



Coimisiún na Scrúduithe Stáit
State Examinations Commission

**LEAVING CERTIFICATE
APPLIED 2010**

MARKING SCHEME

**Graphics and
Construction Studies**

COMMON LEVEL



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied - 2010

Vocational Specialism
Graphics and Construction Studies
(240 marks)

Tuesday, June 15, 2010
Morning, 9.30 - 11.00

For the Superintendent only

<p>Centre Stamp</p>

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

General Directions

1. Write your examination number in this space:

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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) Name the item shown.

Name: _____ **3 Marks**

What power tool would you use this item with?

Power tool: _____ **2 Marks**



(b) In the space provided, **sketch** a try square and **label** its parts.

Sketch = 4 Marks (Deduct 1 Mark if not in pencil)

Any One parts = 1 Marks



(c) Sort the following list of trees into the headings of **hardwoods** or **softwoods**.

Oak, Ash, Sitka Spruce, Larch, Elm



Softwoods (Coniferous)
Sitka Spruce, Larch = 2 Marks



Hardwoods (Deciduous)
Oak, Ash, Elm = 3 Marks

(d) The diagram shows a Radon Barrier in a new building.

Give **TWO** reasons for using such a barrier?

1. _____ **4 Marks**

2. _____ **1 Mark**



(e) The diagram shows a pillar drill.

Explain, using notes and a sketch, how you would change the speed of this drill.

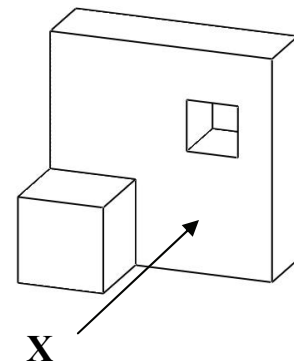
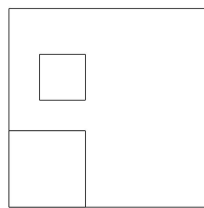
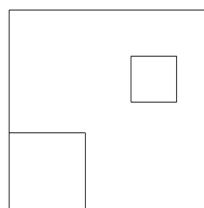
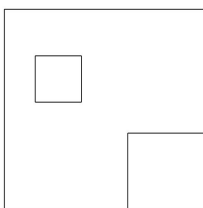


Sketch = 3 Marks (Deduct 1 Mark if not in pencil)



2 Marks

(f) Indicate, using a tick, which drawing below is the correct elevation of the object on the right when viewed in the direction of arrow 'X' ?



5 Marks

(g) List **TWO** advantages of speed control when using power hand tools.

Advantage 1: _____ **4 Marks**

Advantage 2: _____ **1 Mark**

(h) Shown is a wood-turning lathe.

List **TWO** safety precautions to be observed when using a wood turning lathe.

1. _____ **4 Marks**

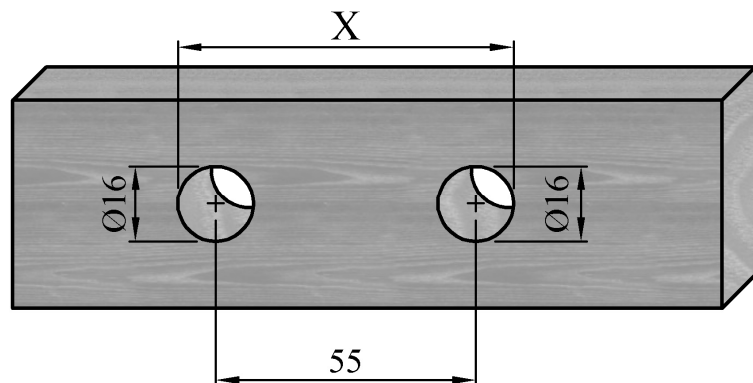
2. _____ **1 Mark**



(i) Calculate the value of 'X'.

