sail boat below.
- (2) Design and sketch a logo on the sail of the boat, which reflects the company business.



15 Marks in Total  
(Deduct 1 if not in pencil)

3 Marks

5 Marks for  
LOGO

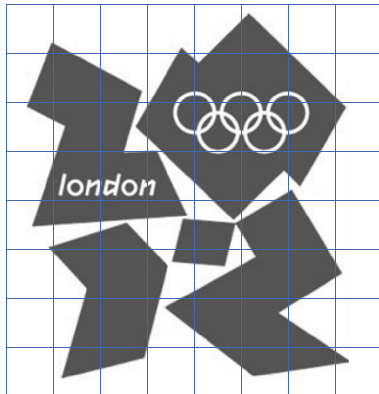
1 Mark

2 Marks

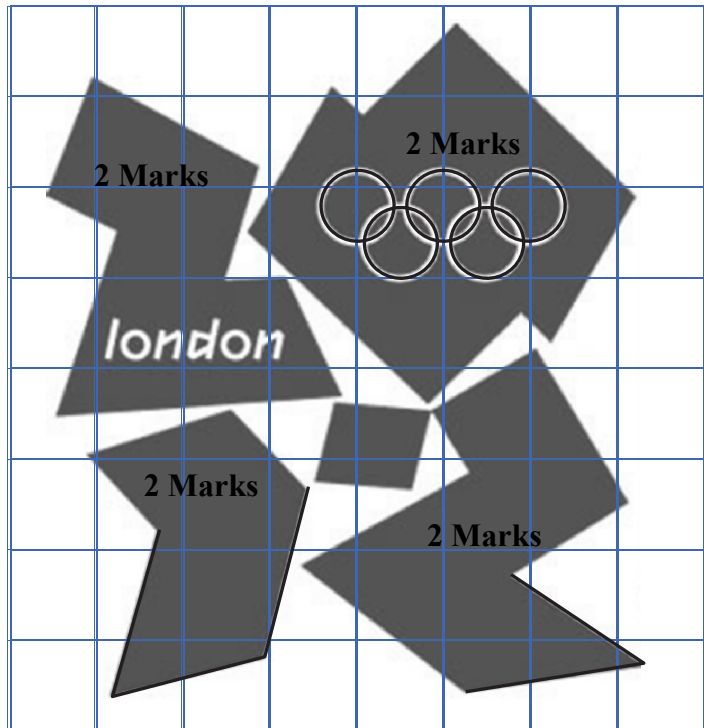
1 Mark

3 Marks

- (c) (1) The logo for this year's Olympic Games, which are to be held in London, is shown below. The logo is designed to reflect the year "2012". Using the grid on the right, draw the enlarged logo. The logo has been partly started for you. The "london" text should be inserted freehand.

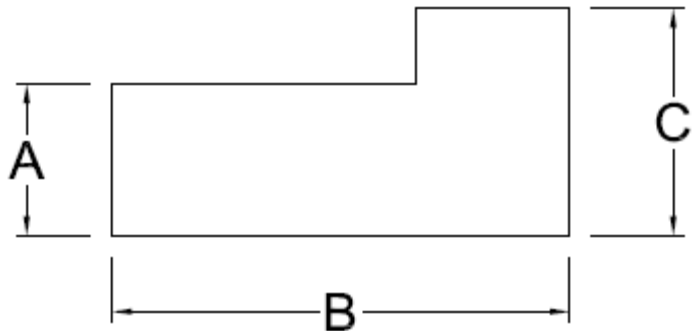


(Deduct 1 if not in pencil)

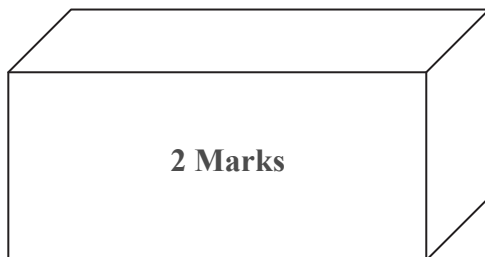


- (c) (2) If the scale of the drawing shown is 1:2, calculate the dimensions for **A**, **B** and **C** below.

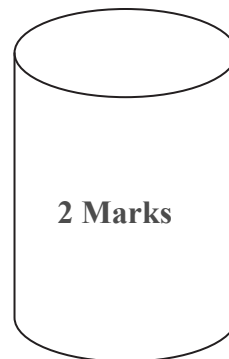
- A  mm 1 Mark
- B  mm 1 Mark
- C  mm 1 Mark



- (c) (3) Apply the appropriate rendering and shading to the following shapes.



