



Coimisiún na Scrúduithe Stáit State Examinations Commission

Leaving Certificate Applied - 2006

Vocational Specialism - Graphics & Construction Studies (240 marks)

Tuesday, 13th June 2006
Morning 9.30 am - 11.00 am.

For the Superintendent only

Marking Scheme

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+4)	
Note: The mark in row 3 (or row 5 if an Irish Bonus is awarded) must equal the mark in the Mór-Iomlán box on the script		

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.

Section 1

COMPULSORY QUESTION 1

(60 Marks)

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

(a) Describe one practical skill that you learned during this course.

5 marks

(b) Sketch in the space provided one hand tool you used during this course.

5 marks



(c) Give **TWO** safety precautions to be observed when using an electric sander.

2.5 marks each

(d) Name the **TWO** woodwork machines shown.

1



1 Morticer = 2.5 marks

2



2 Bandsaw = 2.5 marks

- (e) A list of material properties is given below.
Select the property which makes the wood *ash* suitable for sporting equipment.

Material Properties:- Malleable, Ductile, Elastic, Brittle.

Answer:- **Elastic = 5 marks**

- (f) Convert the following dimensions to millimetres.

2.8 m = **2800 mm. [2.5 marks]**

2.8 cm = **28 mm. [2.5 marks]**

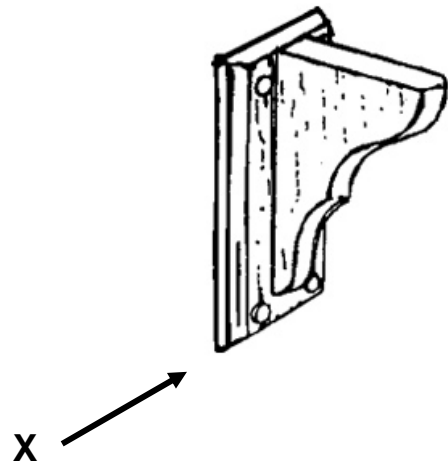
- (g) State ONE advantage and ONE disadvantage for the use of wind-power as a source of Energy.

Advantage: **2.5 marks**

Disadvantage: **2.5 marks**

- (h) Sketch an elevation of the shelf bracket when viewed in the direction of arrow "X".

5 marks



(i) State **TWO** checks to be carried out before working on a scaffold.

1. **1.25 marks**

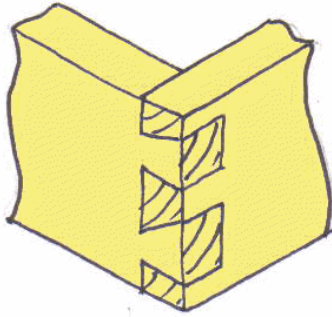
2. **1.25 marks**

State **TWO** reasons why a scaffold is braced.

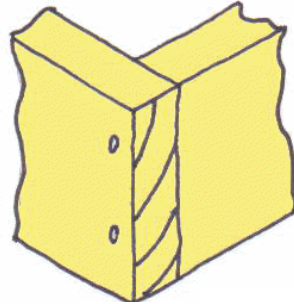
1. **1.25 marks**

2. **1.25 marks**

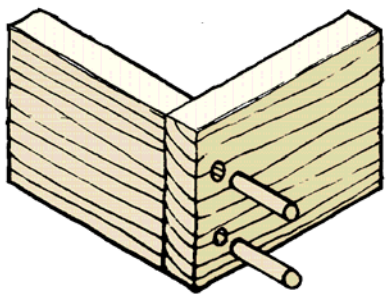
(j) Name any **THREE** of the following joints commonly used in woodwork.



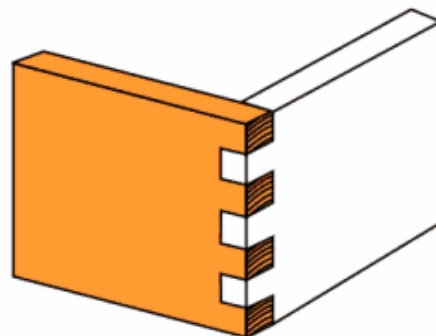
Answer: **Dovetail / Box dovetail**



Answer: **Butt joint / Nailed joint**



Answer: **Dowelled joint**



Answer: **Finger joint**

1.5 marks each = 4.5 marks
Neatness / accuracy = 0.5 marks.

