



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2009

Vocational Specialism - Technology
(240 Marks)

Wednesday 10th June, Afternoon 2.00 to 4.00

General Directions:

1. Write your examination number in this box:

| |
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| |
|--|

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 | | |

Question 1

(40 marks)

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

(a) The picture shows a ceramic wash hand basin.
List 2 advantages of using this material in bathrooms.

Advantage 1 _____

Advantage 2 _____



(b) Name the types of media for storing digital information shown below.



1 _____

2. _____

3 _____

(c) The material opposite is referred to as MDF.
What is meant by the term MDF?
Give 1 use for this material.

MDF _____

Use _____



(d) A picture of a variable resistor is shown. Suggest 1 everyday use of this electronic component.

Everyday use _____



(e) A picture of a tungsten filament bulb is shown. List 2 disadvantages of using this type of bulb.

Disadvantage 1 _____

 Disadvantage 2 _____



(f) Fill in the table below by indicating the energy conversion in each case.

| Device | From | To |
|------------------------------------|------|----|
| Solar panel on the roof of a house | | |
| Wind Turbine | | |

(g) Identify the component shown opposite and give its use.

Component _____
 Use _____



- (h) A copper earth rod is shown.
What is the purpose of an earth rod?
Why is copper a suitable material for this purpose?

Purpose _____

What makes copper a suitable material? _____



Copper earth rod

- (i) In the context of the ratchet wrench shown, explain the term "ratchet".

Ratchet _____



Ratchet wrench

- (j) Many outdoor lights are now made from plastic.
Suggest 2 reasons for this.

1 _____

2 _____



- (k) In the space below, determine the cost of running this 2KW heater for 40 hours if one unit of electricity costs €0.20.



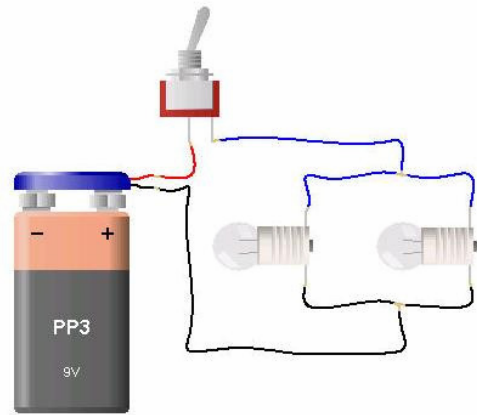
(l) Name this plumbing tool and give its use.

Name _____

Use _____



(m) Shown are two bulbs connected, in parallel, to a switch and a battery.
In the space below draw the circuit diagram for this circuit.



(n) Name the tool shown and suggest a use for it.

Name _____

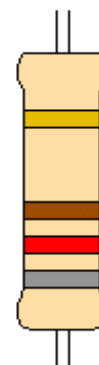
Use _____



(o) Name the electronic component shown.
Use the colour code table shown to find its value.

