



Leaving Certificate Applied 2009

Vocational Specialism - Technology
(240 Marks) Marking Scheme

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. sketches (in pencil) as appropriate.

Section	No.	Mark
Section A	1	
	2	
	3	
Section B	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 **2 marks**

Advantage 2 **2 marks**



(b) Identify the types of media for storing digital information shown here.



2 marks

1. _____



1 marks

2. _____



1 mark

3. _____

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

MDF **2 marks**

Use **2 marks**



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

Everyday use **4 marks**



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

Disadvantage 1 **2 marks**

Disadvantage 2 **2 marks**



(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	1 mark	1 mark
Wind Turbine	1 mark	1 mark

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

Component **2 marks**

Use **2 marks**



- (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 **2 marks**

What makes copper a suitable material? **2 marks**



Copper earth rod

- (i) In the context of the ratchet wrench shown, explain the term “ratchet”

Ratchet **4 marks**



Ratchet wrench

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

1 **2 marks**

2 **2 marks**



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

$$2 \times 40 \times .2 = \text{€}16.00$$

4 marks



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

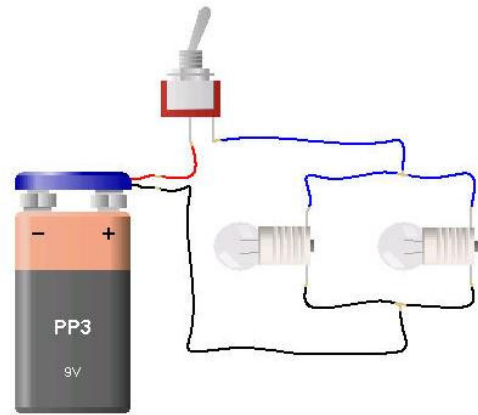
Name **2 marks**

Use **2 marks**



(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.

4 marks



(n) Name and suggest a use for this device.

Name **2 marks**

Use **2 marks**



(o) Name the electronic component shown here. What is its value?

