



Coimisiún na Scrúduithe Stáit

State Examinations Commission

Leaving Certificate Applied 2010

Vocational Specialism - Technology

(240 Marks)

Wednesday 16th June, Afternoon 2:00 to 4:00

General Directions:

1. Write your examination number in this box:

2. There are two sections in this paper.
Section 1– Answer **all three** questions. - 90 marks

Q1. - Short answer questions

Q2. - Graphical Communication

Q3. - Health and Safety

Section 2– Five questions, answer **any three** - 150 marks

Q1. - Introducing Technology

Q2. - Design and Manufacture

Q3. - Water Technology

Q4. - Electrical Understanding and Basic Electronics

Q5. - Tools and Equipment

3. Write your answers in the spaces provided and include sketches (in pencil) where appropriate.

Centre Stamp

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)	
	<u>Note:</u> 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.	

Section	No.	Mark
Section 1	1	
	2	
	3	
Section 2	1	
	2	
	3	
	4	
	5	
Total		

Section 1 (90 marks)

Compulsory

Question 1

(40 marks)

1. Answer **any Ten** of the following fifteen short questions.

- (a) The Halfpenny bridge in Dublin is built using steel.
Outline **one** advantage and **one** disadvantage of using steel for this purpose.

Advantage _____

Disadvantage _____



- (b) State whether each of the following products are Analogue or Digital.



1. _____



2. _____



3. _____

- (c) This glue is called PVA.
What do the letters **PVA** stand for?
Name **one** material that it can be used to bond.

P.V.A. _____

Material _____



- (d) A picture of a digital keypad is shown. Suggest **one** everyday use of this electronic component.

Everyday use _____



- (e) Wood pellets have become very popular for heating homes and have advantages over home heating oil. List **two** such advantages.

Advantage 1 _____

Advantage 2 _____



- (f) Voltage is measured in Volts. State what units **two** of the following quantities are measured in.

Voltage	Energy	Current	Distance	Power
				
Volts				

- (g) Name the plumbing fitting shown opposite and give its use.

Fitting _____

Use _____



- (h) A SPST switch is shown.
What does SPST stand for and give **one** use for this switch.

SPST _____

Use _____



- (i) Shown is a non return valve used in plumbing. Explain its function and give an example of where it is used.

Function _____

Where used _____



Non return valve

- (j) List **three** important design features that designers must consider when designing car bodies.

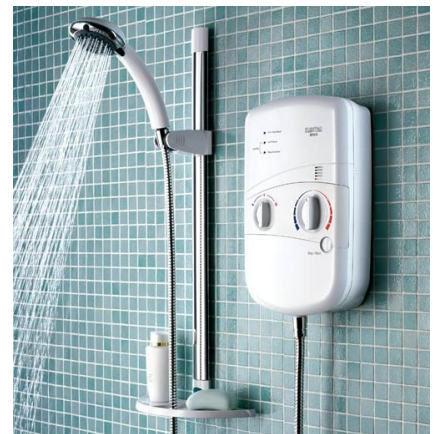


1 _____

2 _____

3 _____

- (k) In the space below, determine the cost of running this 10kW electric shower for half an hour if one unit of electricity (1 kWh) costs €0.20.



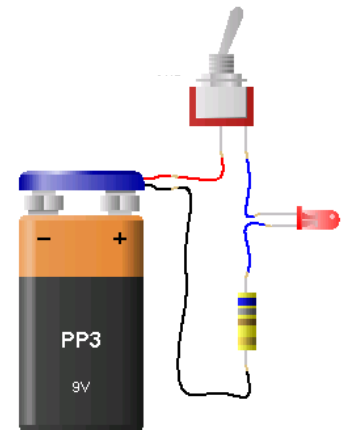
- (l) Shown is a pole mounted electricity transformer. Why are such transformers needed?

Answer _____



- (m) A circuit to switch on an LED is shown. Draw the circuit diagram for this assembly in the space below.

Circuit diagram



- (n) Name the machine used, and briefly explain the manufacturing process in the making of this front panel for a small quad bike.

Machine _____

Process _____



- (o) Using the colour code shown, name the colours of the bands for the following resistors.

