



Coimisiún na Scrúduithe Stáit
State Examinations Commission
Leaving Certificate Applied 2007

Vocational Specialism - Technology
(240 Marks)

Wednesday 13th June, Afternoon 2.00 to 4.00

General Directions

1. Write your examination number in this space:

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 Electronics	
Q5. - Tools and Equipment	

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

1.	Total of end of page totals	
2.	Aggregate total of all disallowed questions	
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.	

Centre Stamp

For the superintendent only

Section 1

Compulsory

90 marks

Question 1

(40 marks)

1. Answer **any TEN** of the following **FIFTEEN** short questions

(a) The picture shows a cast iron bath. List **two** advantages of using cast iron for this purpose:

Advantage 1 _____

Advantage 2 _____



(b) The picture shows a 1960s design for a chair made from GRP. What does GRP stand for?

GRP _____

Suggest **two** other materials from which the chair could be made.

Material 1 _____

Material 2 _____



(c) Name this tool and give one example of where it could be used.

Tool name _____

Where used _____



(d) Two of the solder terminals on a micro-switch are marked NO and NC. What do these abbreviations stand for?

NO _____

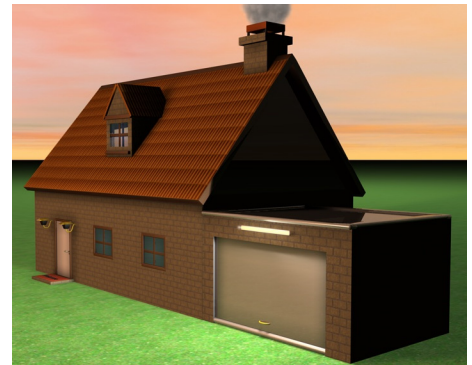
NC _____



(e) Describe **two** ways in which the rate of heat loss from a house can be reduced.

1 _____

2 _____



(f) Point X in the photograph indicates the position of which pin on a plug.

Answer _____



(g) Solar powered garden lighting is in common use today. List **two** other uses of solar cell technology.

1 _____

2 _____



- (h) An extension socket with a surge protector is shown. Explain why it is important to have surge protection.

Explanation _____



- (i) Suggest a suitable material for the wash hand basin and for the support frame shown.

Wash hand basin _____

Support frame _____

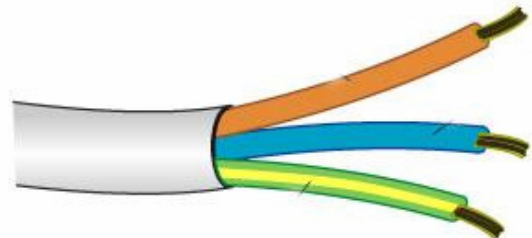


- (j) The illustration shows a 3 core electrical cable. Identify each wire.

Brown _____

Blue _____

Green and yellow _____



- (k) In the space below, determine the power of this lamp if the current through the bulb is 0.25 Amps and the voltage is 240 Volts



(l) A vernier calipers is shown here. List **two** uses of this type of measuring instrument.



1 _____

 2 _____

(m) Suggest one advantage and one disadvantage of using brass for a doorbell switch.



Advantage _____

 Disadvantage _____

(n) Suggest a suitable use for this plumbing fitting.



Suitable Use _____

(o) Computers consist of both input and output devices. Fill in the table indicating which devices are input and which are output. (Tick as appropriate)

