



Coimisiún na Scrúduithe Stáit
State Examinations Commission
Leaving Certificate Applied - 2004

Vocational Specialism - Technology
(240 marks)

Wednesday, 16th. June 2004
Afternoon 2.00 pm to 4.00 pm

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 - Orthographic projection**
- Q3 - 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**

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

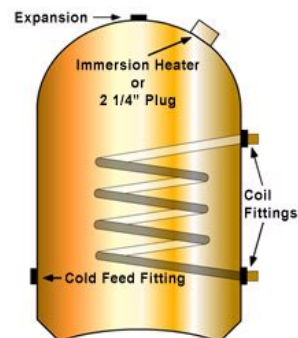
For the Superintendent only

Centre Stamp

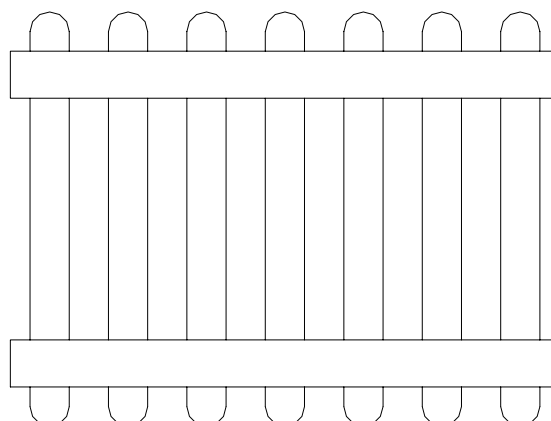
1. Answer **any TEN** of the following **FIFTEEN** short questions

(a) The diagram shows an indirect copper hot water cylinder. State **ONE** property of copper that makes copper a suitable metal for the manufacture of a hot water cylinder.

Property _____

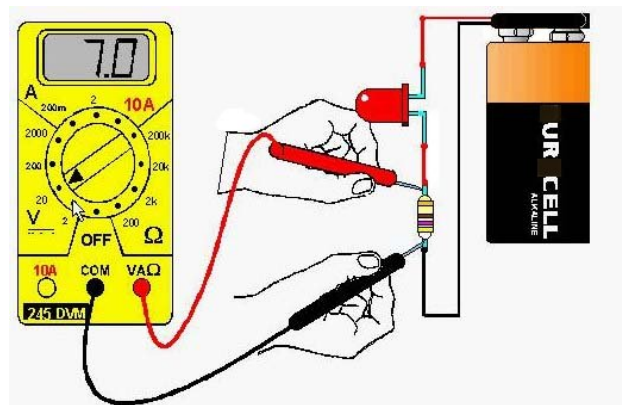


(b) Show on the sketch, **ONE** method to make the wooden gate more rigid.



(c) Name **ONE** test which is being carried out in the diagram.

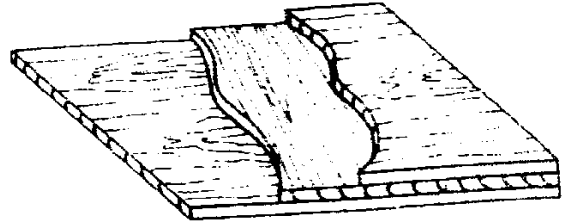
Test : _____



- (d) Name the manufactured board shown in the diagram.
State **ONE** advantage of this board.

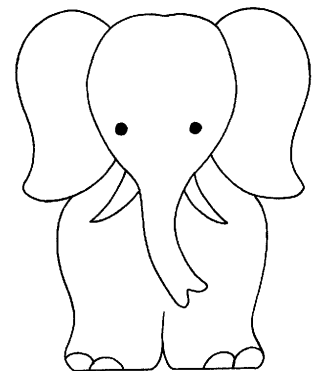
Name : _____

Advantage : _____

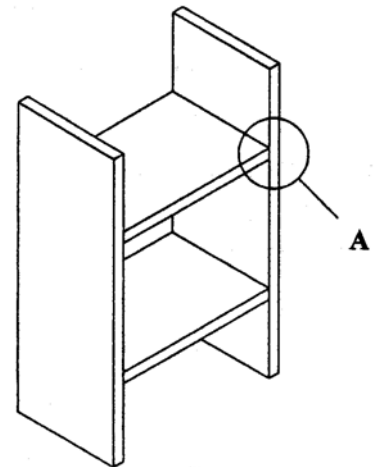


- (e) Describe **ONE** method of enlarging the given design to a size four times larger than the design shown.