Name **2 marks**

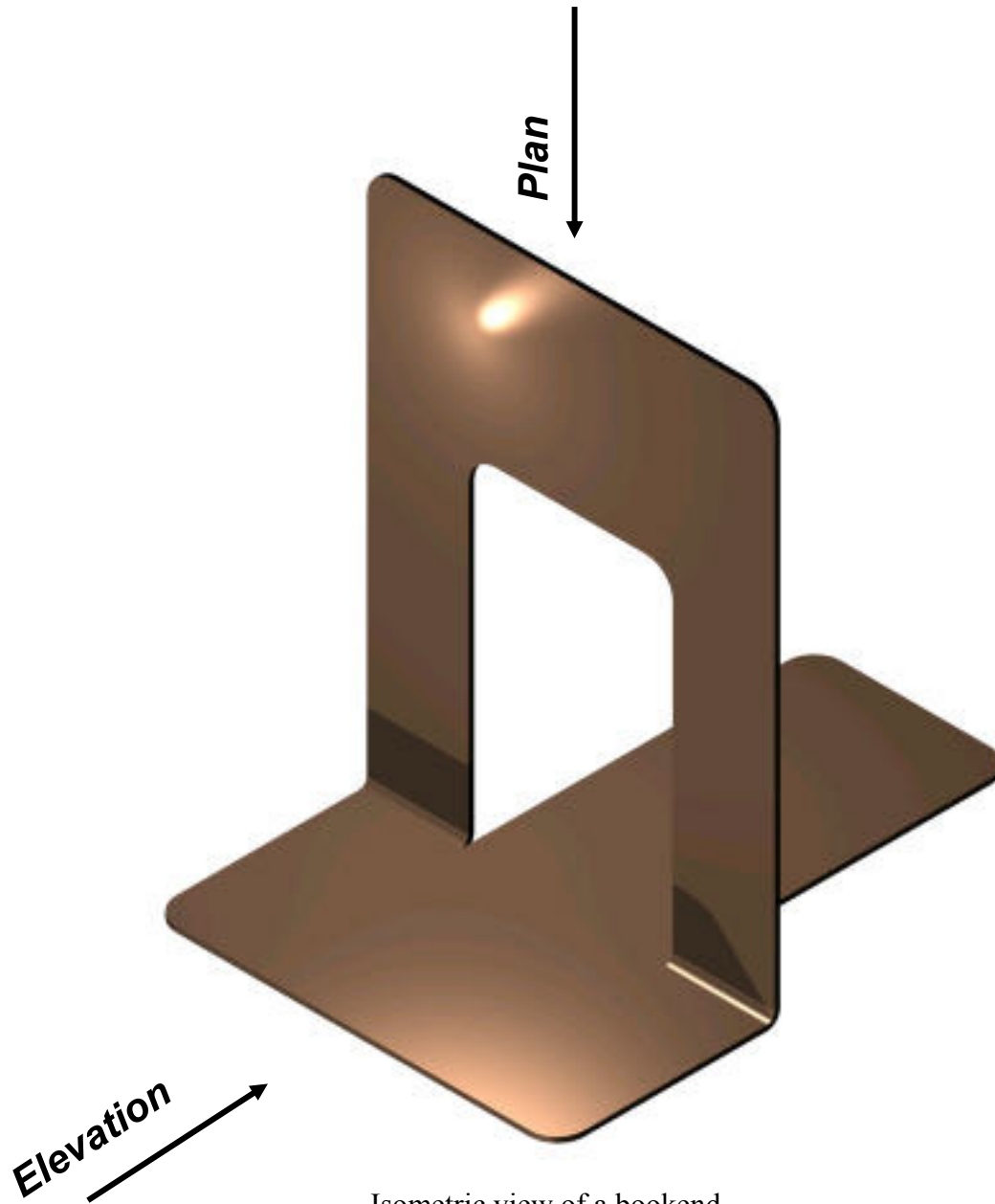
Value **2 marks**



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.



Elevation *13 marks*

Plan *13 marks*

Dimensions *4 marks*

(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 marks**

2 **2 marks**



Push stick

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

1 **2 marks**

2 **2 marks**



Bandsaw blades

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

Danger **2 marks**



Lathe chuck key

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

Sketch 2 marks each
Name 2 marks each

- (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 *2 marks*

Example 2 *1 mark*

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

Machine 1 *1 mark*

Machine 2 *1 mark*

Machine 3 *1 mark*



Bandsaw

Answer ANY THREE Questions from this section

1. Introducing Technology

(50 marks)

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

Sketch 6 marks

Rendering 4 marks



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 *10 marks*



Vacuum formed shelf display unit

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

1 *3 marks*

2 *3 marks*



Rigid polystyrene sheets

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

1 **3 marks**

2 **3 marks**

3 **3 marks**

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

1 **3 marks**

2 **3 marks**



Mobile phone

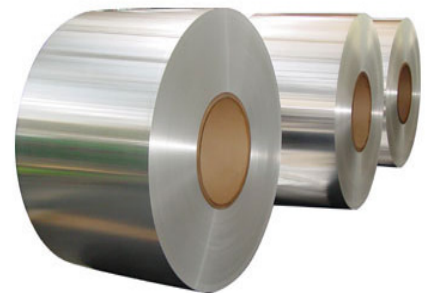
(d) Aluminium is an example of a non ferrous metal.

(i) Explain the term “non ferrous”. **3 marks**

(ii) Name 2 other non ferrous metals

1 **3 marks**

2 **3 marks**



Thin aluminium sheeting
in a roll

2. Design and Manufacture

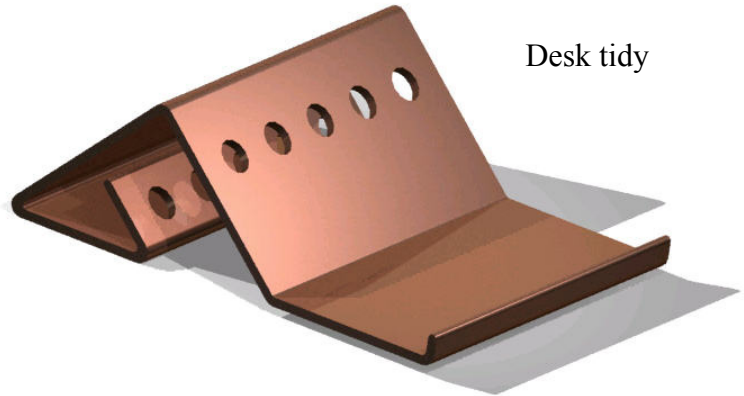
(50 marks)

(a) A desk tidy is shown opposite.