2 Marks



2 Marks



Wood

(Deduct 1 if not in pencil)

Metal






## Section 2

(135 Marks)

Answer any THREE Questions from this section.

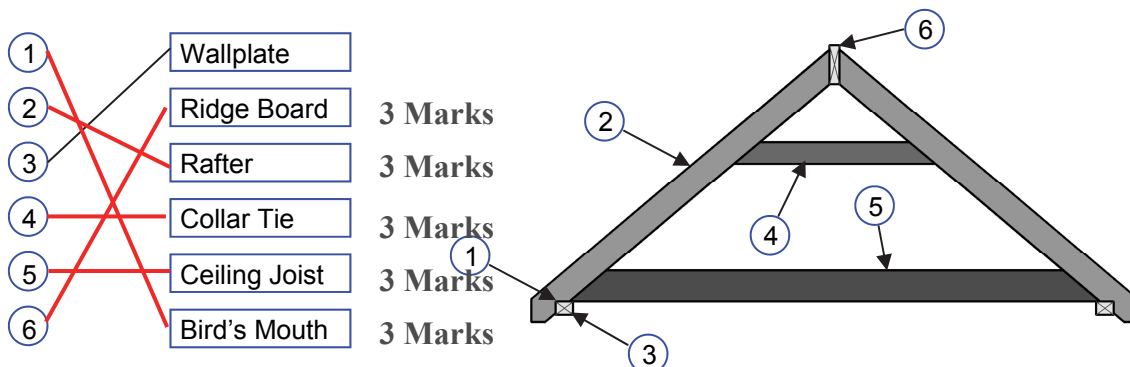
### 1. Construction

- (a) Shown are a number of tools used by a blocklayer or plasterer.  
Name the **FIVE** tools and say what each tool would be used for.

TOOL	NAME	USE
	<u>2 Marks</u>	<u>1 Mark</u> _____
	<u>2 Marks</u>	<u>1 Mark</u> _____
	<u>2 Marks</u>	<u>1 Mark</u> _____
	<u>2 Marks</u>	<u>1 Mark</u> _____
	<u>2 Marks</u>	<u>1 Mark</u> _____

15

- (b) The diagram shows a cut roof with six components labelled by number. Match the component names to the correct numbers below. (The first one is already done.)



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- (c) The dotted rectangle below shows the perimeter walls of a kitchen.  
The kitchen measures 3000mm x 4000mm.

Sketch, to scale of 1:20, a typical kitchen layout. Indicate the position of a door, two windows, a sink, a hob, kitchen base units and a table and chairs. Shading and colouring should be used to enhance the presentation.



**15 Marks in Total**  
**2 Marks for Shading/Colour.**  
**(Deduct 1 if not in pencil)**

**Layout: 1 Mark**  
**Door: 2 Marks**  
**Windows: 2 Marks**  
**Sink: 2 Marks**  
**Hob: 2 Marks**  
**Base Units: 2 marks**  
**Table & Chairs: 2 Marks**

## 2. Building Services

- (a) (1) Shown is a **Solar Panel** that is commonly installed in houses.

Describe, using notes and sketches, how this panel may be incorporated into a system for heating domestic water.



**5 Marks**  
(Deduct 1 if not in pencil)

**4 Marks**

- (a) (2) The diagram shows a common plumbing fitting.  
Name the fitting and briefly describe how it functions.

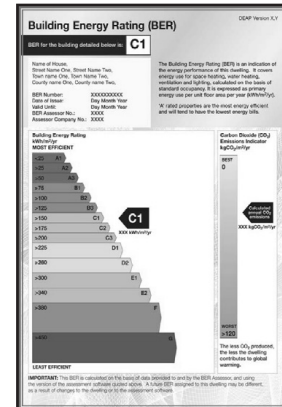
Name: \_\_\_\_\_ **2 Marks**

Function: \_\_\_\_\_ **4 Marks**



- (b) (1) Explain what is meant by the term '**Building Energy Rating (BER)**' as it relates to houses in Ireland.

6 Marks



- (2) A well insulated house, with a floor area of 200 square metres, has a **Building Energy Rating** value of 90 Kilowatt hours per square metre per year. The house is to be heated by electricity, which costs €0.12 per Kilowatt hour. In the box below calculate the cost of heating this house each year.

$200\text{m}^2 \times 90\text{KW hrs/m}^2 = 18000 \text{ KW hrs (5 Marks)}$   
 $18000 \text{ KW hrs} \times €0.12/\text{KW hr} = €2160 \text{ (5 Marks)}$



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- (c) Two components which are used in a plumbing system are shown below. Name each of the components and briefly describe how each component could be best insulated.