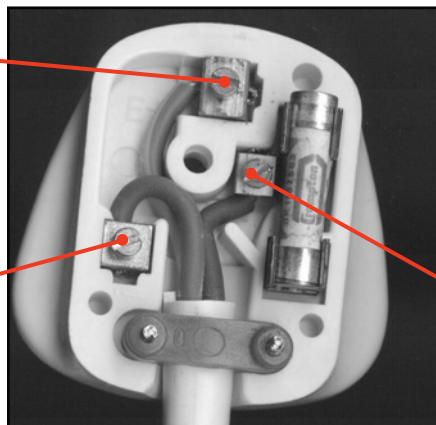
X = 71 = 5 Marks

X = _____



(j) Name the terminals of the plug shown below.

2 + 2 + 1 Marks in any correct order.



(k) Name the **THREE** main materials which are mixed with water to form concrete.



Water + 2 Marks + 2 Marks + 1 Mark = Concrete.

(l) List **TWO** safety precautions that should be taken when applying a surface finish to a project.

1. _____ **4 Marks**

2. _____ **1 Mark**



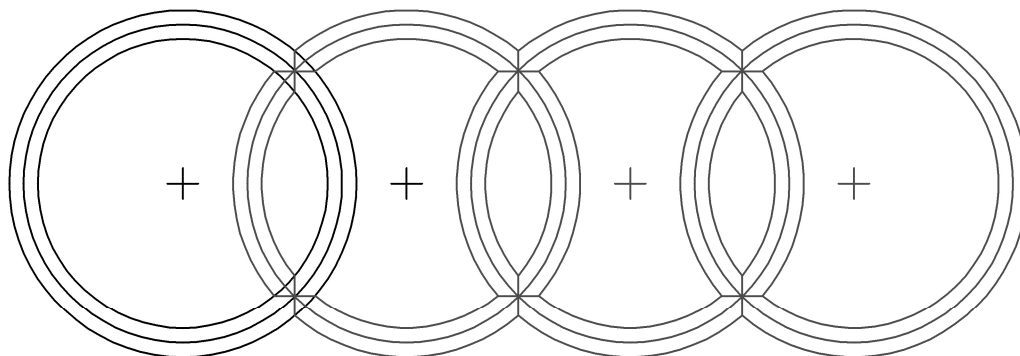
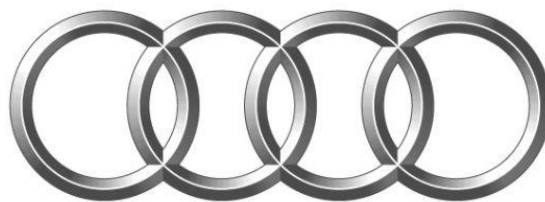
(m) Explain the term "**Geo-thermal energy**".

Good Answer = 5 Marks

Average Answer = 3 Marks

Below average Answer = 1 Mark

(n) Complete the logo, based on circles, using the three given circles and centre points.



2 Marks

2 Marks

1 Mark

(o) Name the type of Light Bulb shown in the diagram.

Name: _____ **1 Mark**

List **ONE** advantage and **ONE** disadvantage of using this type of bulb.