Name _____

Value _____

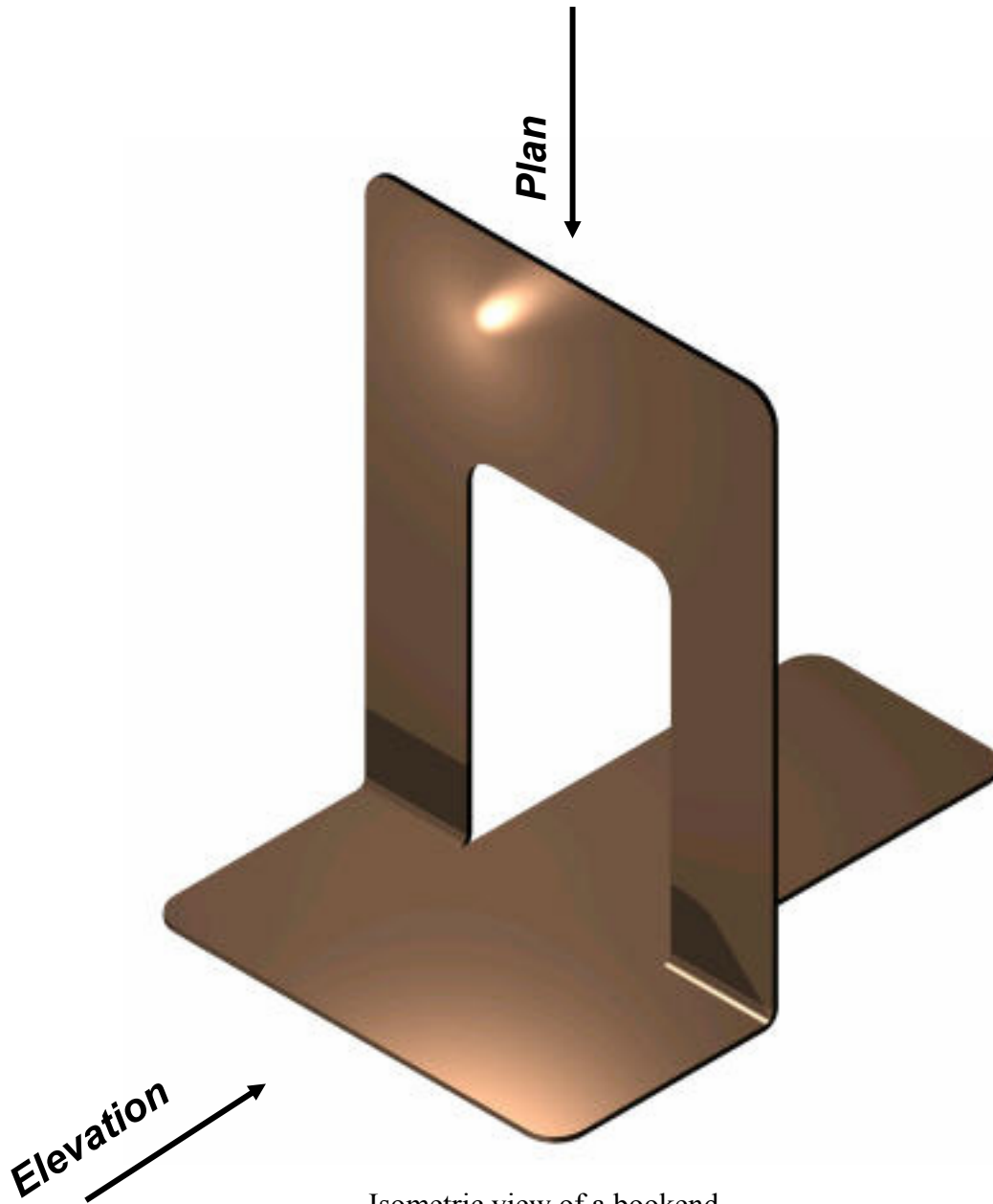


| | |
|--------|---|
| Black | 0 |
| Brown | 1 |
| Red | 2 |
| Orange | 3 |
| Yellow | 4 |
| Green | 5 |
| Blue | 6 |
| Purple | 7 |
| Grey | 8 |
| White | 9 |