(k) Name **TWO** safety procedures that should be observed when using power hand tools.

1. **2.5 marks each = 5 marks**

2. _____

(l) The following is a list of trees which grow in Ireland.

Scots Pine, Horse Chestnut, Ash, Beech, Larch, Holly, Douglas Fir, Sitka Spruce.

Sort the trees under the correct category:

5 marks

Deciduous (Hardwood)	Coniferous. (Softwood)
Horse Chestnut	Scots Pine
Ash	Larch
Beech	Douglas Fir
Holly	Sitka Spruce

[0.5 marks for each correct entry. 1 bonus mark if all correct.]

(m) Given below is the formula used to calculate fuse size for electrical goods.

$$\text{Current (amps)} = \frac{\text{Power (Watts)}}{\text{Voltage}}$$

Calculate the correct fuse size for a 660 watt electric drill which is connected to a 220 volt mains power supply.

$$\frac{660}{220} = 3$$

Answer: **3 amps [5 marks]**

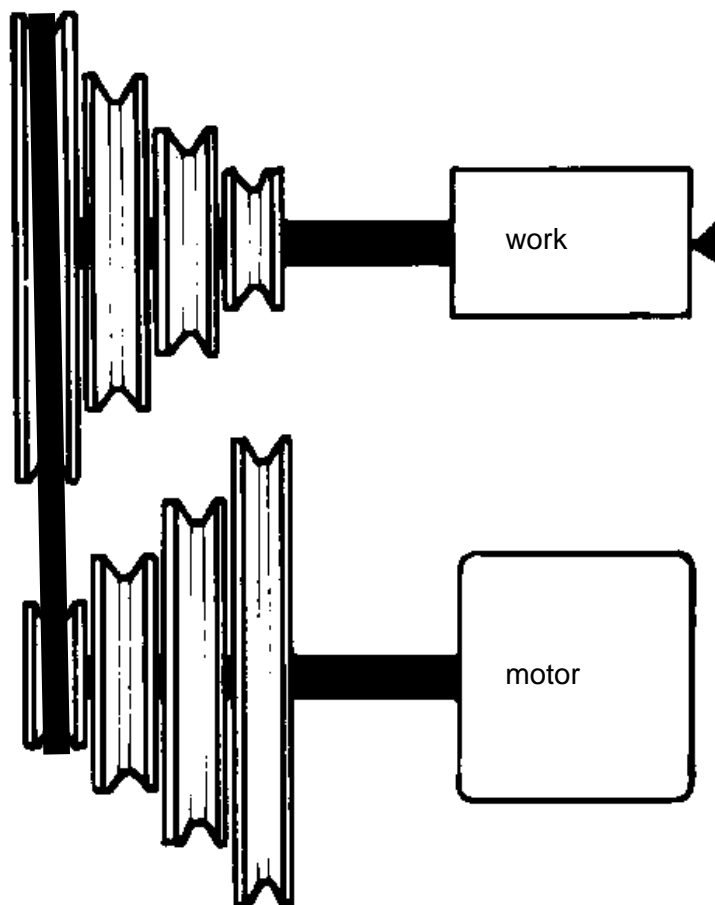
(n) The first stage in the Design Process is listed below.

List the remaining stages of the Design Process in the correct order.

1. Investigation
2. Analysis {Research}
3. Select a solution [Possible solution]
4. Working Drawings **1 mark each = 5 marks**
5. Realisation
6. Evaluation [Conclusion]

(o) The drawing shows the pulley arrangement for a wood turning lathe. Draw the correct position for a belt to give the slowest speed.

