Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied - 2004

Vocational Specialism - Technology
(240 marks) MARKING SCHEME

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

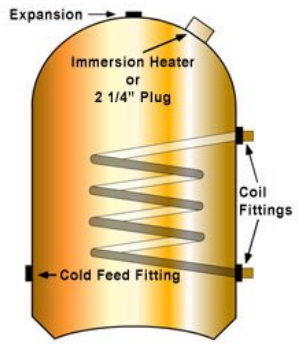
3. Write your answers in the spaces provided and include sketches as appropriate.

For the Superintendent only

Centre Stamp

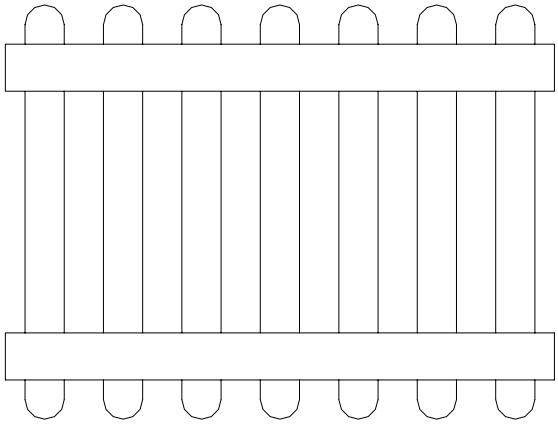
1. Answer **any TEN** of the following **FIFTEEN** short questions

(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.



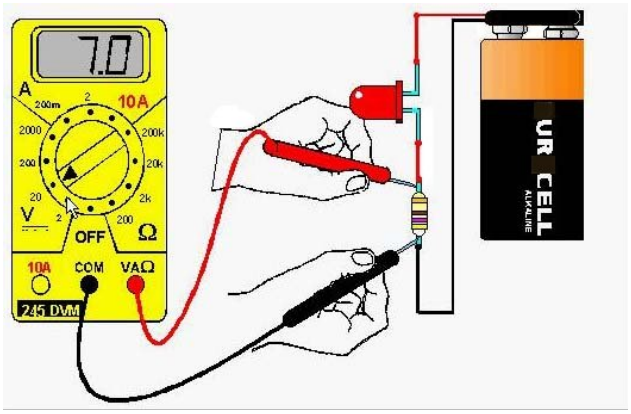
Property **Any 1-4 marks**

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



Any method-4 marks

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



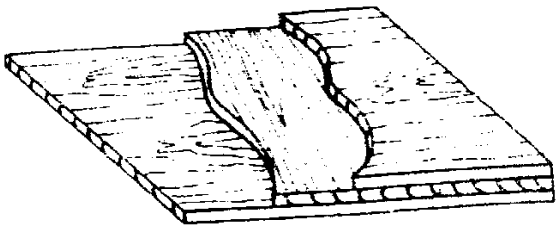
Test : **Any test– 4 marks**

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

Name : **Plywood-2 marks**

Advantage : **Any Advantage—2 mks**

_____



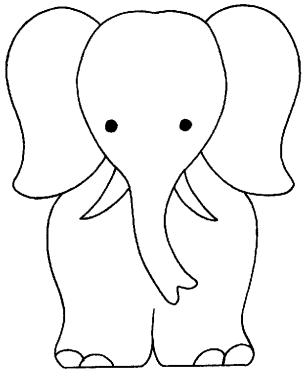
(e) Describe **ONE** method of enlarging the given design to a size four times larger than the design shown.

Method : **Any suitable method-4 marks**

_____

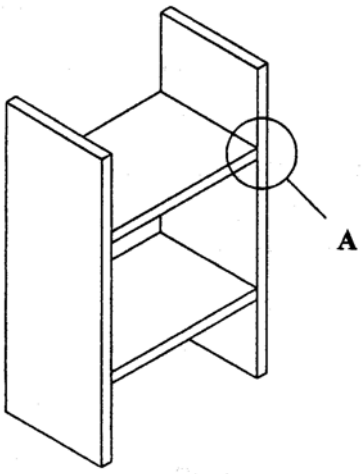
_____

_____



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

Any suitable jointing method-4 marks



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

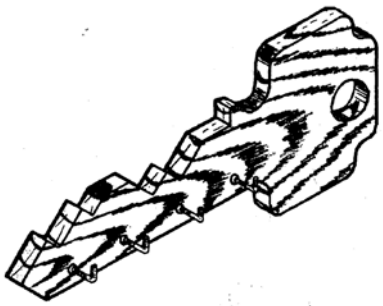
Method 1 **Any 2 techniques– 2 marks each**