Advantage: _____ **3 Marks**

Disadvantage: _____ **1 Mark**



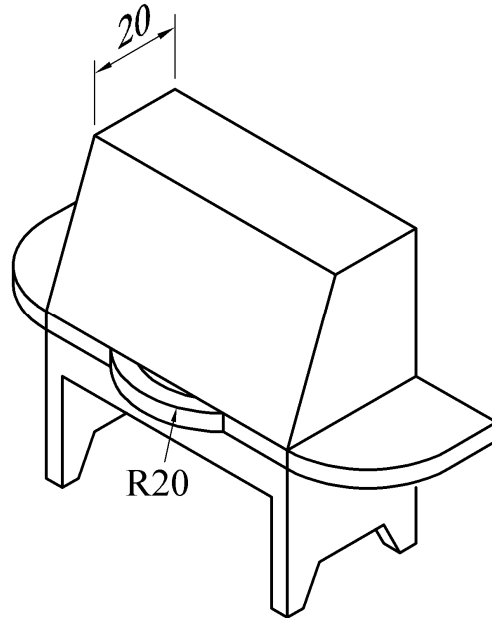
Section 1

**COMPULSORY
QUESTION 2**

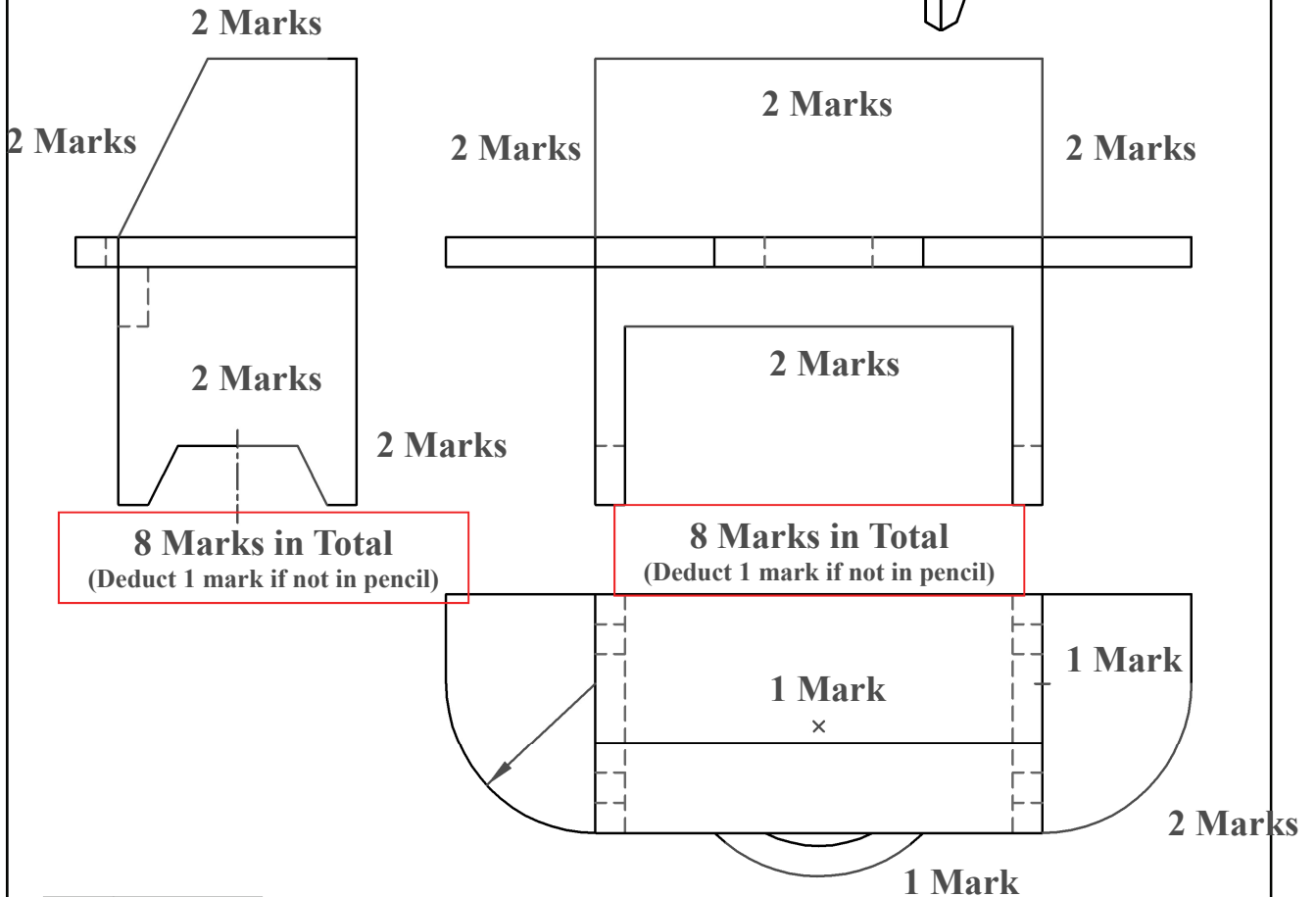
(45 Marks)

2. Graphic Communication

- (a) The graphic on the right shows a pictorial view of a Gas Barbeque.
- (i) Complete the Elevation, Plan and End View of the Barbeque on the drawing below.
- (ii) Apply appropriate colour or shading to the **Elevation** view only.