100 Ohm _____

220 Ohm _____

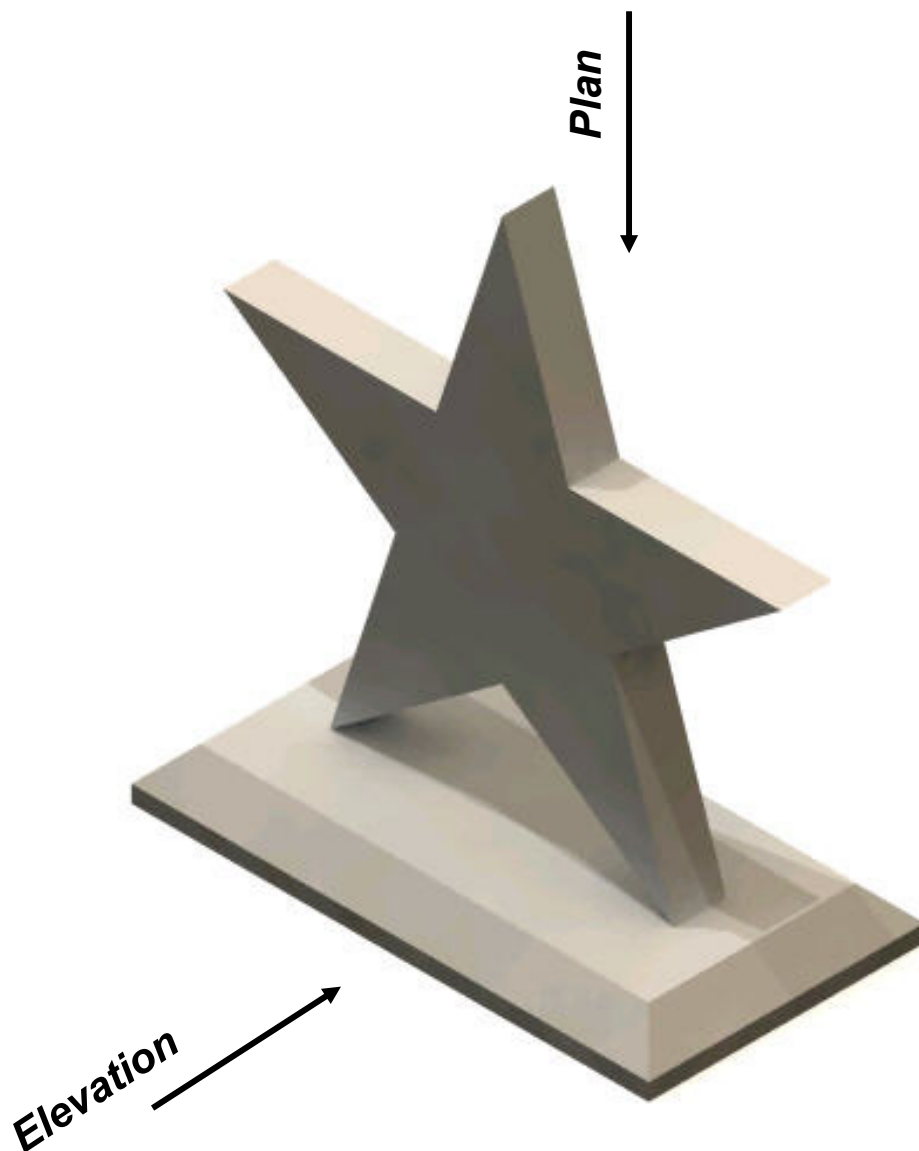
1 MOhm _____



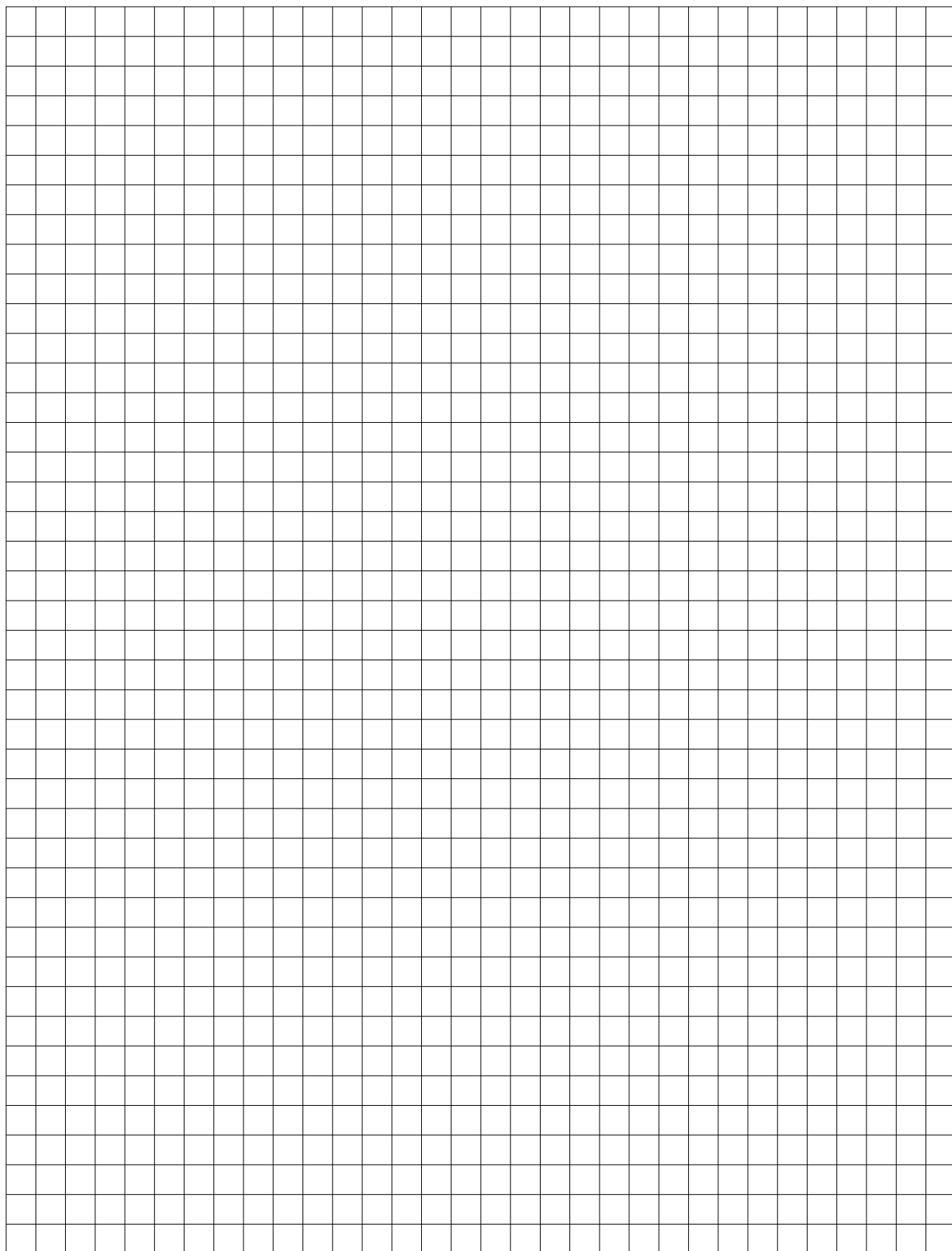
Compulsory

2. Graphical Communication

- (a) A solid model of a marble trophy is shown. On the page opposite sketch a plan and elevation of the trophy while maintaining its proportions.
- (b) Estimate and include 4 dimensions on your completed drawing.



Isometric view of a marble trophy



Estimate and include 4 dimensions on your completed drawing.

Section 1 - continued Question 3

Compulsory

(20 marks)

3. Health and Safety

- (a) (i) Long hair can be a safety hazard in a workshop environment.
Describe **two** situations where long hair should be tied back in the workshop.