Method 2. _____

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

1. **Any 2 questions 2 marks each**

2. _____



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

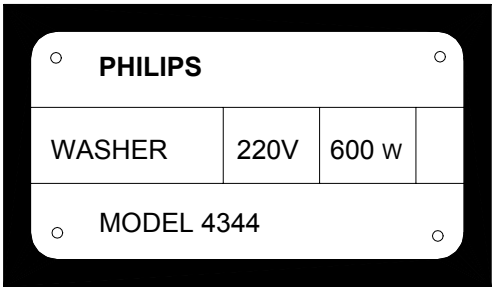
Any suitable explanation-4 marks

_____

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

Fuse size. **Correct size-4 marks**

_____



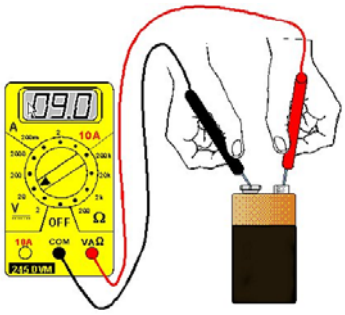
(k) Briefly explain how the remaining voltage can be determined in a partially used battery.

Suitable answer-4 marks

_____

_____

_____



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

Advantage : One suitable advantage-4 marks

_____

_____

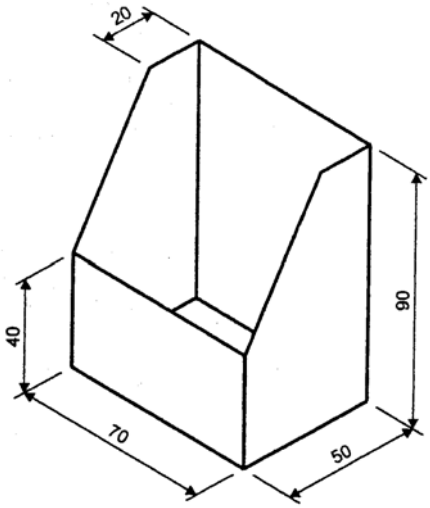
(m) Name the electronic symbol and state why it is used in an electronic circuit.

Name Resistor-2 marks

Why it is used Suitable use-2 **marks**

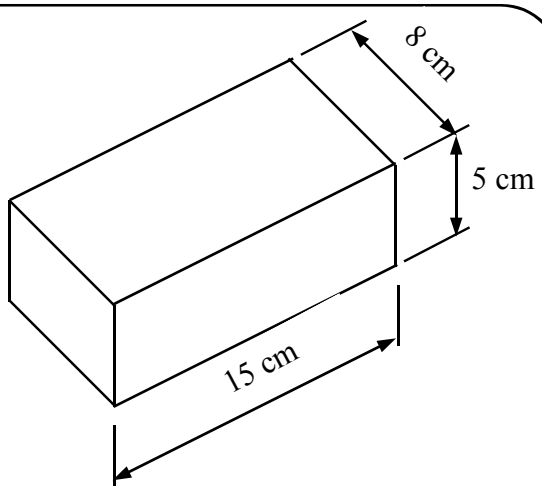
(n) Complete the cutting list below, for the disk holder shown.

No.	Length	Width	Part	
1	90	70	Back	1 mark
2	90	50	Side	1 mark
1	70	40	Front	1 mark
1	70	50	Base	1 mark