Device	Input	Output
Mouse		
Speakers		
Monitor		
Keyboard		

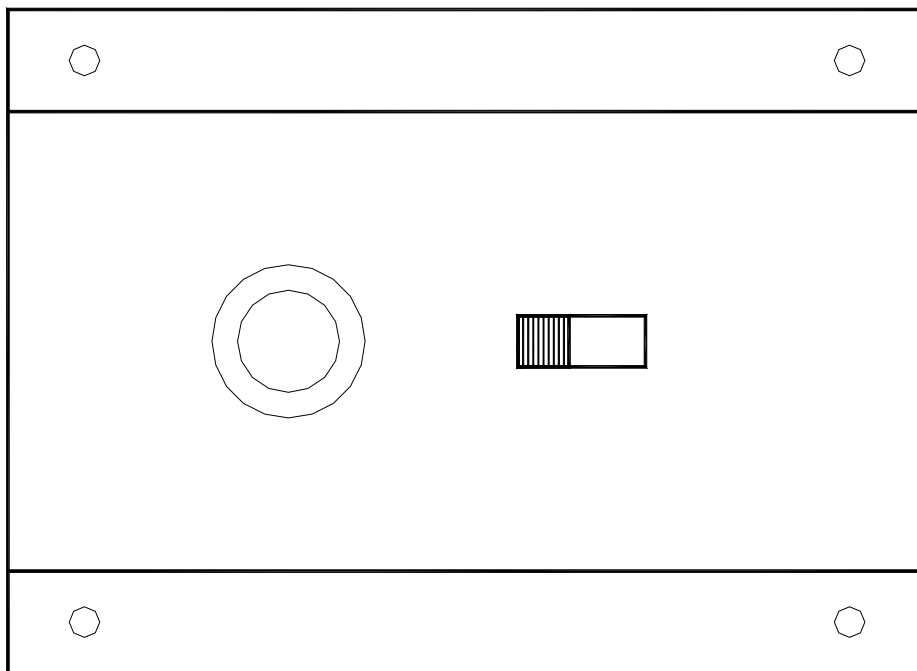


Compulsory

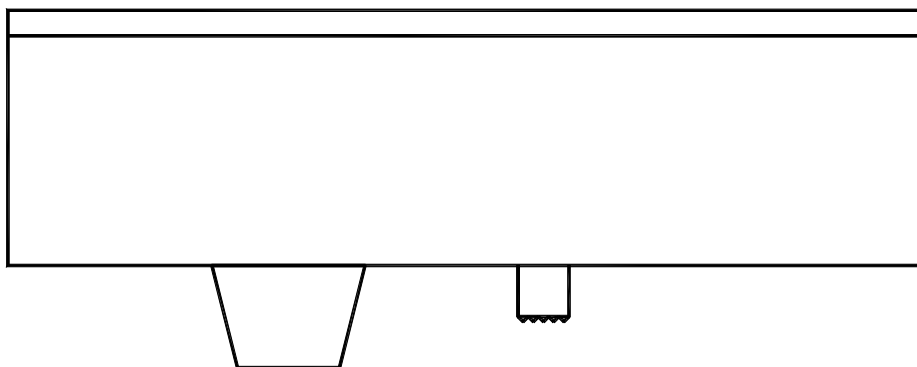
2. Graphical Communication

The plan and elevation of a casing for an electronic timer are shown below.