1 _____

2 _____

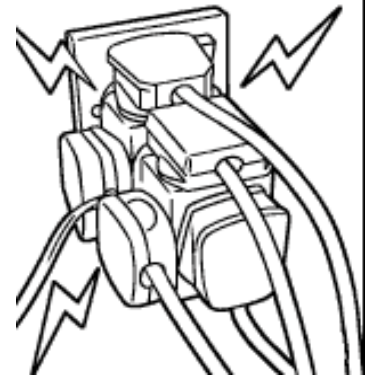
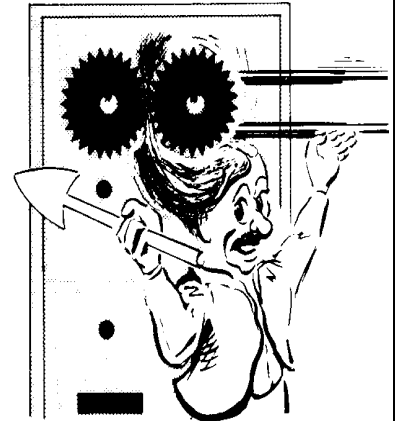
- (ii) Suggest **two** safety hazards associated with connecting too many plugs to a power outlet.

1 _____

2 _____

- (iii) The pillar drill shown has no *rack and pinion* gear on the pillar.
What danger does this present to the operator?

Danger _____



Pillar drill

- (b) For **each** of the safety signs shown below, list **two** situations where the instruction on the sign should be carried out.

Sign A



Sign A

- 1 _____
2 _____



Sign B

- 1 _____
2 _____

Sign B

- (c) When using each of the machines/tools below identify **two** safety precautions which should be observed.

- 1 _____

- 2 _____



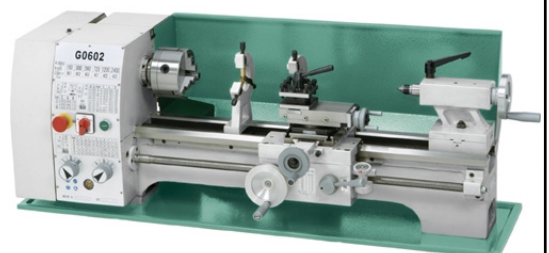
- 1 _____

- 2 _____



- 1 _____

- 2 _____

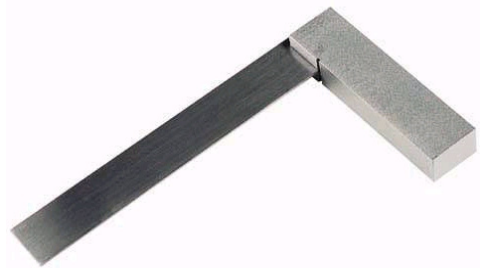


Answer **ANY THREE** Questions from this section.

1. Introducing Technology

- (a) An image of a metal precision square is shown.
Make a 3D sketch of this square and use shading to enhance your drawing.

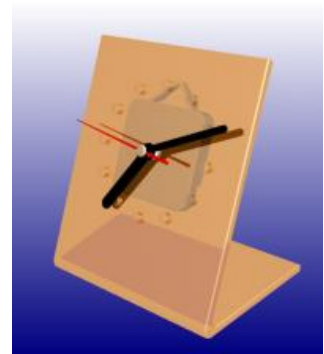
3D Sketch



Precision square

- (b) A simple design for an acrylic clock is shown.
- (i) Describe the process of bending the acrylic into this shape.

Answer _____



Acrylic Clock

- (ii) In the space opposite sketch a change to the given design to improve its appearance.

- (c) (i) In making small motorised devices, gearboxes such as the one shown are used.
Give **two** reasons why gearboxes are used.

1 _____

2 _____



Worm and worm wheel gearbox

- (ii) Gears are manufactured to very accurate dimensions. The instruments shown here are used for accurate measuring. Name these instruments.



Name: _____



Name: _____

- (d) Manufactured boards are commonly used in industries that use wood products. Suggest **two** suitable uses for each of the following manufactured boards:
MDF (Medium Density Fibreboard), plywood and chipboard.

MDF Use 1 _____

Use 2 _____

Plywood Use 1 _____

Use 2 _____

Chipboard Use 1 _____

Use 2 _____



MDF



Plywood



Chipboard

2. Design and Manufacture

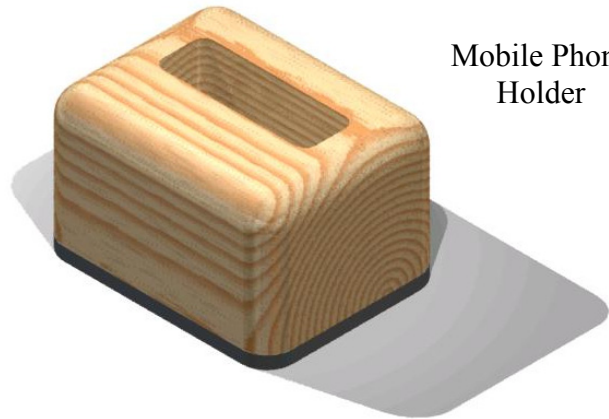
(50 marks)

- (a) A mobile phone holder is shown opposite. The main body is made from solid wood and the base from plastic.