Colour/ Shading
2 Marks = Good attempt
1 Mark = Average attempt



8 Marks in Total
 (Deduct 1 mark if not in pencil)

8 Marks in Total
 (Deduct 1 mark if not in pencil)

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



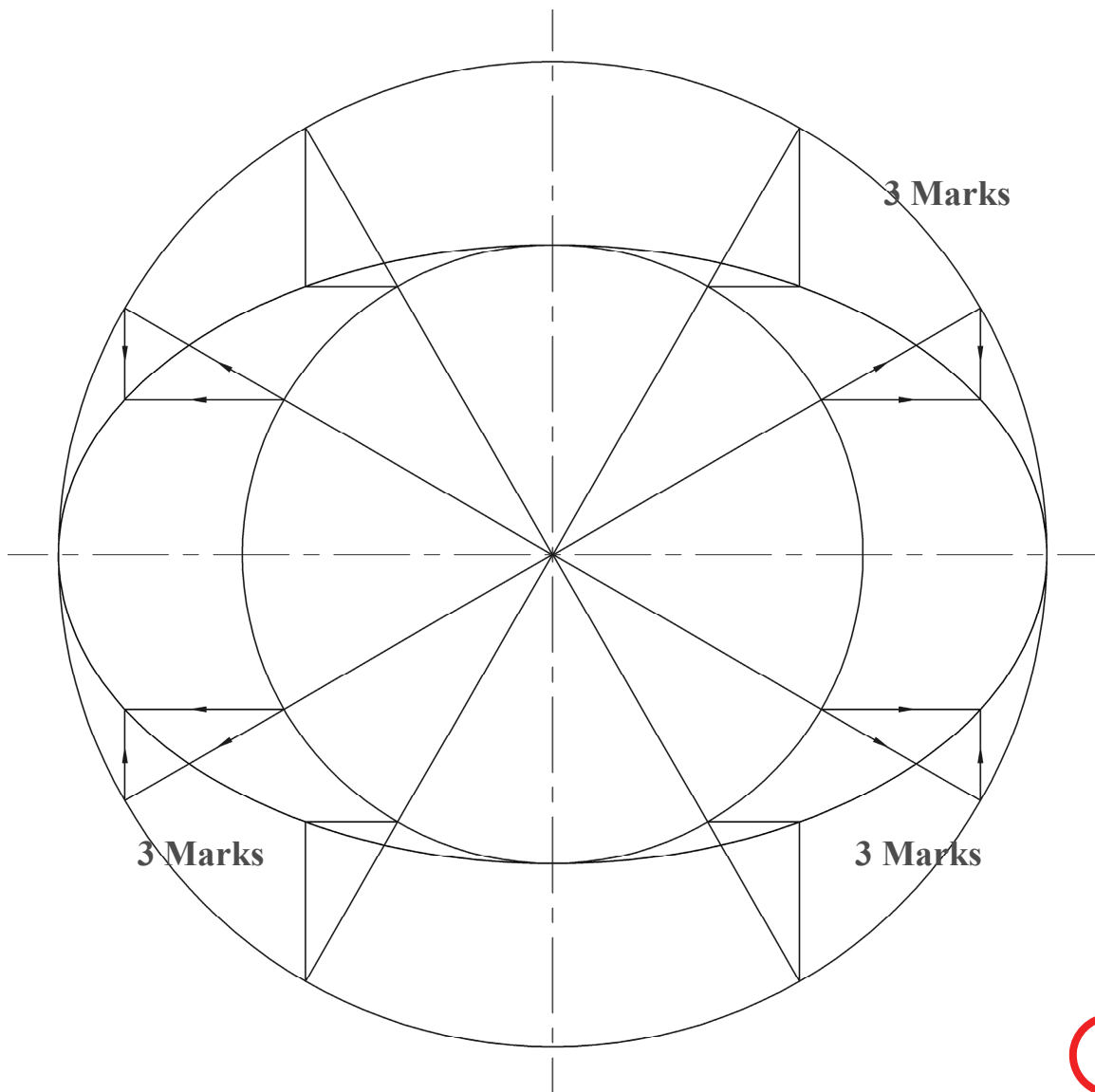
23

(b) The picture shows a table with an **elliptical** wooden top.

On the drawing below one quarter of an ellipse is drawn. Complete the ellipse.