5 marks



Section 1

COMPULSORY QUESTION 2

(45 Marks)

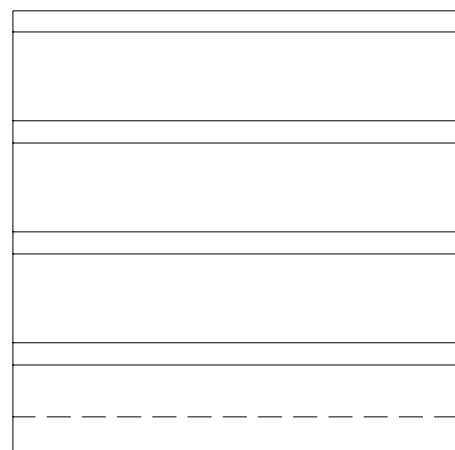
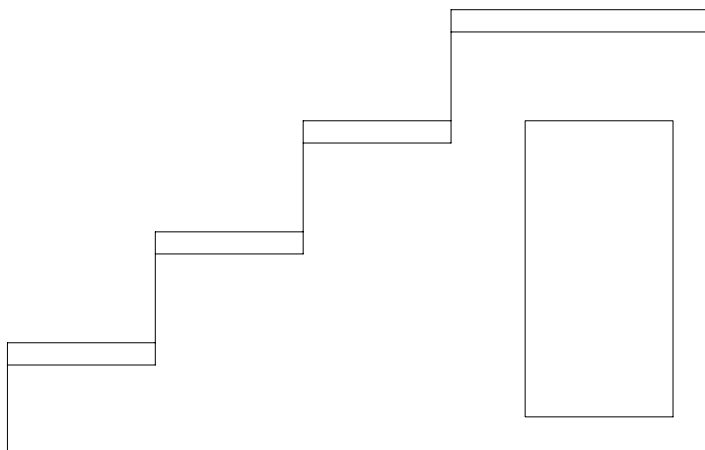
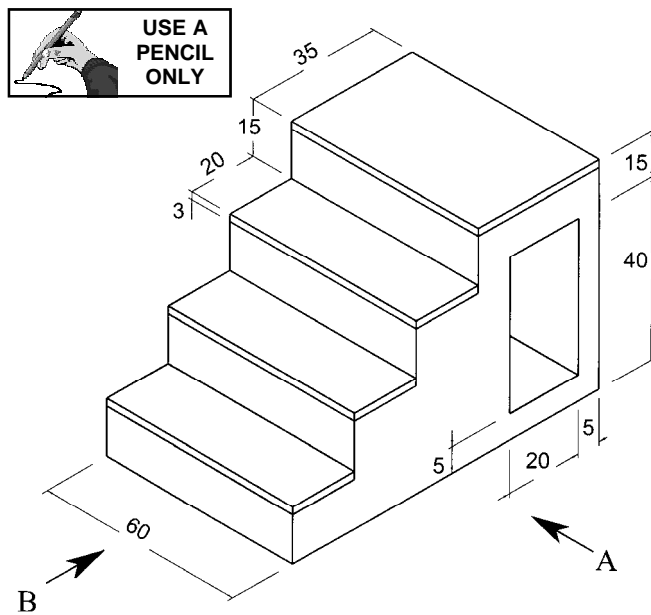
2. Graphic Communication

(a) The figure shows the outline of a stepped object.

Draw the following views:

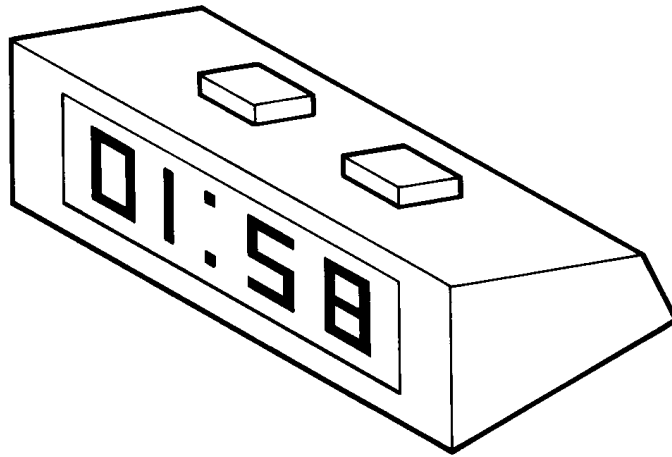
(a) (1) A front elevation looking in the direction of the arrow A. [10 marks]

(b) (2) An end elevation looking in the direction of the arrow B. [5 marks]