- (i) Name a suitable wood and a suitable plastic for this purpose.

Wood _____

Plastic _____



Mobile Phone Holder

- (ii) Describe **four** stages in the manufacture of the wooden part of the holder.

Stage 1 _____

Stage 2 _____

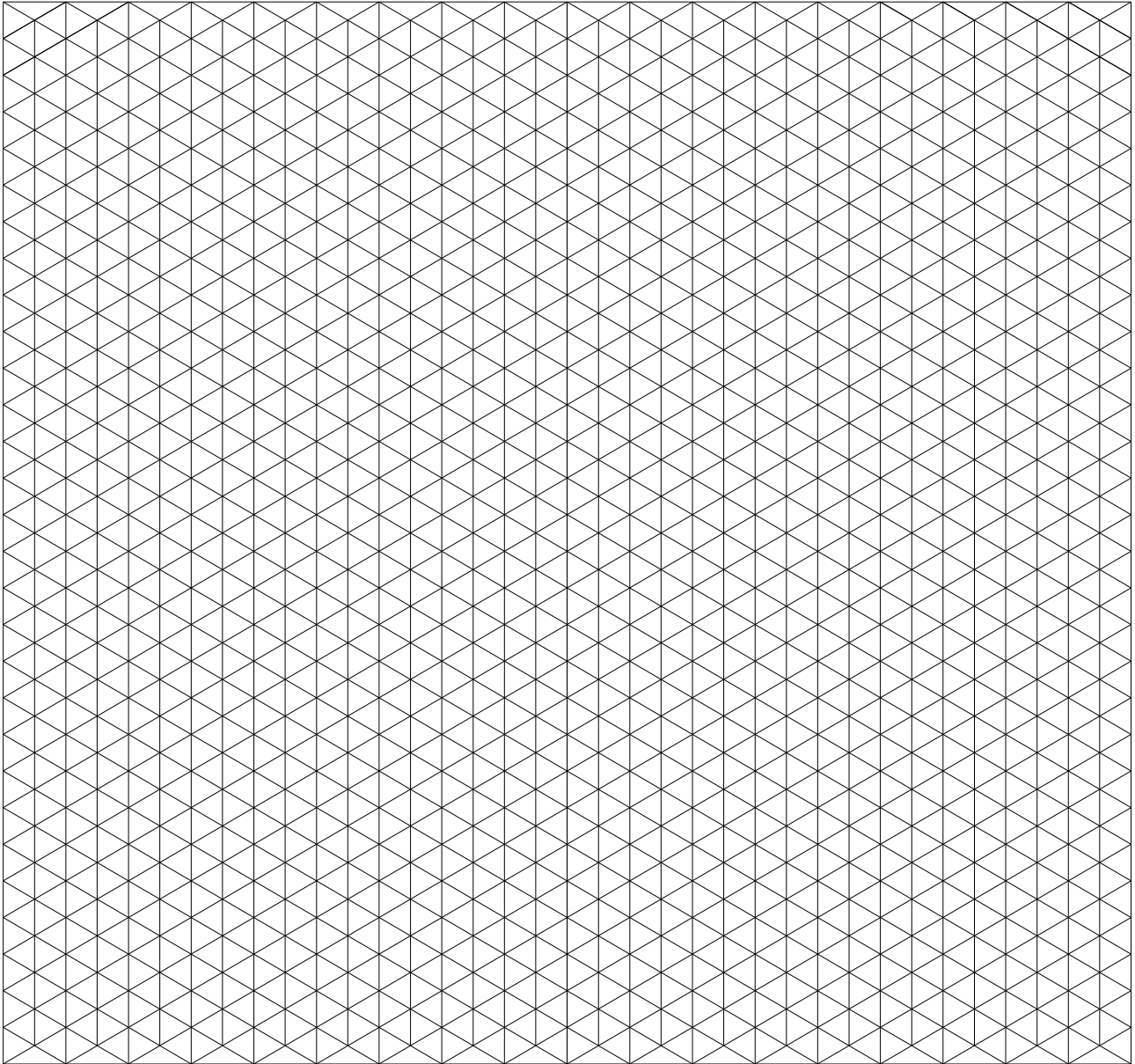
Stage 3 _____

Stage 4 _____

- (iii) In the space below make neat sketches of any **two** tools/machines you would use in the making of the phone holder.