9 Marks in Total
(Deduct 2 marks if not in pencil)

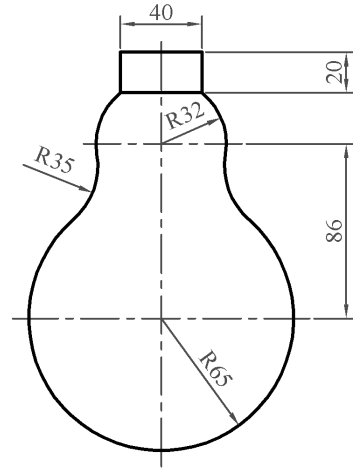
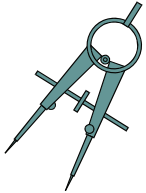


9

(c) The drawing on the right shows a light bulb.

Using the given dimensions, complete the drawing of the light bulb on the centrelines below.

USE A
COMPASS
AND PENCIL



13 Marks in Total
(Deduct 2 marks if not in pencil)

Cap = 1 Mark

32mm Circle = 4 Marks

35mm Circle = 1 Mark
35mm Circle centre points = 1 Mark

35mm Circle = 1 Mark
35mm Circle centre points = 1 Mark

65mm Circle = 4 Marks

13

Section 2

(135 Marks)

Answer ANY THREE Questions from this section.

1. Construction

- (a) (1) Shown is a timber-frame stud-partition. Identify any **FIVE** of the eight labelled components.

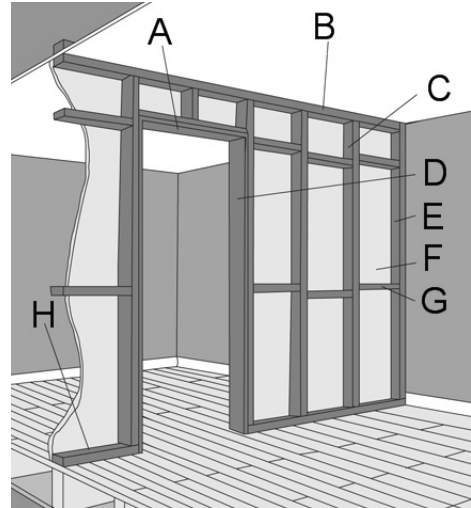
A. _____ E. _____
B. _____ F. _____
C. _____ G. _____
D. _____ H. _____

Any 5 correct = 2 Marks each

- (2) Suggest a different material that can be used for stud partitions.

Name: _____

5 Marks



15

- (b) In the space provided **sketch** a strip foundation of an external wall of a house.

Include the following in your sketch:

1. Steel reinforcement.
2. Bottom of cavity wall.
3. Compacted hardcore filling.
4. Radon Barrier.
5. Insulation.



2 Marks for showing steel reinforcement

2 Marks for showing bottom of cavity wall

2 Marks for showing compacted hardcore filling

2 Marks for showing radon barrier

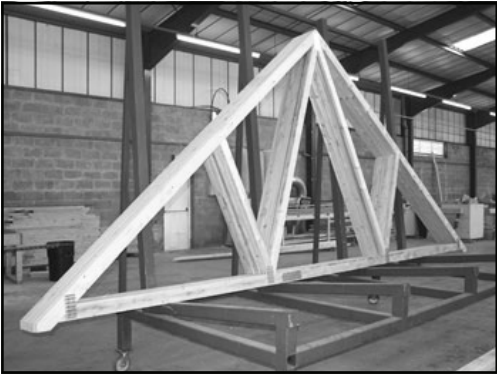
2 Marks for showing insulation

5 marks for overall quality of sketch

15 Marks in Total
(Deduct 3 marks if not in pencil)

15

(c) (1) Shown is a prefabricated timber roof truss.



List **TWO** advantages and **TWO** disadvantages of using this type of roof construction.

- Advantage 1: _____ **2 Marks**
- Advantage 2: _____ **2 Marks**
- Disadvantage 1: _____ **2 Marks**
- Disadvantage 2: _____ **2 Marks**

(2) Name a different type of timber roof construction?

Name: _____ **1 Mark**

(3) Shown are **TWO** different types of roof coverings. Name each type and suggest a material that each is made from.