Name: \_\_\_\_\_ 3 Marks

Insulation Method: \_\_\_\_\_ 4 Marks



Name: \_\_\_\_\_ 3 Marks

Insulation Method: \_\_\_\_\_ 4 Marks



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### 3. Woodcraft

(a) The diagram shows a corner shelving unit made from oak.

- (1) Name a tool that you could use to cut the curves on the side panels?

Tool: \_\_\_\_\_ **3 Marks**



- (2) In the box below, describe, using notes and sketches, how you would ensure that the two side panels are identical in shape.

**Notes: 3 Marks**  
**Sketch: 3 Marks**  
**(Deduct 1 mark if not in pencil)**



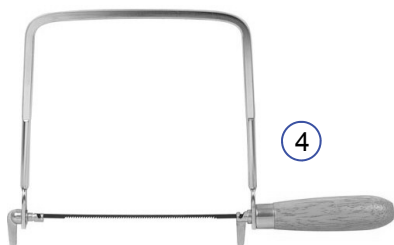
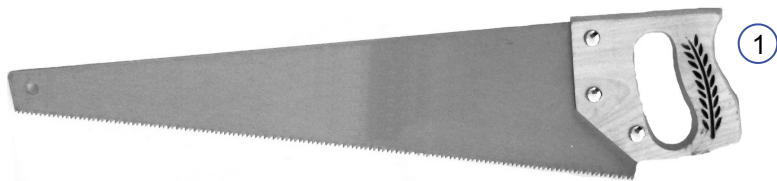
- (3) In the box below, describe, using notes and sketches, a suitable method of jointing the shelves to the side panels.

**Notes: 3 Marks**  
**Sketch: 3 Marks**  
**(Deduct 1 mark if not in pencil)**





(b) Name the **FIVE** handsaws shown.



1 3 Marks

2 3 Marks

3 3 Marks

4 3 Marks

5 3 Marks

15

(c) The diagram shows an outdoor wooden planter.

(1) Name a suitable native Irish wood that could be used to manufacture this planter.

5 Marks

(2) Suggest a suitable surface treatment/finish that could be applied to the wooden planter.

4 Marks

(3) Describe **TWO** factors you would need to consider in the design of the base of the planter.

1. 3 Marks

2. 3 Marks



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#### 4. Design and Manufacture of Educational Toys

- (a) (1) In order for toys to hold the interest of a child they often have more than one function.

Describe what you think would happen when this toy is pushed along the ground.

**6 Marks**

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- (2) Sketch a toy that you made as part of your course that incorporated a secondary movement. Include labels on the sketch to show how the secondary movement worked.



**9 Marks**  
**(Deduct 1 mark if not in pencil)**

Large empty box for sketching a toy with a secondary movement.

(b) Educational toys should be designed to cater for specific age groups.

State which age group each of the toys shown below would be suitable for and give a reason for your answer.



Age Group: 1 Mark

Reason: 4 Marks  
 \_\_\_\_\_  
 \_\_\_\_\_



Age Group: 1 Mark

Reason: 4 Marks  
 \_\_\_\_\_  
 \_\_\_\_\_

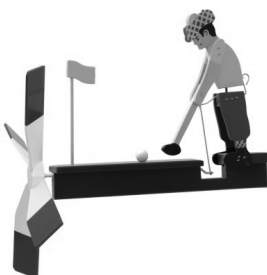


Age Group: 1 Mark

Reason: 4 Marks  
 \_\_\_\_\_  
 \_\_\_\_\_

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(c) Name the **THREE** power sources needed to produce movement in the toys shown below.