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

Volume : **600 cm^3—4marks**

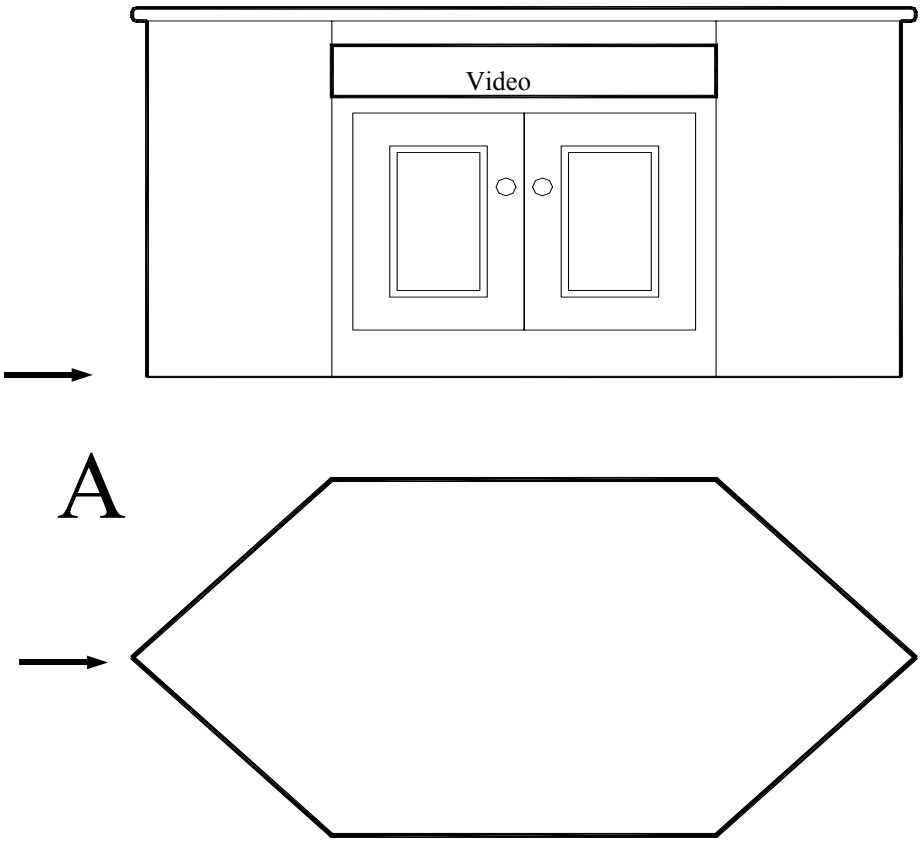


Compulsory

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 television stand on the grid opposite maintaining the proportions.



Drawing

Height-6 mks

Width-6 mks

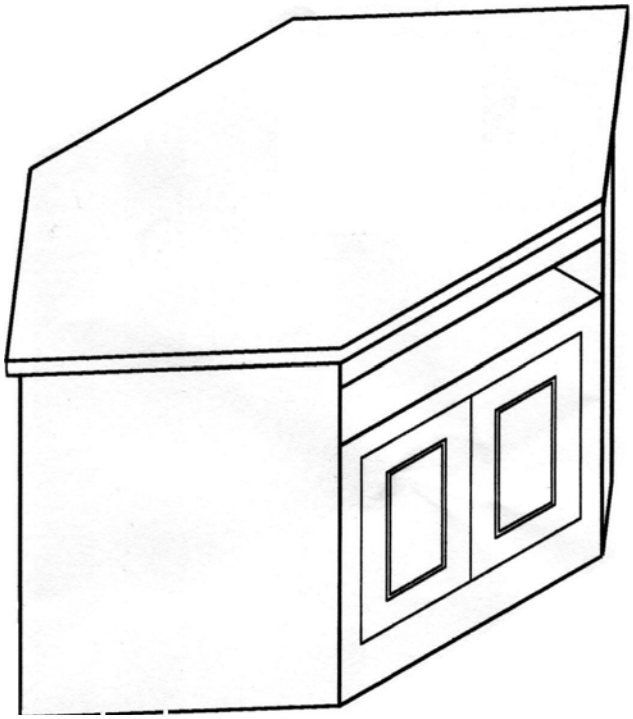
Depth-6 mks

Proportion

Height-2 mks

Width-2 mks

Depth-2 mks



A

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

Dimensions

Height 450-550mm
2 mks

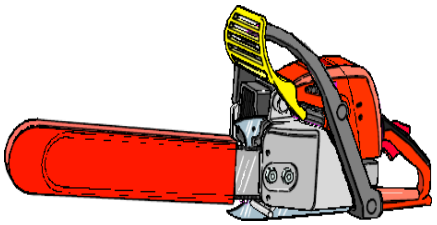
Width 600-10000mm
2 mks

Depth 300-450mm
2 mks.

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. **Any 5 dangers-1 mk each**	**Any 5 precautions-1 mk each**
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 **Correct name-1 mk,**

Safety checks :

1. **2 suitable checks-1 mk each**

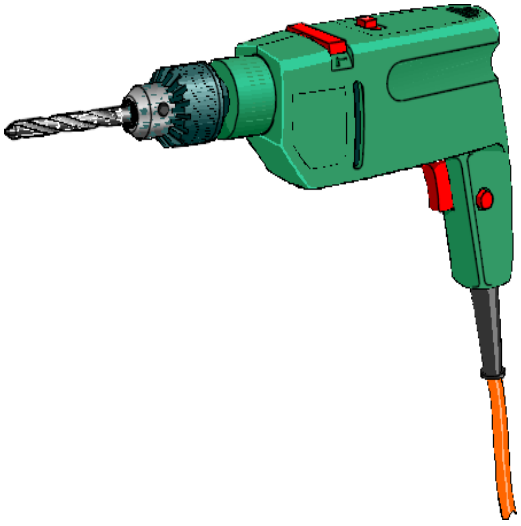
2. _____

Safety equipment :

1 **2 suitable items-1 mk each**

2. _____

Name **Correct name-1 mk,**



Safety checks :

1. **2 suitable checks-1 mk each**

2. _____

Safety equipment :

1 **2 suitable items-1 mk each**

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: **Correct material-4 mks**

Part B - Material **Correct material-4 mks**

Part C - Material : **Correct material-4 mks**

Part D - Material : **Correct material-4 mks**

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

	MATERIAL	SUITABILITY
Part A		**Suitable reason-3 mks**
Part B		**Suitable reason-3 mks**
Part C		**Suitable reason-3 mks**
Part D		**Suitable reason-3 mks**

(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.