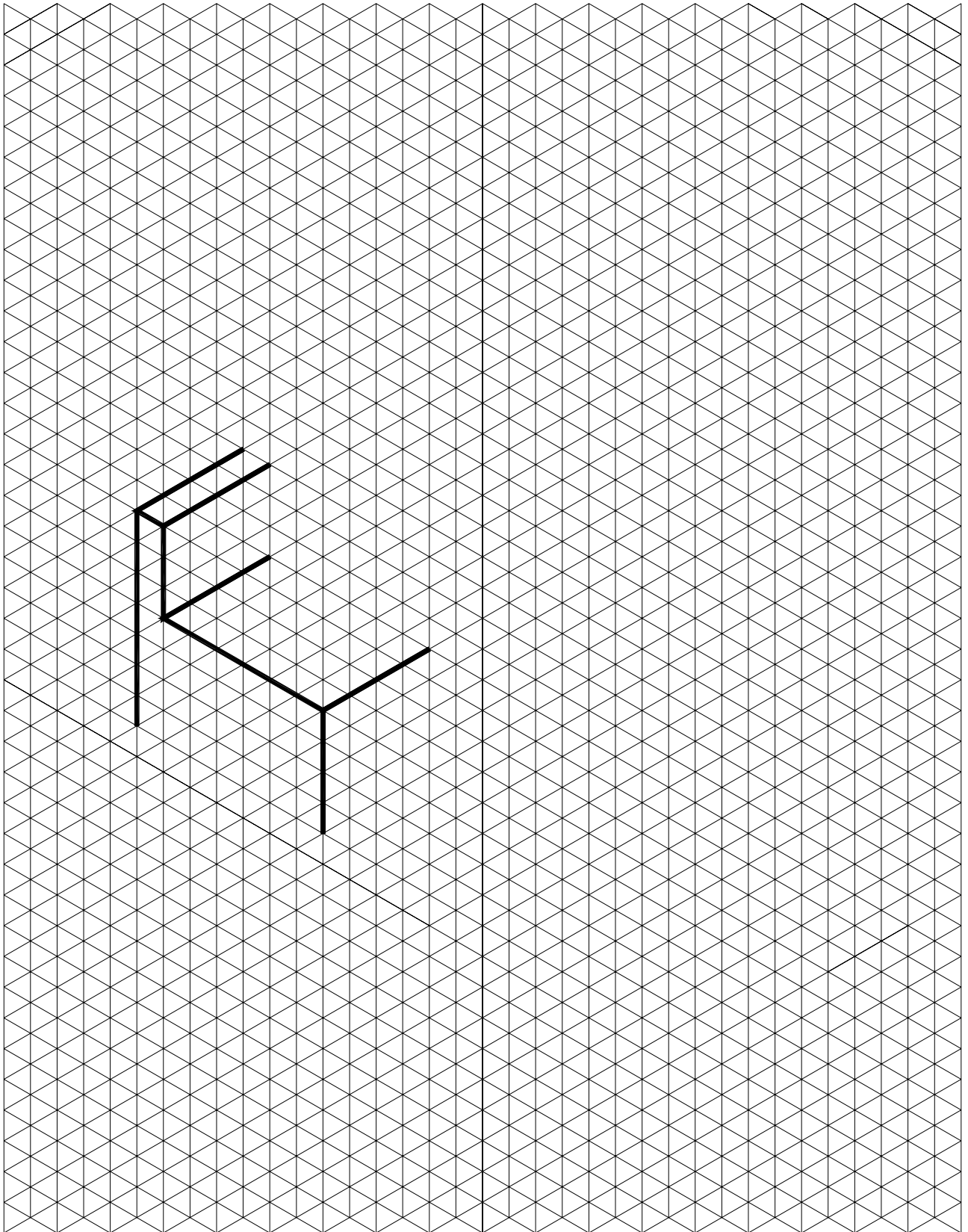
- (a) Complete the isometric drawing of the casing (including the control knob and slide switch) on the grid opposite. You should maintain the proportions of the casing in the isometric drawing.



ELEVATION



PLAN



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

Compulsory

3. Health and Safety

(a) (1) A pair of protective gloves is shown. Identify three processes in technology where it is necessary to wear protective gloves.

1 _____

2 _____

3 _____



Protective Gloves

(2) Repetitive strain injury has become a modern complaint among computer and other workers. In relation to people working on computers give **two** examples of this type of injury indicating the cause in each case.

1 _____

2 _____



(3) The illustration shows a man lifting a box. Compared to the man in A describe **two** actions that the man in B is doing correctly.

1 _____

2 _____



A



B

(b) The illustration shows a person cutting metal tubing with a hack saw. Identify what this person is doing that is unsafe and indicate how it should be done correctly.



(c) (1) List **three** changes that you would make to your school workshop to make it a safer environment for someone in a wheelchair.