- (b) (i) In the *Design and Manufacture* module you designed and manufactured a product. Name the product you made and make an isometric sketch of it on the grid below.

Product Name _____



- (ii) Describe **two** ways in which you gathered research material for this project.

1 _____

2 _____

3. Water Technology

(50 marks)

- (a) (i) In relation to town water supplies explain the function of a reservoir and a water tower.

Reservoir _____

Water tower _____



- (ii) Describe some of the steps taken by your local authority to ensure that the water entering your home is safe to drink.

Answer _____

- (b) Name the plumbing fittings shown below:



1 _____



2 _____



3 _____

- (c) Describe the steps in joining two copper pipes using a standard compression fitting.

Answer _____



- (d) A drawing of an indirect hot and cold water supply system for a house is shown.
State the purpose of parts 1, 2, 3, 4 and 5 in this system.

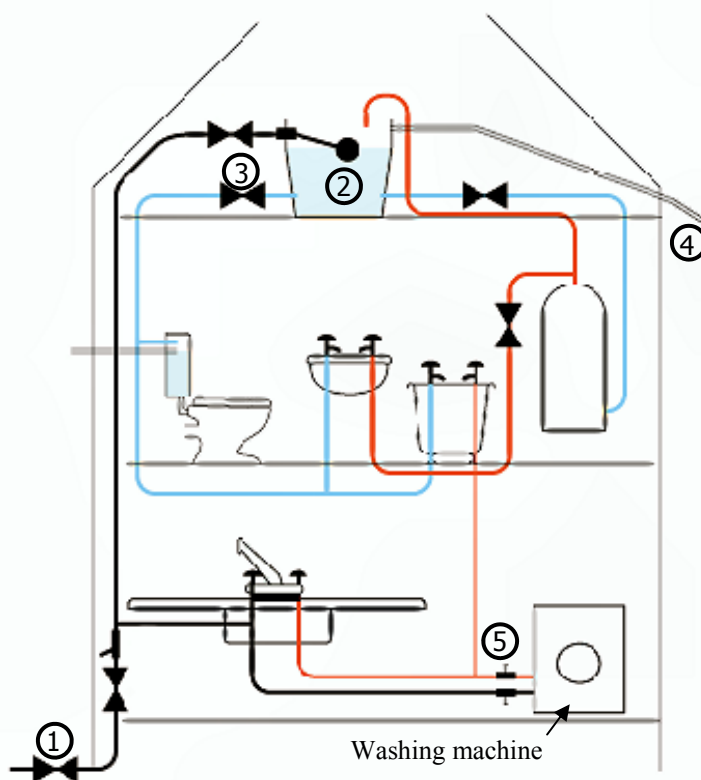
1 _____

2 _____

3 _____

4 _____

5 _____

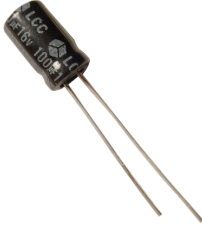


Indirect hot and cold water system

4. Electrical Understanding and Electronics

(50 marks)

(a) Name the electronic components shown below.