Name: _____ **2 Marks**

Material: _____ **1 Mark**



Name: _____ **2 Marks**

Material: _____ **1 Mark**

2. Building Services

- (a) (1) Shown below are **FOUR** main components used in central heating systems. Name the components shown and suggest what each could be used for.



Name: _____ **2 Marks**

Use: _____ **2 Marks**



Name: _____ **2 Marks**

Use: _____ **2 Marks**



Name: _____ **2 Marks**

Use: _____ **2 Marks**



Name: _____ **2 Marks**

Use: _____ **2 Marks**

- (2) Outline **TWO** ways in which water sources could become contaminated.

1. _____ **2 Marks**

2. _____ **1 Mark**



(b) The table below shows an estimate of the annual electricity cost for a typical dishwasher.

Dishwasher Rating	A	B	C	D	E	F	G
Annual Cost €	28	31	40	46	52	58	64

(1) Calculate the annual saving in changing an old G rated dishwasher to a new B rated one.

Saving: € €33 = 9 Marks

(2) An old dishwasher breaks down and a new one will cost €120 more than the repair cost.
If the old dishwasher is F rated and the new one is A rated what is the payback period, in years, if a new dishwasher is purchased?

4 years (2 Marks)

Payback Period = years.

11

(c) (1) Shown are **TWO** devices used to conserve energy in the home.
Name each device and describe how it can conserve energy.



Name: _____ **4 Marks**

Conserves energy by: _____ **4 Marks**



Name: _____ **4 Marks**

Conserves energy by: _____ **3 Marks**

15

3. Woodcraft

(a) "Knock-down" fittings may be described as modern methods of jointing.

(1) Name **TWO** "knock-down" fittings and state where each might be used.

1. Name: _____ **1 Mark**

Use: _____ **1 Mark**

2. Name: _____ **1 Mark**

Use: _____ **1 Mark**

(2) Sketch any one of the "knock-down" fittings named above.

3 Marks in Total
(Deduct 1 mark if not in pencil)



7

(b) A picture of a outdoor wooden deck is shown.

(1) Name a suitable wood for this deck.

6 Marks

(2) Name a suitable treatment that could be applied to the wooden deck.

7 Marks

(3) Describe a suitable way of attaching the boards to the supporting framework, taking the external environment into consideration.

8 Marks



21

(c) The diagram shows a power hand-tool.

(1) Name this tool.

Name: _____ **6 Marks**

(2) Briefly describe the steps involved in safely changing the blade of this tool.

5 Marks



(3) In the space provided sketch how you would securely hold a piece of timber while using this tool.

6 Marks in Total
(Deduct 2 mark if not in pencil)



4. Design and Manufacture of Educational Toys

(a) A child's push-along toy with a secondary movement is shown in the diagram.

(1) Using notes and sketches, describe in detail what will happen when the toy is pushed along.



5 Marks

7 Marks in Total
(Deduct 2 mark if not in pencil)

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

3 Marks

15

- (b) (1) Shown opposite is a toy helicopter. Name **TWO** tools that would be used in the manufacture of this toy.



1. _____ **4 Marks**

2. _____ **3 Marks**

- (2) List **TWO** safety precautions that should be observed when using one of the above tools.