(1) Name a suitable material for its manufacture

Material **3 marks**

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



Desk tidy

Stage 1 **3 marks each**

Stage 2

Stage 3

Stage 4

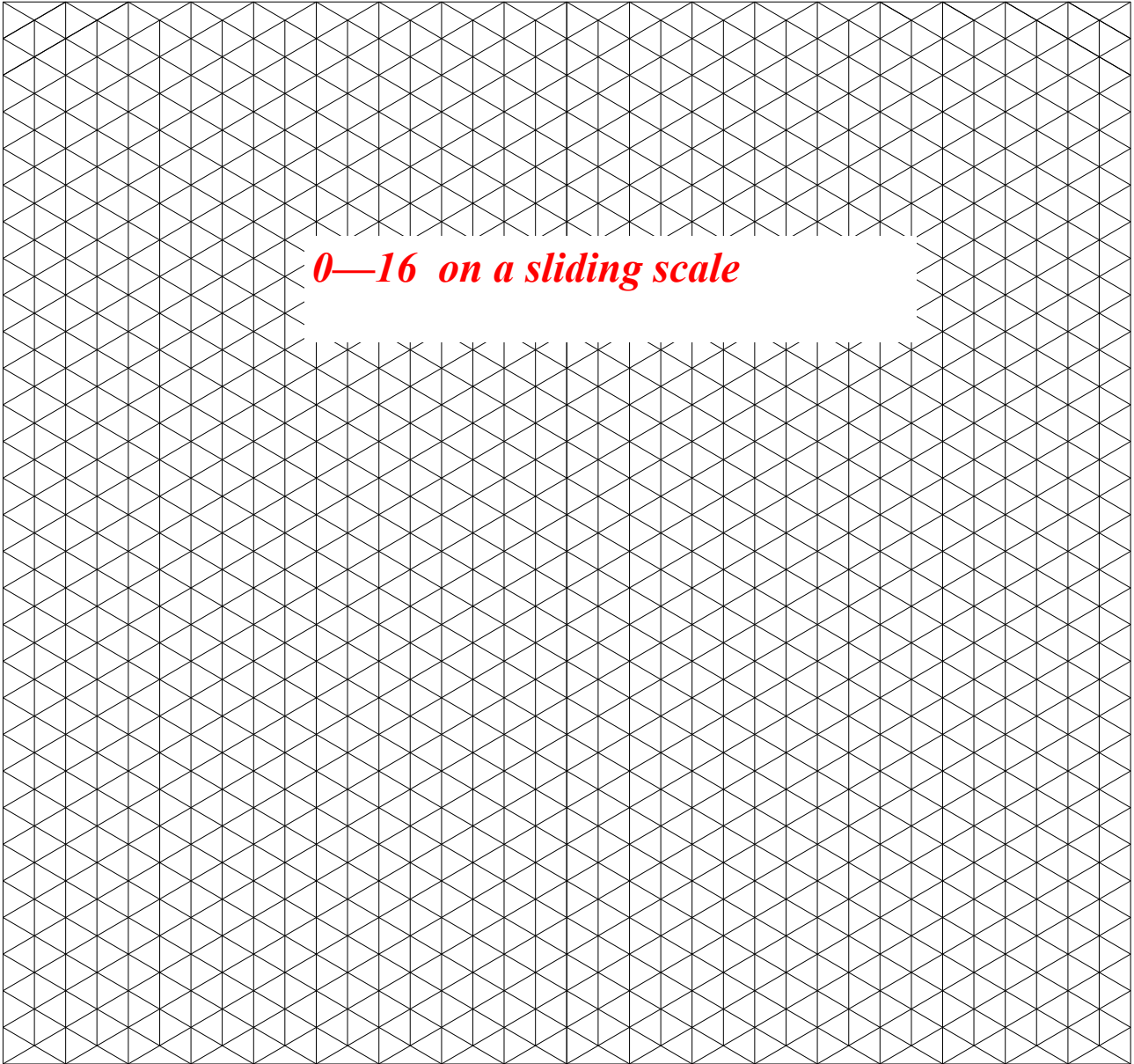
(3) In the space below make a neat sketch of the setting out (complete marking out) of the material for this artefact.