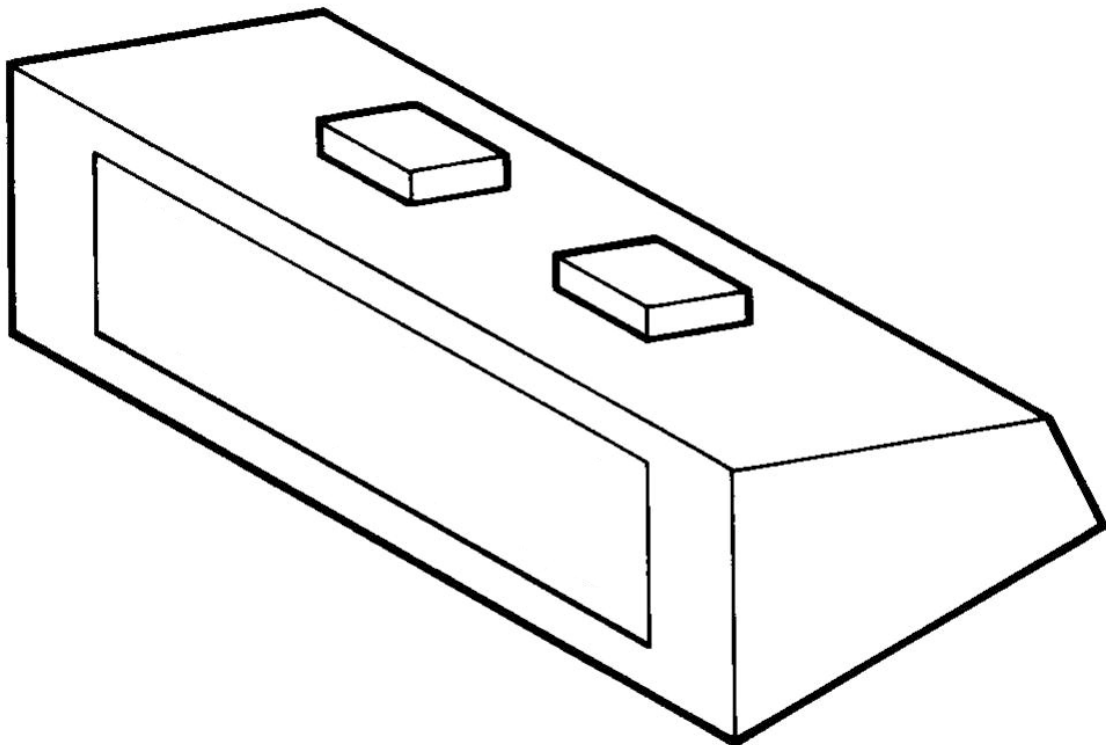
(b) The drawing below shows an isometric sketch of a digital clock.

Make an isometric sketch of the clock on the grid paper below.
It is not necessary to include the digits for the time on the sketch.



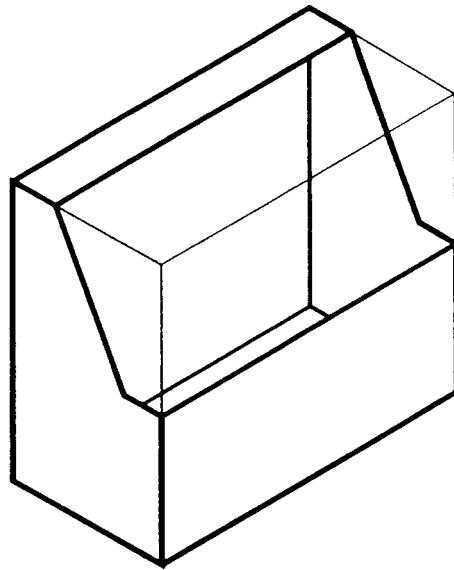
2 buttons at 1 mark each = 2 marks
All other lines at 1 mark each = 13 marks