1. _____ **4 Marks**

2. _____ **4 Marks**

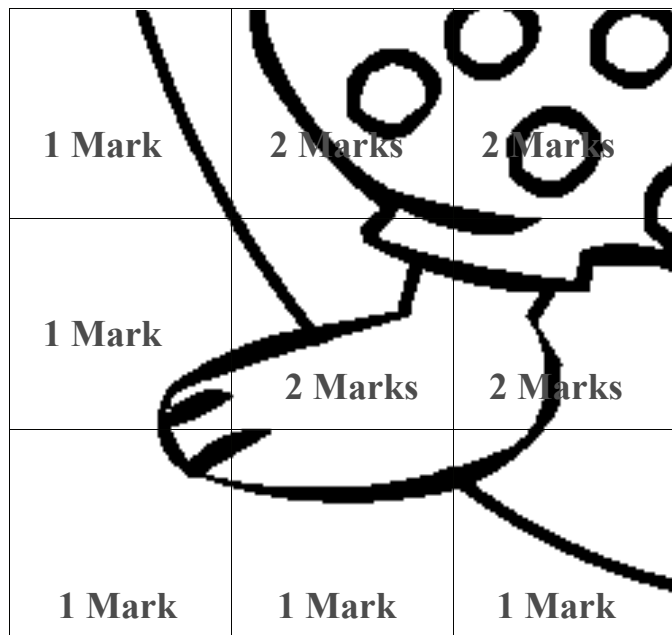
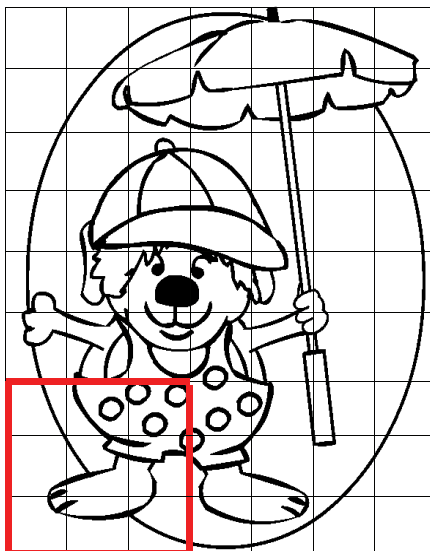
15

- (c) The image on the left below is to be enlarged using a grid, and then transferred to a piece of wood.

- (1) In the grid on the right below, redraw the portion of the image which is highlighted in red.

- (2) Apply appropriate colour or shading to the enlarged image.

2 Marks = Colour/ Shading

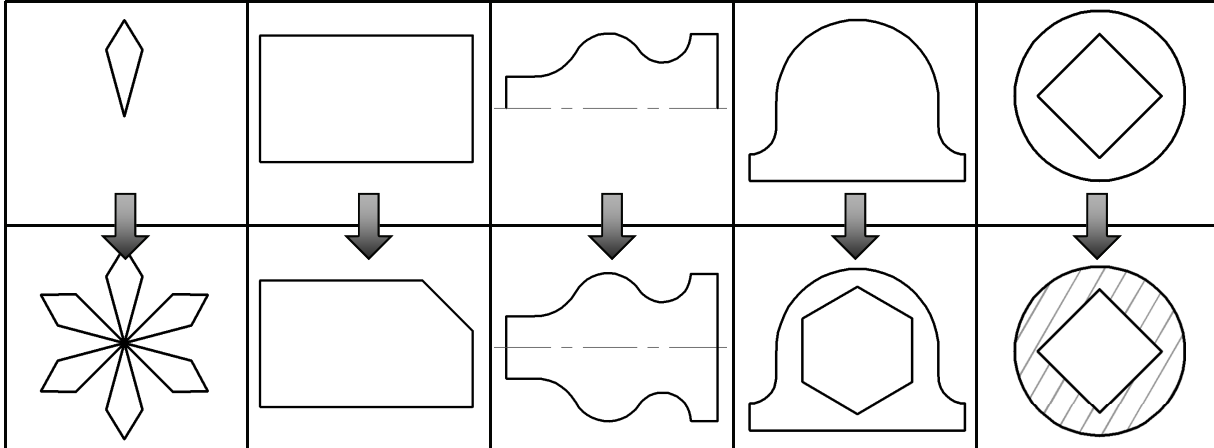


15 Marks in Total
(Deduct 2 mark if not in pencil)

15

5. Computer Aided Design

(a) Identify each of the CAD commands/tools required to produce the modified drawing from the original drawing below.