Method : _____



- (f) A solid wood bookcase is shown in the sketch. Sketch **ONE** suitable method of joining the two pieces at 'A'.



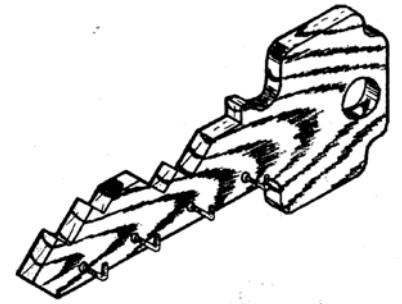
- (g) Describe or name **TWO** techniques of joining copper pipes in a central heating system.

Method 1. _____

Method 2. _____

(h) Write **TWO** product evaluation questions for the key holder shown in the diagram.

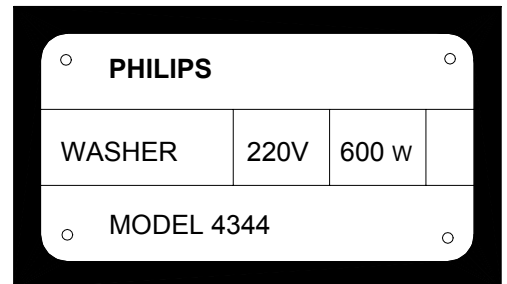
- 1. _____
- 2. _____



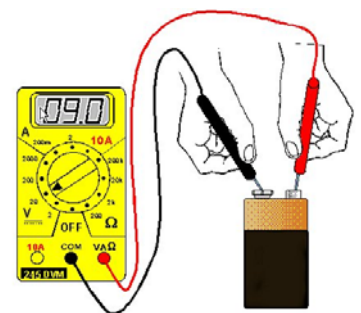
(i) Briefly explain why it is important to use the correct amount of water when mixing concrete.

(j) Calculate the size of fuse required by the electrical appliance rating plate shown.

Fuse size. _____



(k) Briefly explain how the remaining voltage can be determined in a partially used battery.



(l) Give **ONE** advantage of making a **model** of a project before making the actual project.

Advantage : _____

(m) Name the electronic symbol and state why it is used in an electronic circuit.

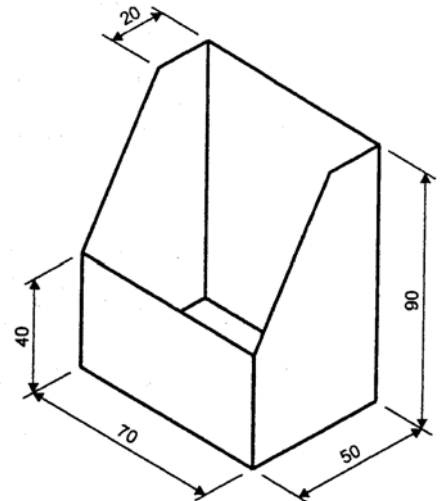
Name _____



Why it is used _____

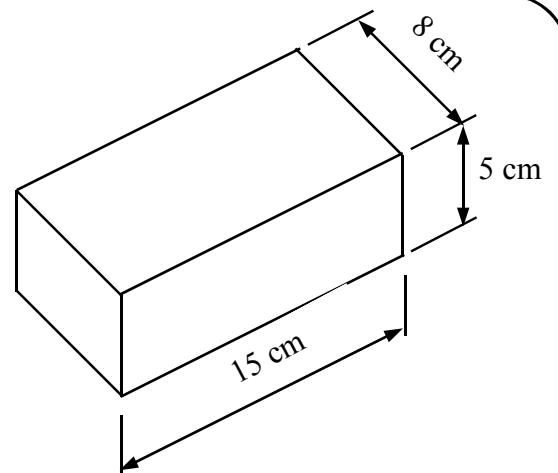
(n) Complete the cutting list below, for the disk holder shown.

| No. | Length | Width | Part |
|-----|--------|-------|-------|
| | | | Back |
| | | | Side |
| | | | Front |
| | | | Base |



(o) Calculate the volume of the metal tank shown.