Total = 15 marks



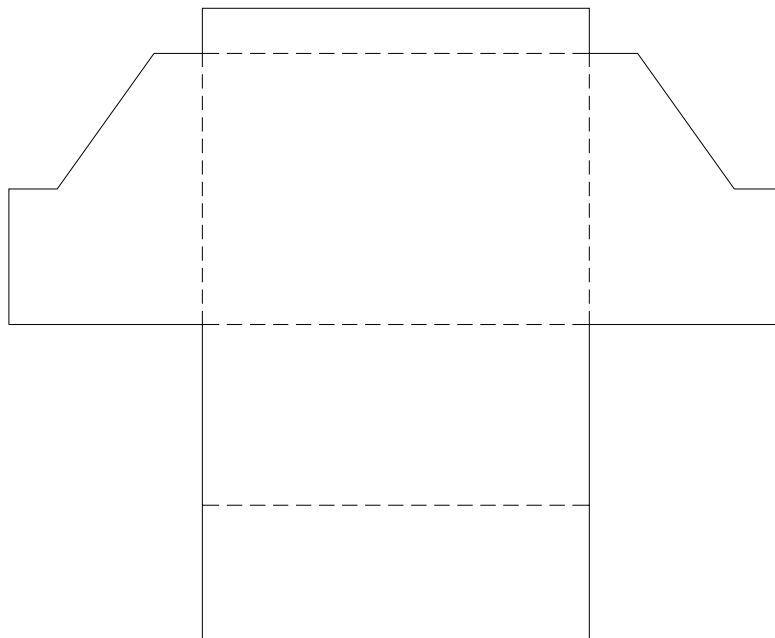
(c)

The pictorial view of a display box is shown.
Sketch the surface development of this display box.



2 sides at 4 marks each = 8 marks
Middle section = 5 marks
Hidden lines = 2 marks

Total = 15 marks



Section 2

(135 Marks)

Answer ANY THREE Questions from this section.

1. Construction

(a) Describe the work of **THREE** of the following trades associated with the construction industry. [5 marks each = 15 marks]

1. Plumber _____

2. Electrician _____

3. Plasterer _____

4. Carpenter _____

(b) A Timber-Frame wall detail, including a cavity, is shown below.

Name any **FIVE** of the elements shown. [3 marks each = 15 marks]

1. Plasterboard

2. Stud framework / Timber

3. Insulation

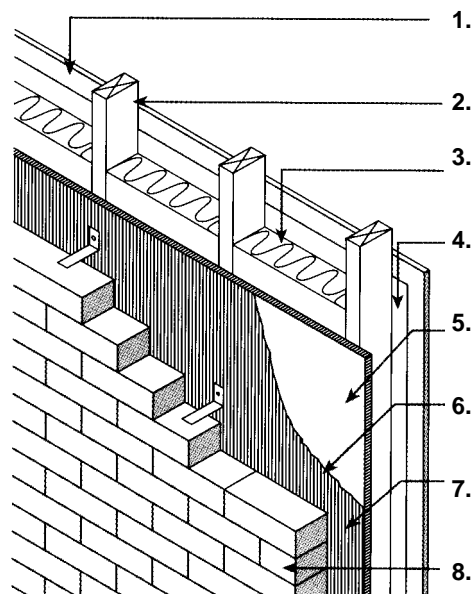
4. Vapour check

5. Sheathing material [Plasterboard –2]

6. Breather membrane / DPM

7. Ventilated cavity

8. Masonry outer leaf



- (c) (1) Name the **TWO** types of internal door shown.
Describe **ONE** advantage and **ONE** disadvantage of each door type.



Name: **2 marks**

Advantage: **1 mark**

Disadvantage: **1 mark**



Name: **2 marks**

Advantage: **1 mark**

Disadvantage: **1 mark**

- (c) (2) Describe the correct procedure for lifting a heavy object off the ground.

4 marks

[Keep back straight = 2 marks]

[Bend knees = 2 marks]



- (c) (3) Explain the term "Safe Pass" as it relates to the construction industry.

3 marks

2. Building Services

- (a) A range of common plumbing fittings used in most households are shown.
(a) (1) Name any **FIVE** of the plumbing fittings shown. [2 marks each = 10 marks]



Answer: Tee joint



Answer: Compression coupling



Answer: Elbow



Answer: Gate valve
Tap / valve



Answer: Stop cock
Tap / valve



Answer: Reducer

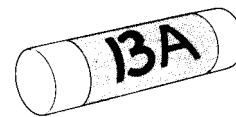
- (a) (2) The diagram shows a typical kitchen tap, that may develop a leak over time.
Suggest a reason why a leak may occur and describe the correct procedure to fix such a leak.

Reason = 2 marks

Procedure to fix = 3 marks



- (b) (1) A common electrical component is shown opposite. Name the component.