5 Marks



5 Marks



5 Marks

15

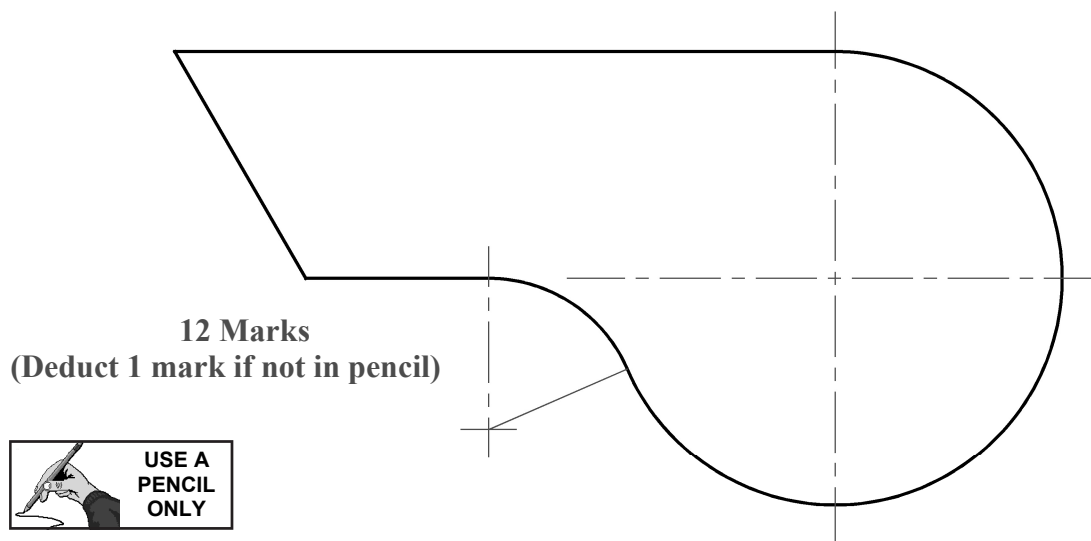
## 5. Computer Aided Design

- (a) (1) The CAD drawing below shows the outline of a referee's whistle. Using a ruler to measure, neatly insert on the drawing, an example of **EACH** of the following types of CAD dimension:

- (i) Linear Dimension (Horizontal) **2 Marks**
- (ii) Linear Dimension (Vertical) **2 Marks**
- (iii) Leader Dimension **2 Marks**
- (iv) Angular Dimension **2 Marks**
- (v) Aligned Dimension **2 Marks**
- (vi) Radius Dimension. **2 Marks**





(Arrowheads, extension lines, text, etc should be neatly included.)



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- (b) Online "Cloud" technology is rapidly gaining in popularity for data storage in preference to traditional media such as CDs, USB Drives, etc.

In the table below identify **TWO** advantages and **TWO** disadvantages for each storage medium.

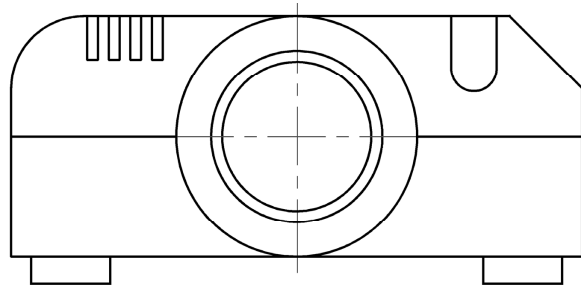
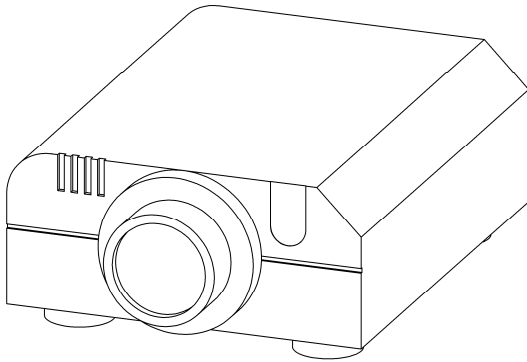
<b>Traditional Media</b> 	<b>Advantages</b>	1. <b>2 Marks</b>
		2. <b>2 Marks</b>
	<b>Disadvantages</b>	1. <b>2 Marks</b>
		2. <b>2 Marks</b>
<b>Online Storage</b> 	<b>Advantages</b>	1. <b>2 Marks</b>
		2. <b>2 Marks</b>
	<b>Disadvantages</b>	1. <b>2 Marks</b>
		2. <b>2 Marks</b>

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- (c) (1) Name a CAD package that you have used while studying Graphics and Construction Studies.

Package: \_\_\_\_\_ **2 Marks**

- (2) The graphic on the right shows a data projector which is commonly found in modern classrooms. The drawing below shows a pictorial view and a front elevation of the data projector. List **FIVE** CAD commands/tools/features that would be used to produce the drawings below and briefly explain what each command/tool/feature does.



Command/Tool/Feature		What it does
1	<b>1 Mark</b> _____	<b>2 Marks</b> _____ _____
2	<b>1 Mark</b> _____	<b>2 Marks</b> _____ _____
3	<b>1 Mark</b> _____	<b>2 Marks</b> _____ _____
4	<b>1 Mark</b> _____	<b>2 Marks</b> _____ _____
5	<b>1 Mark</b> _____	<b>2 Marks</b> _____ _____