1 _____

2 _____

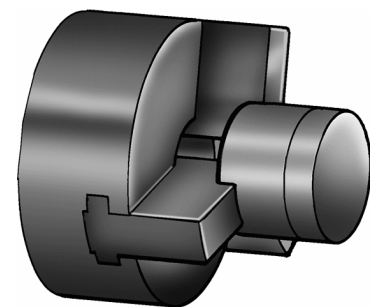
3 _____



(2) Explain **two** safety procedures that should be observed when securing a piece of work in the chuck of a lathe.

1 _____

2 _____



Answer ANY THREE Questions from this section

1. Introducing Technology

(50 marks)

- (a) An illustration of a cordless drill is shown. Using a pencil, make a neat, well proportioned sketch of this drill in the box. Use shading to enhance your sketch.



Cordless Drill

- (b) An electric vacuum cleaner is shown. List **three** objectives that you would write before designing a product like this.

1 _____

2 _____

3 _____



(c) Explain the function of this vacuum forming machine.

Answer _____



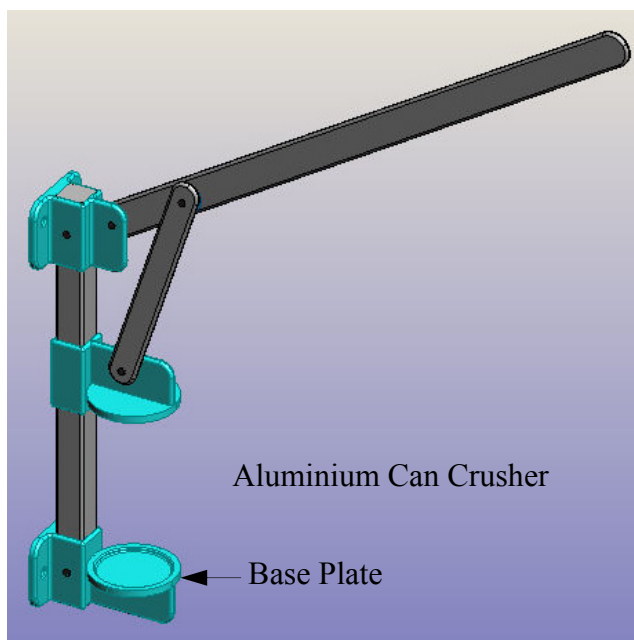
(d) The drawing opposite shows a design for an aluminium can crusher which may be fixed to a vertical surface such as a wall.

(1) Suggest a material from which the can crusher could be made.

Material _____

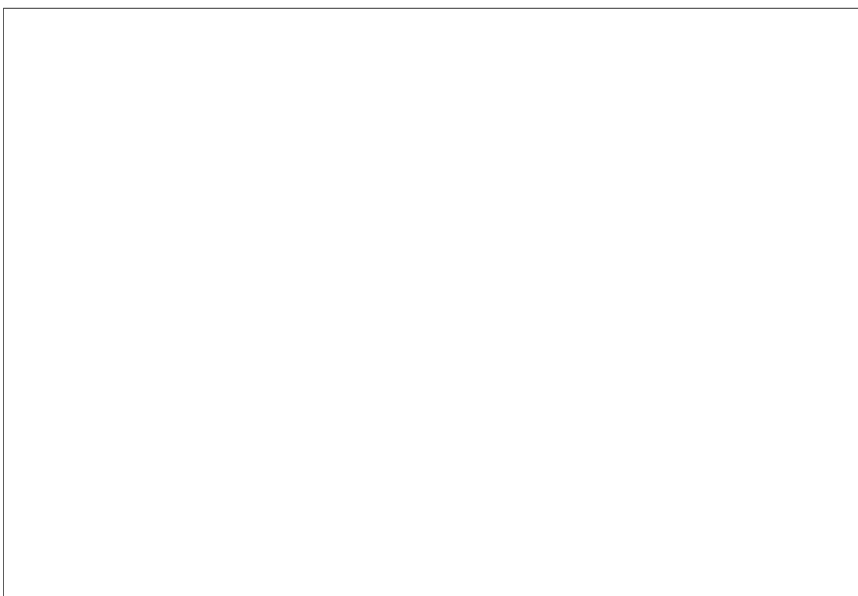
(2) The lever was found to have a poor grip when in use. Sketch a suitable grip for the handle, in the box below, and name the material from which it is made.