0—10 on a sliding scale

- (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

1 mark



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

Improvement 1

4 marks

Improvement 2

4 marks

3. Water Technology

(50 marks)

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

Answer **4 marks**



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

Answer **4 marks**

- (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 **4 marks**



Hot water cylinder

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

Name **2 marks**

Use **4 marks**



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

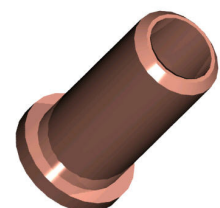
Answer **4 marks**



Olive

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

Answer **4 marks**



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

Name **2 marks**

Where used **4 marks**

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

Purpose **4 marks**



Non-return valve

(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 **3 marks**

What manufacturing process could be used to shape these ponds?

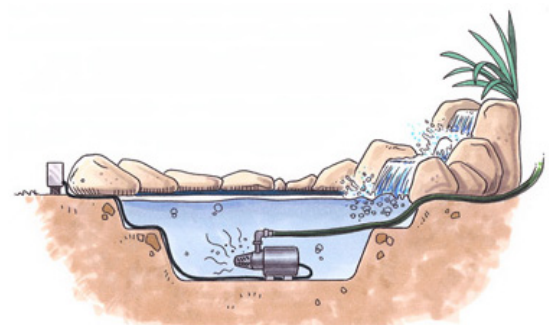
Answer **3 marks**



Garden ponds

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

Answer **2 marks**



Garden pond

(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 marks**

2 **2 marks**

3 **2 marks**



Alternative pump



4. Electrical Understanding and Electronics

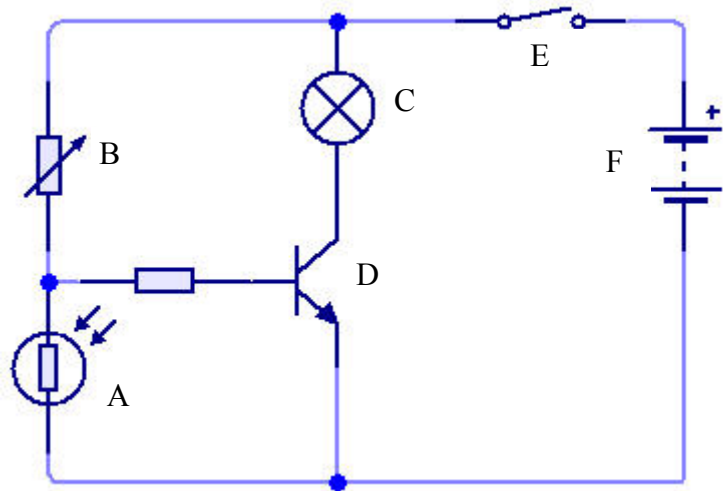
(50 marks)

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

Component					
Symbol	<i>2 marks each</i>				

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

Component	Name
A	<i>1 mark each</i>
B	
C	
D	
E	
F	



(ii) What is the function of this circuit?

Answer *4 marks*

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

5 marks



- (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 = ***Voltage x current (V x I) 3 marks***
 Calculation: ***12 W = V x 1 + 12V 3 marks***



12W low voltage halogen bulb

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

Answer ***3 marks***

- (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 20c?

Calculation:

Cost = .8 kW x 2 hr = €0.32 5 marks



Modern automatic washing machine

- (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:

V = I x R
I = 240/40 = 6 Amps 5 marks



Electric Iron

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

Appliance ***3 marks***

Electrical system ***3 marks***

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	<i>3 marks each</i>	<i>3 marks each</i>
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 **3 marks**

Advantage 2 **3 marks**



Laser cutter

(c) Make sketches of 4 of the following tools in the space below.

Scriber	Try square	Plane	Centre punch	Flat file
2 marks each				

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

A **3 marks each**

B _____

C _____

D _____



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