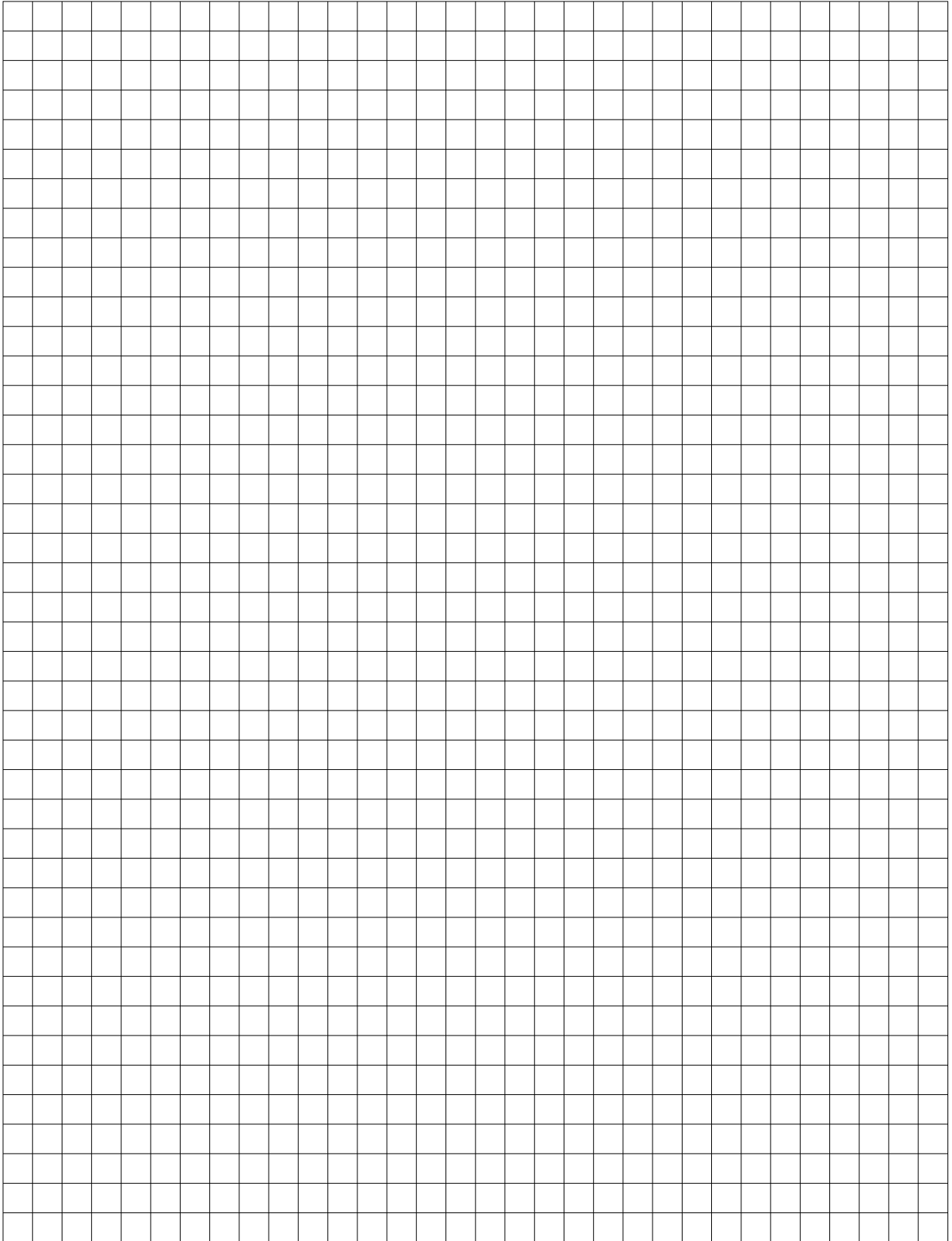
Compulsory

2. Graphical Communication

- (a) A solid model of a bookend is shown. On the page opposite sketch a plan and elevation of the bookend while maintaining its proportions.



Isometric view of a bookend



(b) Estimate and include 4 dimensions on your completed drawing.

Compulsory

3. Health and Safety

(a) (i) A push stick which is used in the workshop to help prevent injury is shown. Describe 2 situations where it would be advisable to use a push stick.

1 _____

2 _____



Push stick

(ii) Suggest 2 reasons why bandsaw blades should always be tensioned correctly.

1 _____

2 _____



Bandsaw blade

(iii) A lathe chuck key is shown. Describe 1 danger associated with using it.

Danger _____



Lathe chuck key

(b) In the space below sketch and name 2 pieces of personal safety equipment used in the workshop.

(c) (i) Safety is very important when designing products for use by children.
Give 2 examples of features which should be avoided when designing a child's toy.

Example 1 _____

Example 2 _____

(ii) A bandsaw is shown.
List 3 safety precautions you should take when using a bandsaw.

1 _____

2 _____

3 _____



Bandsaw

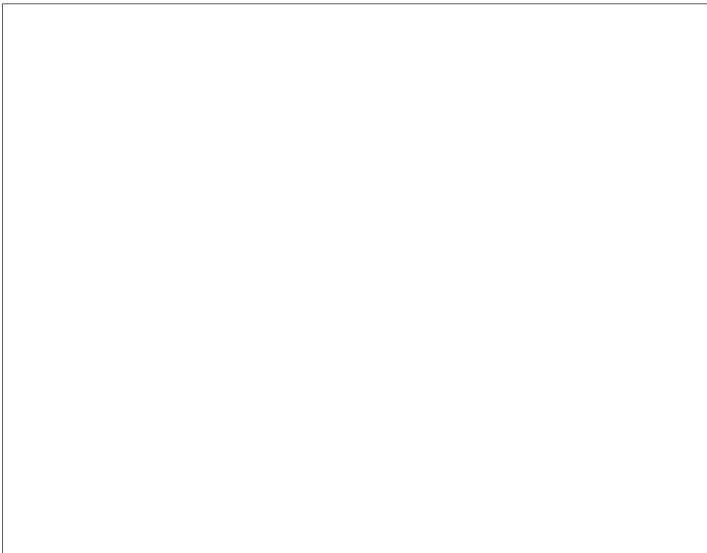
Section 2 (150 marks)

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

1. Introducing Technology

(50 marks)

- (a) A picture of a machine part is shown.
In the space below make a freehand sketch of this part.
Shade or colour your completed sketch.