Answer: **4 marks**

- (b) (2) Explain what this component is used for.

6 marks

A protective device that is designed to melt, or blow, when a specified amount of current is passed through it or appropriate alternative.

- (b) (3) Name an electrical fitting where such a component is used.

5 marks

- (c) The diagram shows two bulbs connected.

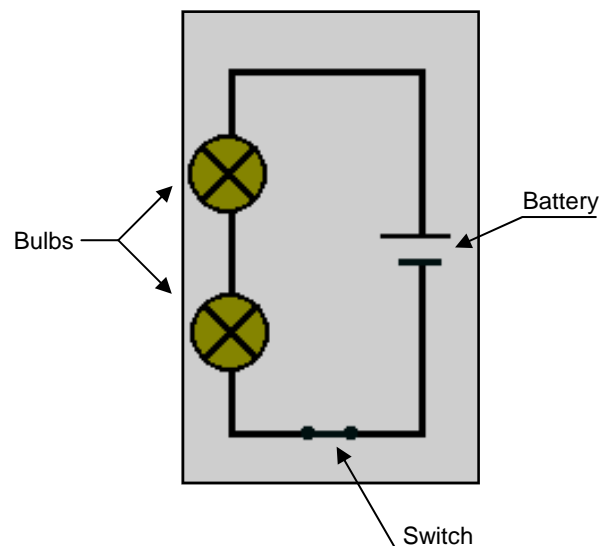
These bulbs are either connected in:

Series.

OR

Parallel.

State which of the above options is correct.



Answer: **Series**

[15 marks]

3. Woodcraft

(a) A woodwork power hand tool is shown.

(a) (1) Name this power hand tool.



Answer [3 marks]

(a) (2) Sketch in the space below the profile of any cutter (bit) for this tool. [6 marks]



(a) (3) Describe the correct procedure for changing a bit in this power tool.

[3 marks]

(a) (4) List **THREE** safety procedures that should be followed when using this power tool.

1. [1 marks each = 3 marks]

2. _____

3. _____

- (b) The diagram shows a wooden wall cabinet.
 (b) (1) Describe how you would mark out the designs on the top and bottom rails.

[6 marks]



- (b) (2) Describe how you would cut out the shapes.

[5 marks]

- (b) (3) Describe how the cabinet might be securely mounted on the wall.

[4 marks]

- (c) A range of fittings associated with woodcraft are shown
 (c) (1) Name any **FIVE** of the fittings shown. **[3 marks each = 15 marks]**



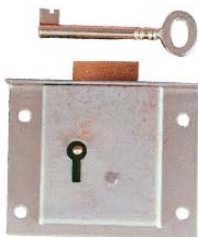
Answer: Butt hinge



Answer: Barrel bolt / bolt



Answer: Flap hinge



Answer: Box lock / lock



Answer: Magnetic catch



Answer: Mortise/Door lock

4. Design and Manufacture of Educational Toys

(a) The diagram shows a model plane made from wood.

(a) (1) Describe **TWO** educational aspects of this toy.

[3 marks each = 6 marks]



(a) (2) Describe, using notes and sketches, how you would create the star design.

Notes = 3 marks

Sketch = 10 marks

(a) (3) Suggest a suitable finish to be applied to the wood, taking its use into consideration.

[3.5 marks]

(b) (1) A child's pull-along toy is shown.

Suggest a suitable wood for the manufacture of this toy.

[5 marks]



(b) (2) Describe, using notes and sketches, a change you could make to the toy which would allow it move up and down while being pulled along.

Notes = 4 marks

Sketch = 10 marks

(b) (3) Identify the safety issues that should be observed in the finishing of toys for young children.

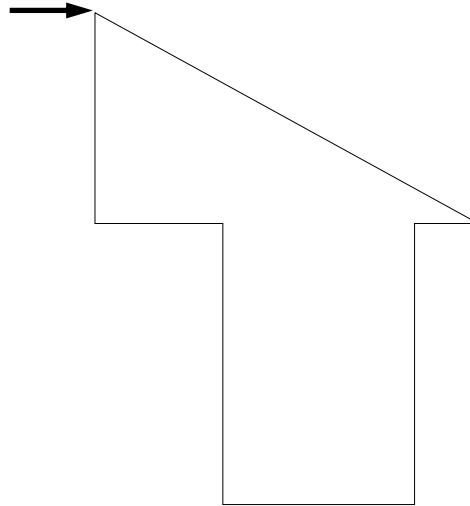
[3.5 marks]

5. Computer Aided Design

- (a) The following relative co-ordinates are used to draw a shape using a CAD package. Draw the shape using the given co-ordinates starting from point 1.