3 Marks

3 Marks

3 Marks

3 Marks

3 Marks

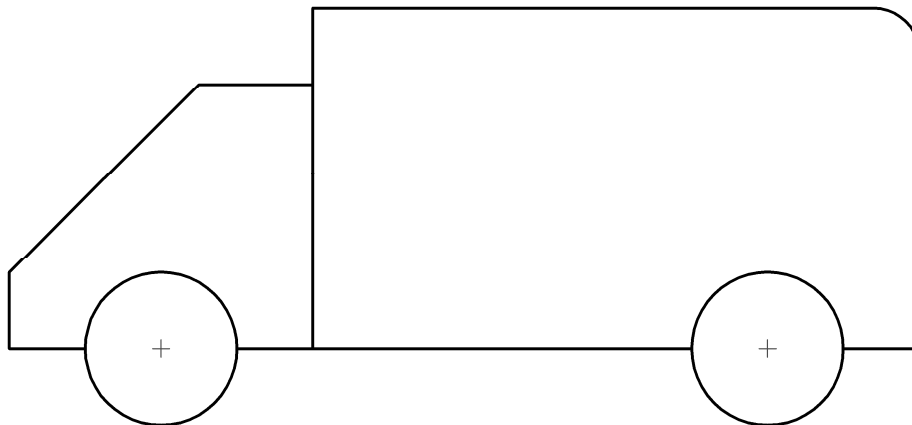
15

(b) Using a ruler to measure, neatly insert on the CAD drawing below, an example of **EACH** of the following types of CAD dimension:

- (i) Linear Dimension (Horizontal)
- (ii) Linear Dimension (Vertical)
- (iii) Aligned Dimension
- (iv) Angular Dimension
- (v) Diameter Dimension
- (vi) Leader Dimension.

15 Marks in Total
Best 5 = 3 Marks each
 (Deduct 2 mark if not in pencil)

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

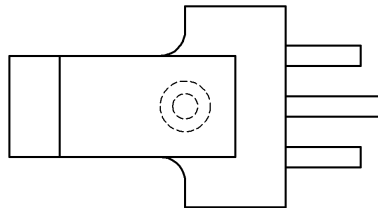
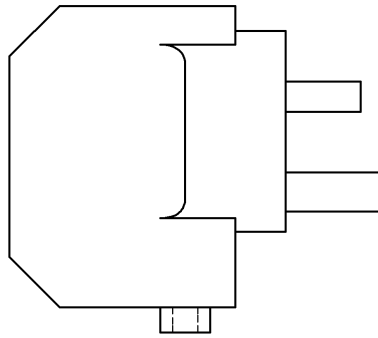
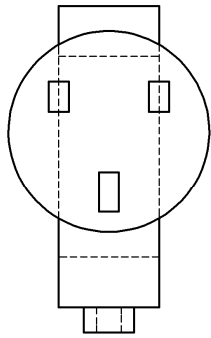
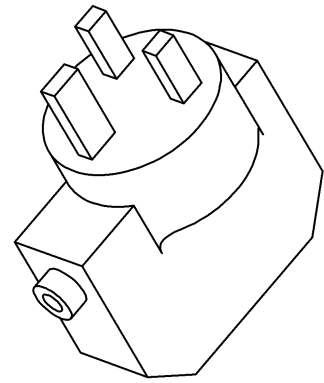


15

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

Package: 5 Marks

- (2) The graphic on the right shows a 3D view of a design for a power adapter for a games console. The drawing below shows the plan, elevation and end view of the Power Adapter.



Command/Tool/Feature		What it does
1	1 Mark _____	1 Mark _____ _____
2	1 Mark _____	1 Mark _____ _____
3	1 Mark _____	1 Mark _____ _____
4	1 Mark _____	1 Mark _____ _____
5	1 Mark _____	1 Mark _____ _____

GRAPHICS and CONSTRUCTION STUDIES

**Practical Examination
Candidate Assessment Sheet
Practical Work Presented - Candidate Present**

School Number: _____

Candidate Examination No.: _____

	Headings	Mark	Mark Awarded
1.	Analysis of Brief	5	
2.	Evidence of investigation/research	5	
3.	Design Ideas	5	
4.	Criteria for selection of solution	5	
5.	Sketches/drawings for manufacture	10	
6.	Suitability of tools/equipment	5	
7.	Appropriateness of materials	5	
8.	Logical sequence of work processes	10	
9.	Quality of finish/overall presentation	15	
10.	Safety considerations	5	
11.	Technical competence/Application of skills	10	
12.	Project Evaluation	5	
	Personal Evaluation	5	
13.	Evidence of Integration	5	
14.	Effectiveness of communication	5	
Total Marks		100	

Gender	
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Project Choice

Signed: _____
Examiner

Date: _____