Machine part

- (b) A unit for displaying bags of crisps is shown.
This unit has been vacuum formed.

- (i) Briefly describe the process of vacuum forming.

Answer _____



Vacuum formed shelf display unit

- (ii) List 2 properties of rigid polystyrene which make it highly suitable for vacuum forming.

1 _____

2 _____



Rigid polystyrene sheets

(c) (i) List 3 design features of present day mobile phones.

1 _____

2 _____

3 _____

(ii) Suggest 2 new features that you would like to see on future mobile phones.

1 _____

2 _____



Mobile phone

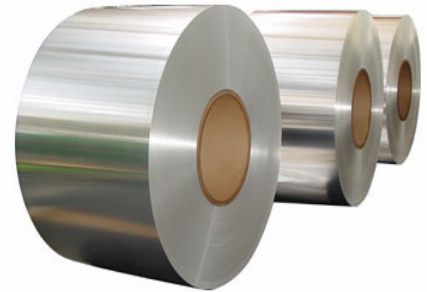
(d) Aluminium is an example of a non-ferrous metal.

(i) Explain the term “non-ferrous”.

(ii) Name 2 other non-ferrous metals.

1 _____

2 _____



Thin aluminium sheeting
in a roll

2. Design and Manufacture

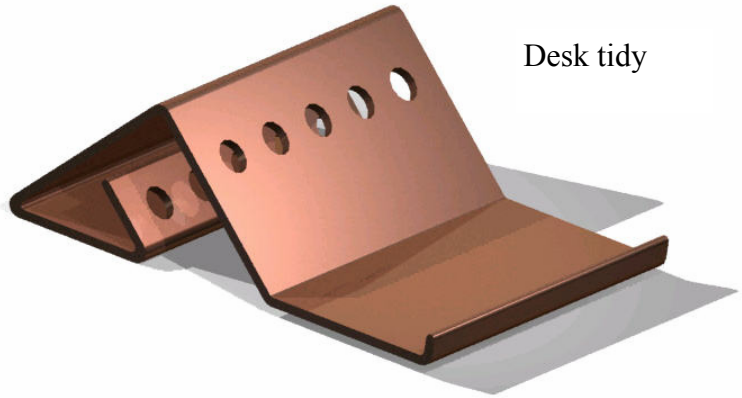
(50 marks)

(a) A desk tidy is shown opposite.

(1) Name a suitable material for its manufacture.

Material _____

(2) Describe 4 main stages in the manufacture of this artefact.