From point 1
To point: @0,-30
To point: @20,0
To point: @0,-40
To point: @30,0
To point: @0,40
To point: @10,0
To point: @-60,30

7 lines @ 2 marks each = 14 marks
Neatness / accuracy = 1 mark



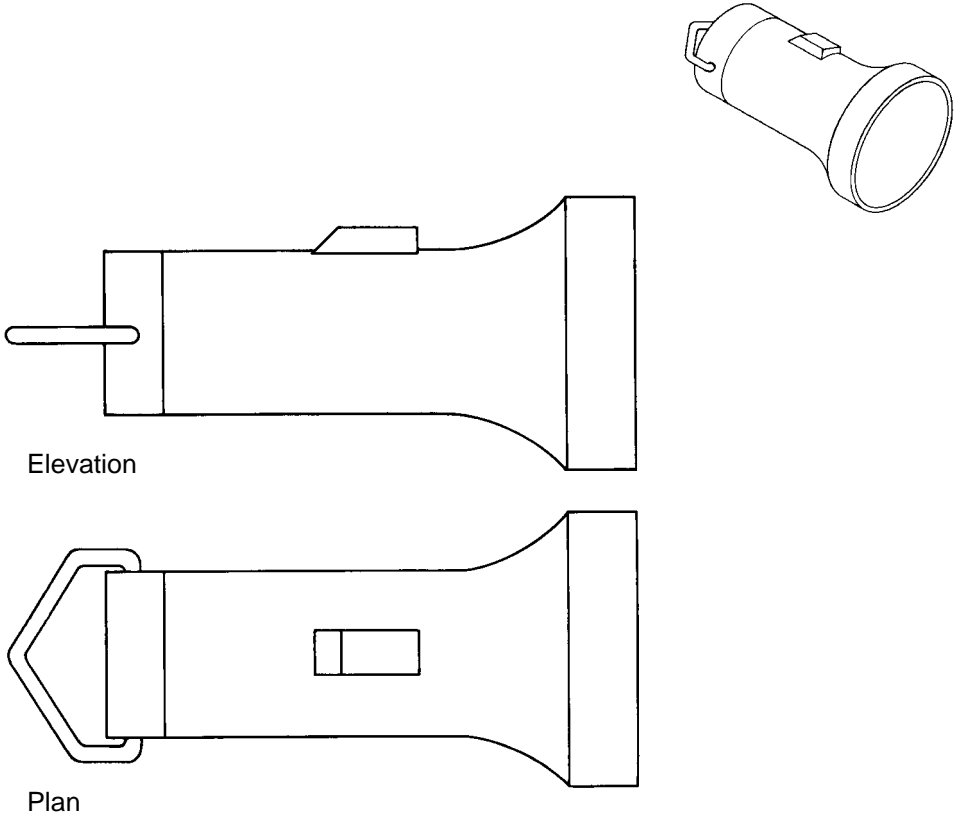
- (b) Good posture is important for computer operators.
(b) (1) Identify **TWO** regulations that should be observed when using computers.

[2 @ 4 marks each = 8 marks]

- (b) (2) List **TWO** career opportunities associated with Computer Aided Design.

[2 @ 3.5 marks each = 7 marks]

(c) Shown are the orthographic and pictorial views of a torch produced on a CAD package. Identify any **FIVE** CAD commands used to produce the elevation and plan and describe, with notes and/or arrows on the drawing, where these Commands are used.



Command. [5 @ 2 marks each = 10 marks]	Where Used. [5 @ 1 mark each = 5 marks]
1.	
2.	
3.	
4.	
5.	

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	Marks Awarded
Section 1 Q1	
Section 1 Q2	
Section 2 Q1	
Section 2 Q2	
Section 2 Q3	
Section 2 Q4	
Section 2 Q5	
Total	