Component					
Name					

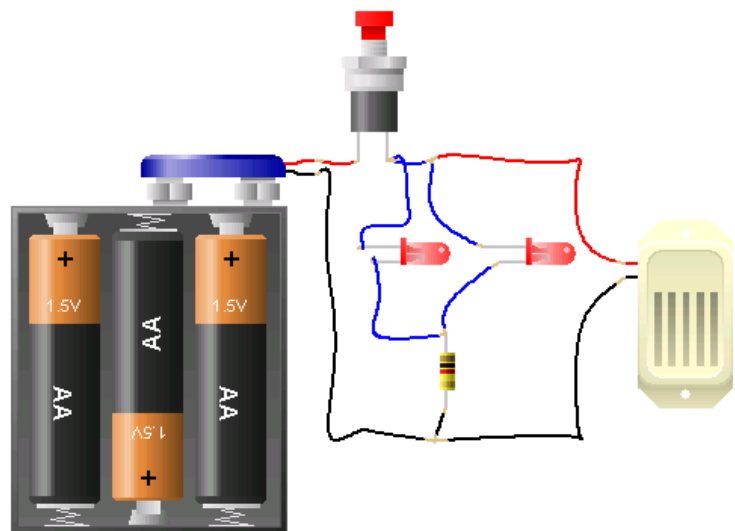
(b) The circuit opposite switches on a buzzer and two LEDs when the PTM switch is pressed.

(i) What does PTM stand for?

Answer _____

(ii) Why is a resistor used in this circuit?

Answer _____



Circuit illustration

(iii) Using the correct symbols for the components draw the circuit diagram for this circuit.

Indicate the supply voltage on your diagram.

Circuit diagram

- (c) (i) The power rating of this HD plasma TV is 360 Watts. If the voltage powering it is 240V, calculate the current flowing through it.

Calculation (Hint: Power = V x I)



Plasma HDTV

- (ii) This vacuum cleaner is double insulated. What does this mean?

Answer _____

- (iii) If the average power consumption of this vacuum cleaner is 1.5kW how much will it cost to run it for a 5 hour period if one unit of electricity (1 kWh) costs €0.20?

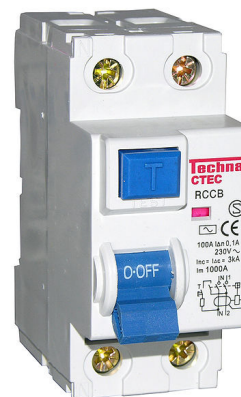
Calculation:



- (iv) A picture of an RCD is shown.
What does RCD stand for.
What is the function of an RCD in the wiring circuit of a house?

RCD stands for _____

The function of an RCD is _____



RCD

- (v) Name the pins on a standard 3 pin plug and identify the colour of the wire connected to each pin.

Pin name			
Wire colour			



3 pin plug

5. Tools & Equipment

(50 marks)

(a) A range of equipment found in workshops is shown.

1.



2.



3.



4.



Name each piece of equipment and give a suitable use for it.

No.	Name	Use
1		
2		
3		
4		

- (b) CAD CAM is now commonplace in the manufacturing industry.
What does CAD CAM stand for?
Give an example of where CAD CAM is used.

CAD CAM stands for _____

Example _____

- (c) Make sketches of **any 4** of the following tools in the spaces below.

Cold chisel	Wood chisel	Hack saw	G Clamp	Cordless drill

- (d) Name the parts indicated on the band saw shown below.

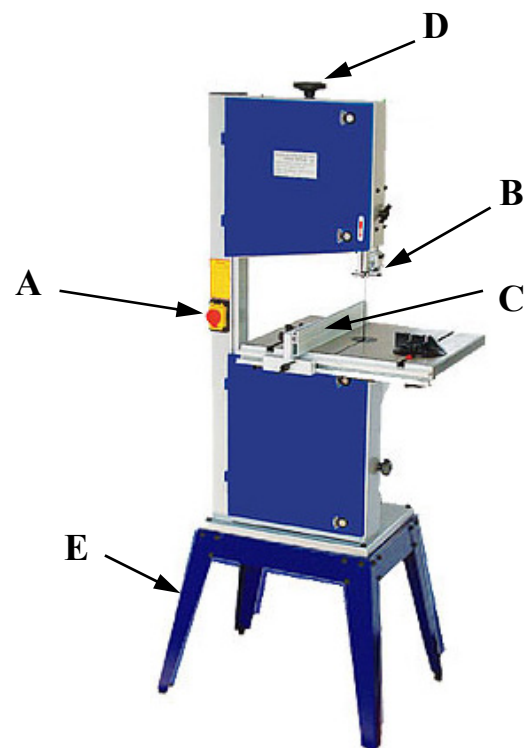
A _____

B _____

C _____

D _____

E _____



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