Material _____



(3) Sketch a design in the space opposite for a new base plate so that the can crusher is free standing.

Base Plate design →



2. Design and Manufacture

(50 marks)

(a) A computer drawing of a CD rack is shown.

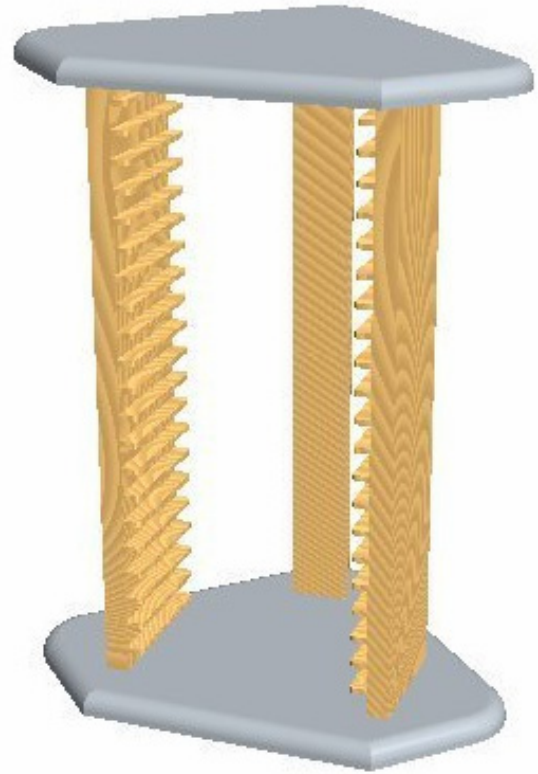
(1) Name a suitable wood for the sides of the rack.

Wood _____

(2) The top and bottom of the rack are made from manufactured board. Name a suitable manufactured board and indicate how the top and bottom are secured to the sides.