Volume : _____

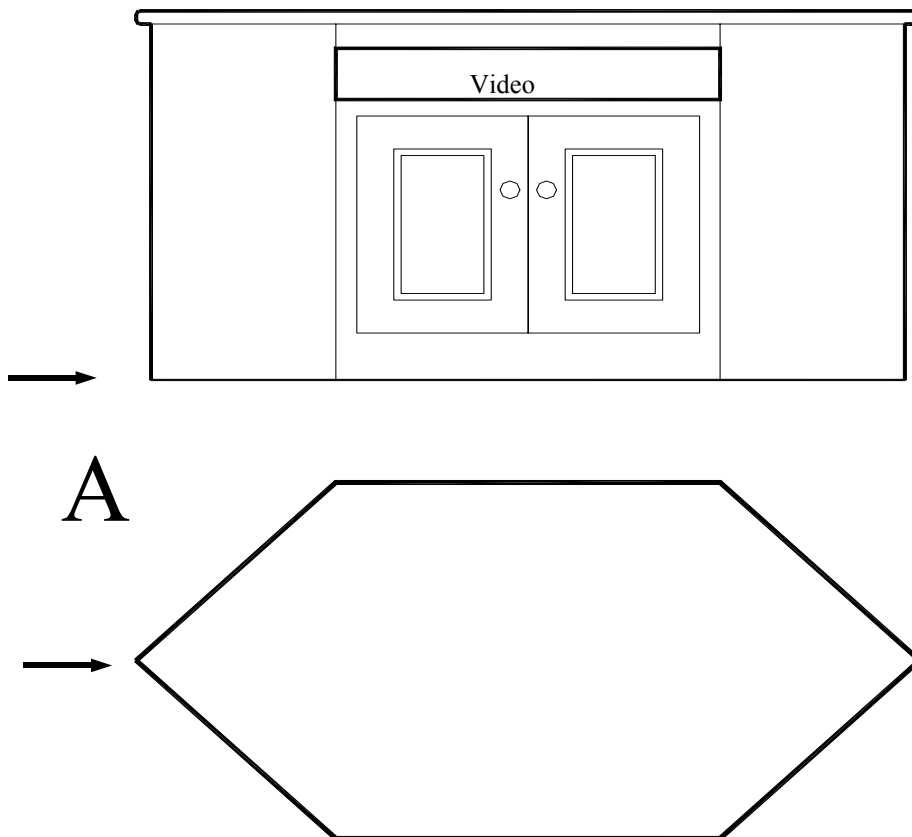


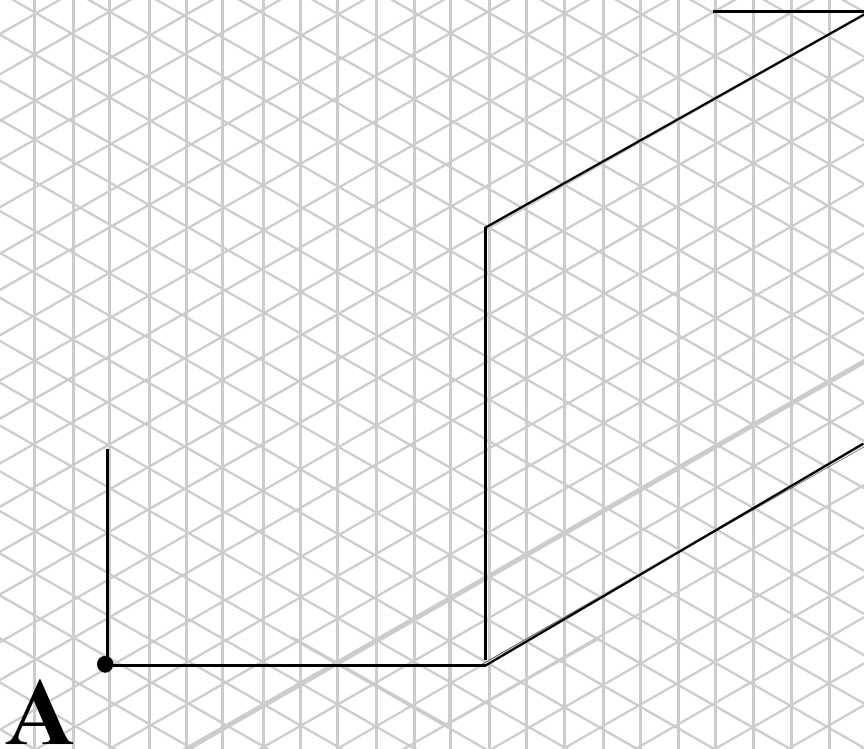
Compulsory

2. Orthographic Projection

Orthographic views of a television stand for a corner are shown below. The stand has a recess for a video case and is part of this combination unit. The position of a vertical edge marked 'A' is shown.