Desk tidy

Stage 1 _____

Stage 2 _____

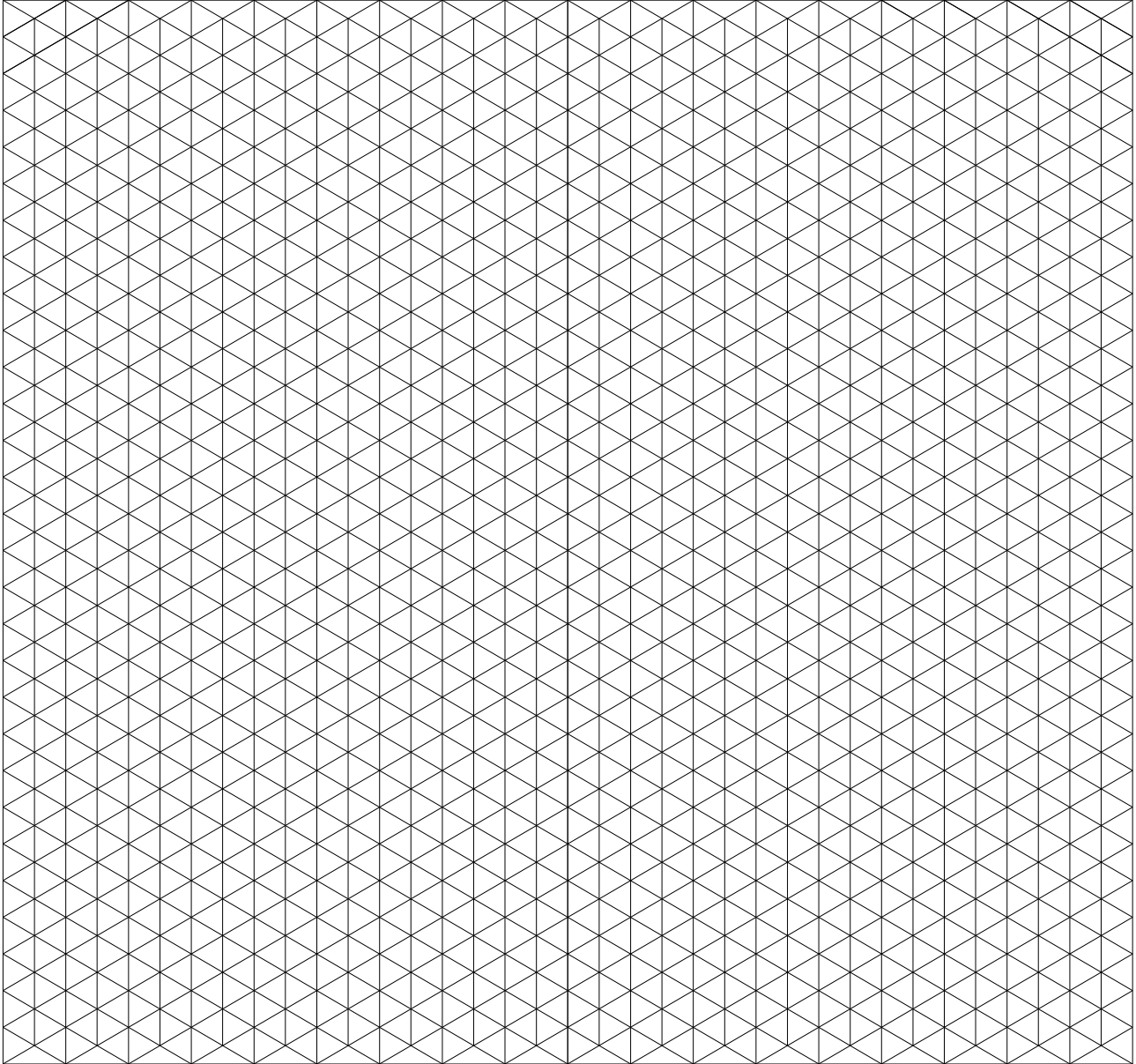
Stage 3 _____

Stage 4 _____

(3) In the space below make a neat sketch of the setting out (complete marking out) of the material for this artefact.

- (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 2 ways in which you could improve on this design.

Improvement 1 _____

Improvement 2 _____

3. Water Technology

(50 marks)

- (a) (i) What is the purpose of the material surrounding the copper pipe shown?

Answer _____



- (ii) Name 1 other place where material is used for a similar purpose in the plumbing system of a house.

Answer _____

- (iii) When you turn on a hot water tap the water flows out freely. Explain what causes the water to flow from the top of the hot water cylinder to the tap.

Answer _____



Hot water cylinder

- (b) (i) Name the tool shown opposite and give it's use.

Name _____

Use _____



- (ii) Explain the function of an "olive" in compression fittings when plumbing.

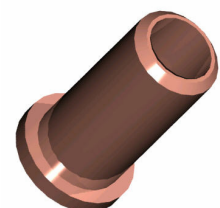
Answer _____



Olive

- (iii) What is the function of this plumbing fitting used with plastic plumbing pipes?

Answer _____



(c) (i) Name the type of tap shown opposite and state where it is most commonly used.

Name _____

Where used _____



(ii) Explain the purpose of the non-return valve in plumbing.

Purpose _____

(d) The picture opposite shows a batch of plastic garden ponds.

(i) Name a type of plastic from which the ponds could be made.

Name _____

What manufacturing process could be used to shape these ponds?

Answer _____



Garden ponds

(ii) The illustration opposite shows a design for a garden pond with a submersible pump. Explain the term "submersible".

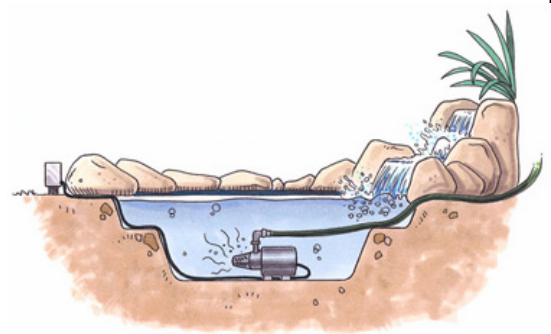
Answer _____

(iii) When purchasing a submersible pump for a garden pond list 3 factors you would take into account before deciding on which pump to buy.