Manufactured board _____

Fixing to sides _____



CD Rack

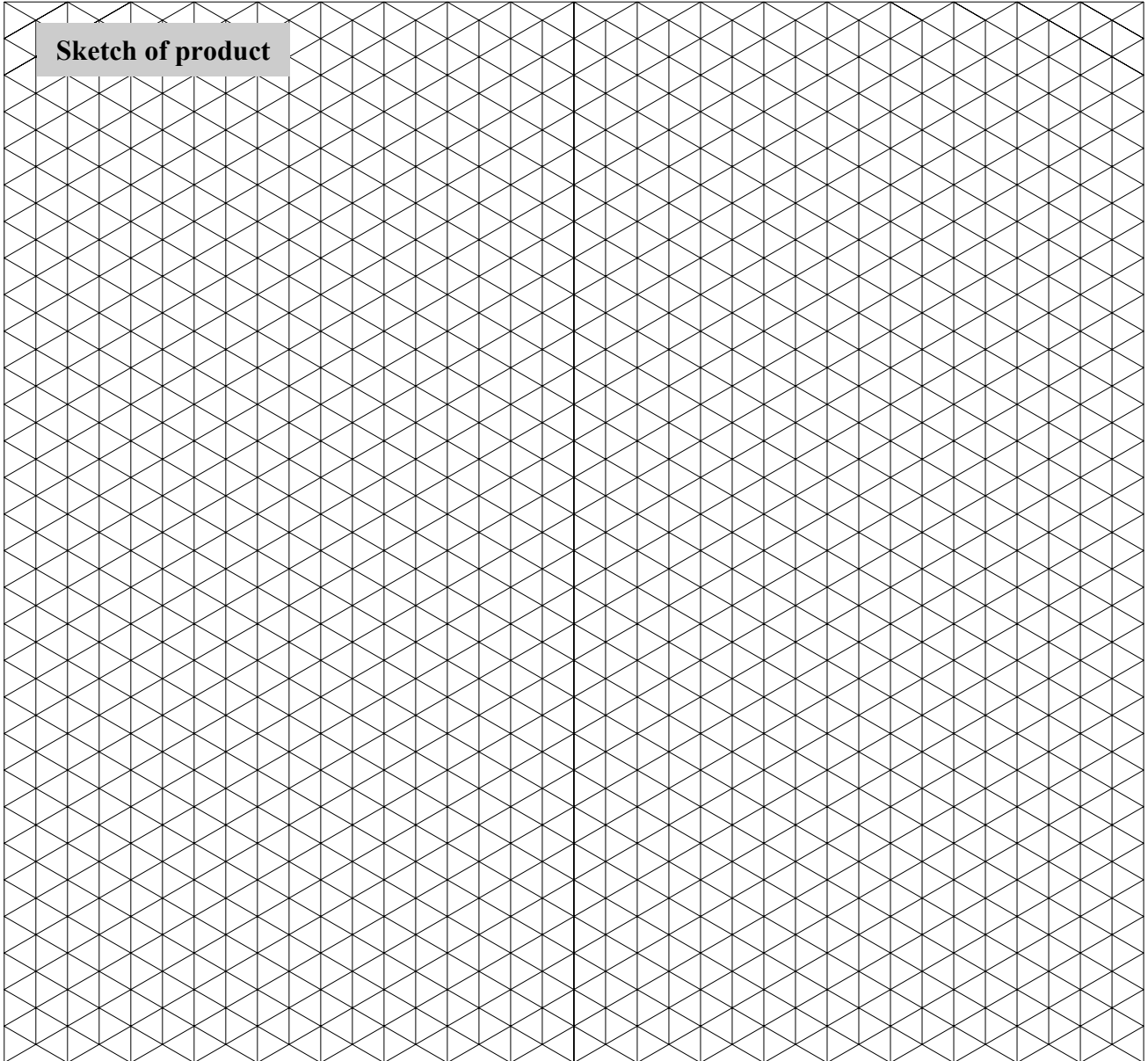
(3) A number of slots hold the CDs in place. Using neat sketches briefly explain how these slots could be made.

Blank area for sketches explaining how the slots could be made.

(b) (1) 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 _____

Sketch of product



(2) Describe two tests you carried out on this product when evaluating it:

Test 1 _____

Test 2 _____

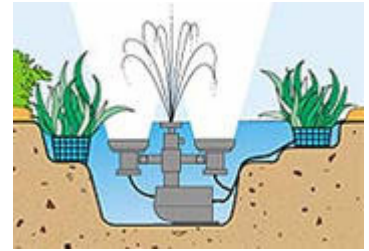
3. Water Technology

(50 marks)

(a) The illustration shows a combined garden water fountain and integral lighting.

(1) List **three** factors that must be considered when installing a system like this:

- 1 _____
- 2 _____
- 3 _____



(2) A picture of a pond water pump is shown. These pumps have a number of essential parts. Name three of these part:

- 1 _____
- 2 _____
- 3 _____



(b) A hot water cylinder coated with insulation is shown.

(1) What is the advantage of this type of insulation compared to a standard lagging jacket?

- _____
- _____
- _____



(2) This cylinder has a single heating coil inside which means that it can be plumbed as part of an indirect hot water system. Explain what is meant by an “indirect hot water system” as compared to a “direct system”.

- _____
- _____
- _____
- _____

(3) An immersion is generally fitted to a hot water cylinder. What is an immersion?

- _____
- _____

(c) (1) Solar panels are becoming more popular for heating water in our homes. Suggest **two** other types of alternative energy that can be used for this purpose:



1 _____

2 _____

(2) Suggest **two** disadvantages to the use of oil for heating the water and rooms in our homes.

1. _____

2. _____

(d) Identify each of the plumbing fittings shown here and explain what the purpose of each is.