(a) Complete the isometric sketch of the bookcase on the grid opposite maintaining the proportions.



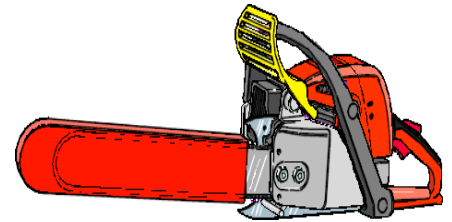


- (b) Estimate the length, height and width of the book case and show these dimensions on your drawing.

Compulsory

3. Safety

(a) The diagram shows a chainsaw.
List **FIVE** dangers associated with the use of this machine,
and **FIVE** safety precautions to be observed to prevent each
danger listed.



| DANGER | SAFETY PRECAUTION |
|-------------------|-------------------|
| 1. _____ _____ | _____ _____ |
| 2. _____ _____ | _____ _____ |
| 3. _____ _____ | _____ _____ |
| 4. _____ _____ | _____ _____ |
| 5. _____ _____ | _____ _____ |

(b) Two power tools are shown below.

Name each tool, state **TWO** checks which should be carried out before using each tool, and list **TWO** items of safety equipment that should be worn when using each tool.

Name : _____

Safety checks :

1. _____

2. _____

Safety equipment :

1. _____

2. _____



Name : _____

Safety checks :

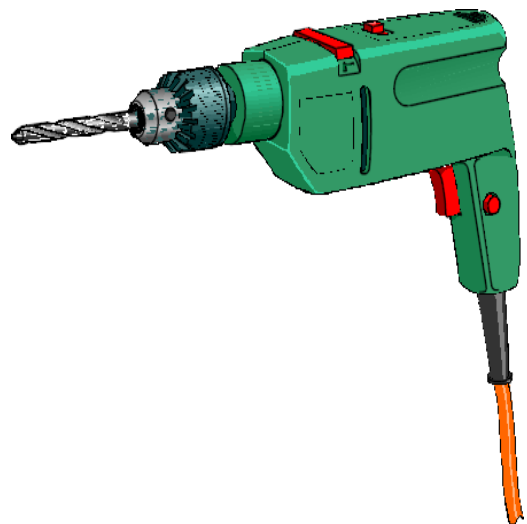
1. _____

2. _____

Safety equipment :

1. _____

2. _____



Section 2

150 marks

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

1. **Introducing Technology**

(50 marks)



The diagram shows a modern scooter.

(a) Name suitable materials which could be used to make parts A,B,C and D.

Part A - Material: _____

Part B - Material : _____

Part C - Material : _____

Part D - Material : _____

(b) Give **ONE** reason why each material you have chosen is suitable for that part.

| | MATERIAL | SUITABILITY |
|--------|----------|-------------|
| Part A | | |
| Part B | | |
| Part C | | |
| Part D | | |

(c) In the space below, sketch **ONE** ergonomic feature (design feature for ease of use) that makes this scooter both comfortable and safe for the user.

(d) (1) What is the primary source of power for this scooter?

Source of Power engine not running _____

(d) (2) State Ohm's Law.

2. Design and Manufacture

(50 marks)

In this module you were required to design and make a product -
e.g. a storage unit or a product made from a material suitable for casting.

(a) (1) Name **ONE** product you made during this module.

Name: _____

(a) (2) In the space below, draw a freehand sketch of the product you made.

(b) Write the design brief for the product you made during your course.

(c) List **THREE** questions you considered when analysing the brief for your project.

Question : _____

Question : _____

Question : _____

(d) (1) Name the material or materials you chose for making the product.

Material (s) : _____

(d) (2) Give **THREE** reasons why you chose the material (s) listed above.

Reason : _____

Reason : _____

Reason : _____

3. Water Technology

(50 marks)

The picture shows an outdoor fountain in a garden.

- (a) (1) The fountain shown is manufactured in two separate parts. Outline the reason why the bowl and pedestal are manufactured as individual parts.

Reason: _____

- (a) (2) In the space below show how the water could be continuously recycled to the spout.