1 _____

2 _____

3 _____






Garden pond

4. Electrical Understanding and Electronics

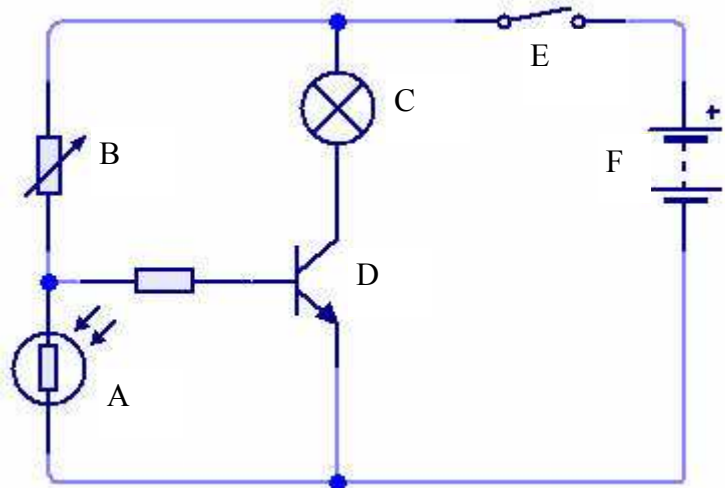
(50 marks)

(a) Draw the symbols for the following electronic/electrical components.

| | | | | | |
|-----------|---|---|---|---|---|
| Component |  |  |  |  |  |
| Symbol | | | | | |

(b) (i) Name the components in the circuit shown.

| Component | Name |
|-----------|------|
| A | |
| B | |
| C | |
| D | |
| E | |
| F | |



(ii) What is the function of this circuit?

Answer _____

(iii) Draw in the wire connections below so that both bulb holders are joined in parallel and connected to the battery snap and switch.



- (c) (i) The current through the 12W halogen bulb shown is 1 Amp. State the formula for Power and determine the voltage of this bulb in the box below.

Power = _____

Calculation:



12W low voltage

- (ii) This washing machine has an A energy rating. What does this mean?

Answer _____



Modern automatic washing machine

- (iii) If the average power consumption of this washing machine is 0.8kW, how much will it cost to run for a 2 hour cycle if a unit of electricity costs €0.20?

Calculation:

- (iv) The resistance in the element of this electric iron is 40 Ohms. If the available voltage is 240V, use Ohm's Law to calculate the current through the element of this iron.

Calculation:



Electric Iron

- (v) Safety is important when working with or using electrical appliances. Describe 1 electrical safety feature of modern appliances. Describe 1 safety feature of the domestic electrical system.

Appliance _____

Electrical system _____

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 its use.

| No. | Name | Use |
|-----|------|-----|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

(b) Laser cutters are becoming popular for cutting plastics and other non metallic sheet materials.
Give 2 advantages of this type of cutter

Advantage 1 _____

Advantage 2 _____



Laser cutter

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

| Scriber | Try square | Plane | Centre punch | Flat file |
|---------|------------|-------|--------------|-----------|
| | | | | |

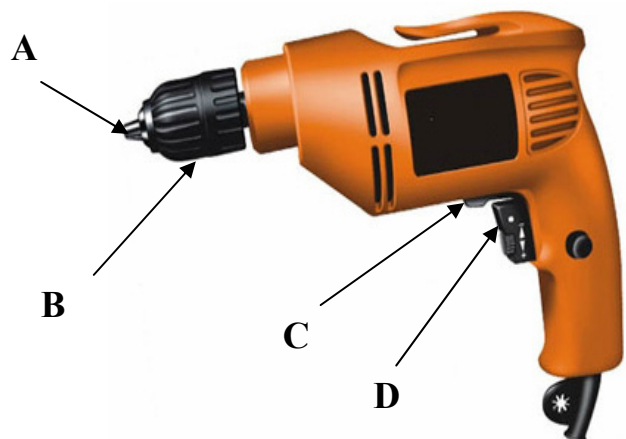
(d) Name the parts indicated on the electric drill shown below.

A _____

B _____

C _____

D _____



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