1 Name _____ Purpose _____



2 Name _____ Purpose _____



3 Name _____ Purpose _____



4 Name _____ Purpose _____



5 Name _____ Purpose _____







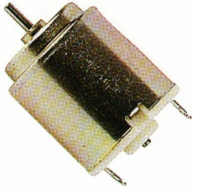
6 Name _____ Purpose _____



4. Electrical Understanding and Electronics

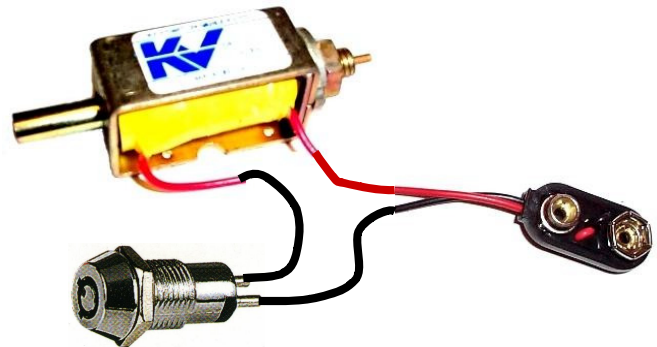
(50 marks)

- (a) Draw the symbols for the following electronic components in the spaces provided.

				
1.5V Cell	Capacitor	MES Bulb	LDR	Motor

- (b) The picture shows a 12V solenoid, a key switch and battery snap. The circuit is to be used as part of an electronic door lock.

- (1) The solenoid works on the principle of electromagnetism. What does this mean?



Electronic door locking system.

- (2) When in operation the voltage across the solenoid is 12V and the resistance of the solenoid is 20 Ohms. Using Ohm's Law calculate the current flow through the circuit.

Calculation

- (3) The switch is an SPST keyswitch. What does SPST stand for?

SPST _____

- (4) If the voltage across the solenoid was reduced to 6V what effect would this have on the operation of the solenoid?

(c) (1) Energy saving light bulbs are becoming increasingly more popular. List two other measures that people can take in their homes to reduce electricity consumption.

1 _____

2 _____



Energy saving light bulbs

(2) The pond water pump shown has a power rating of 50 Watts. If one unit of electricity (kWh) costs €0.20, how much would it cost to run the pump continuously for 24 hours?



Pond pump

(3) The rating plate on the back of this music stereo has a symbol that indicates that it is doubly insulated. Draw this symbol and explain what “doubly insulated” means

Symbol

Explanation



Music stereo

(4) Explain the following terms associated with domestic electricity supply:

AC _____

MCB _____

Consumer Unit _____

Transformer _____

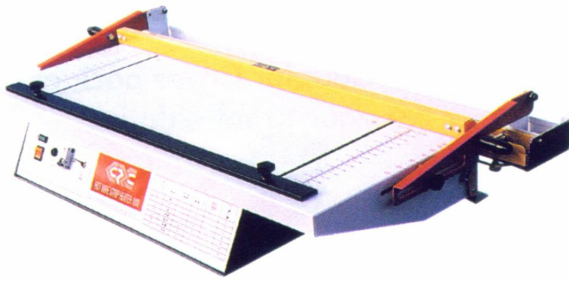
Voltage _____

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 use for each.

No.	Name	Use
1		
2		
3		
4		

(b) Name the tool shown and suggest two uses for it.

Name _____

Use 1 _____

Use 2 _____



(c) The saw shown is to be used to cut a sheet of MDF.
Explain the term MDF and explain the steps required to cut the sheet safely with this saw along a straight line.

MDF _____

Step 1 _____

Step 2 _____

Step 3 _____

Explain how the flex of the saw should be held while cutting the MDF sheet.



(d) (1) Name three quantities that can be measured using a multi-metre.

1 _____ 2 _____ 3 _____

(2) A multi-metre can be used to test continuity in a circuit. What does this mean?



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