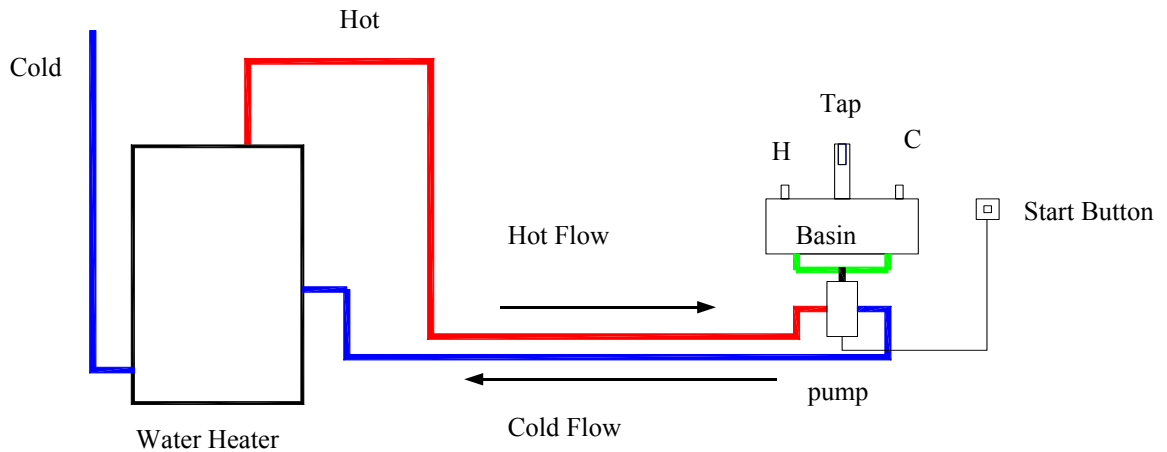


- (b) List **TWO** safety considerations to be observed when installing a water feature in hallway of a house.

1 _____

2 _____

- (c) The diagram shows a hot and cold water circuit that is controlled by a pump. Cool water is returned directly to the water heater by the temperature setting on the pump, under the wash hand basin in this example.



Give **TWO** advantages of this type of water circulation circuit.

1. _____
2. _____

- (d) Suggest **ONE** way by which the pump can be made automatic and operate automatically on reaching a pre set temperature.

The electronic components for an electronic sensor are shown below.



Switch



Variable Resistor



Buzzer



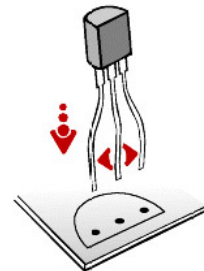
Battery Clip



Thermistor



Resistor



Transistor

- On the drawing above, connect the components so that the circuit can detect a rise in temperature.
- Sketch a circuit diagram below, to show how the circuit could be changed to detect a drop in temperature.

- (c) A Miniature/Micro Circuit Breaker (MCB) is an important safety mechanism in a home. It monitors electrical current and protects appliances against overloads and short circuits by cutting off power. It can be reset after being tripped when it is safe to do so. An image of a typical circuit breaker is shown below.

Specify any **THREE** steps that a qualified electrician would take when installing a new circuit breaker.



Miniature Circuit Breaker

1. _____

2. _____

3. _____

- (d) From the table select the correct fuse rating of a Miniature Circuit Breaker for each of the following circuits.

Socket circuit : _____

Lighting circuit : _____

Cooker circuit : _____

| Rating in amps |
|----------------|
| 10 amp |
| 20-25 amp |
| 32 amp |
| 200 amp |

A range of different tools is shown below.



(a) Name **FIVE** of the tools shown and give a use for each tool named.

| Tool number | Name | Use |
|-------------|------|-----|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

(b) Name **ONE** tool which is used for shaping metal, sketch it in the space provided and describe how it should be stored when not in use.

Note : *You may use any suitable tool from the previous page.*

Name : _____

Storage : _____

(c) (1) Name **a** tool which is used to plumb the edge of a door frame .

(c) (2) Sketch this tool in the space provided.

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|------------------------------|-------|
| QUESTION | MARKS |
| Q.1. | |
| Q.2. | |
| Q.3. | |
| SECTION 2 | |
| Q.1. | |
| Q.2. | |
| Q.3. | |
| Q.4. | |
| Q.5. | |