Suitable choice –5 mks

Sketch - 0-5 mks

(d) (1) What is the primary source of power for this scooter? **Engine-4 mks**

Source of Power engine not running **Battery– 4 mks**

(d) (2) State Ohm's Law. $\frac{\text{Volts}}{\text{Amps}}$ = **Ohms—4 mks**

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.

Sketch 0-10 mks

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

Any 2 design brief points—5 mks each

_____

_____

_____

_____

_____

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

Question : **Any 3 suitable questions—4 mks each**

_____

Question : _____

_____

Question : _____

_____

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

Material (s) : **Suitable material(s) - 6 mks.**

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

Reason : **Any 3 reasons—4 mks each**

_____

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 bowel and pedestal are manufactured as individual parts.

Reason: **Appropriate reason– 4 mks**

_____

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

Sketch 0-10 mks

Method: Pump—2 mks

Filter—2 mks

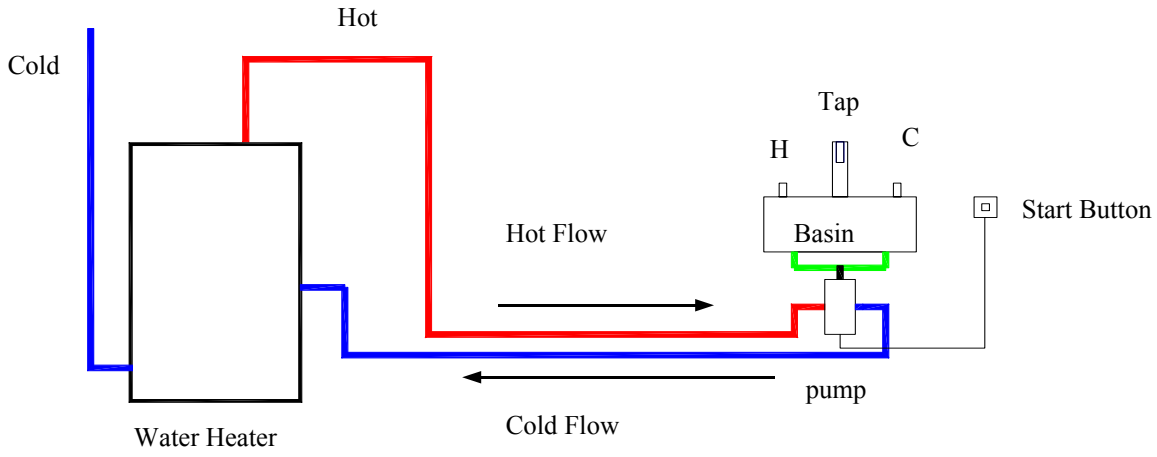
Pipe to spout—2 mks

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

1 **2 suitable precautions—4 mks each**

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 advantages—6 mks each**

2. _____

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

Suitable method—10 mks

_____

4. Electrical Understanding and Basic Electronics (50 marks)

The electronic components for an electronic sensor are shown below.

Switch **2**

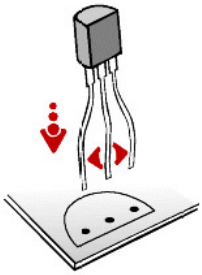
Variable Resistor **3**

Buzzer **7**

Battery Clip **1**

Thermistor **4**

Resistor **5**

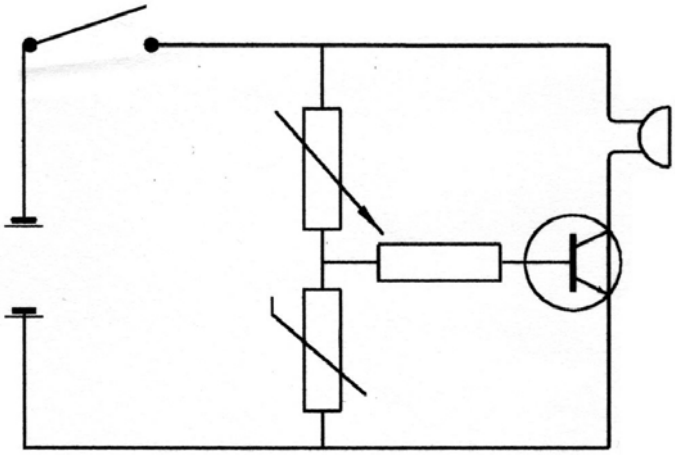


Transistor **6**

Correct sequence– 7x 2 mks each

(a) On the drawing above, connect the components so that the circuit can detect a rise in temperature.

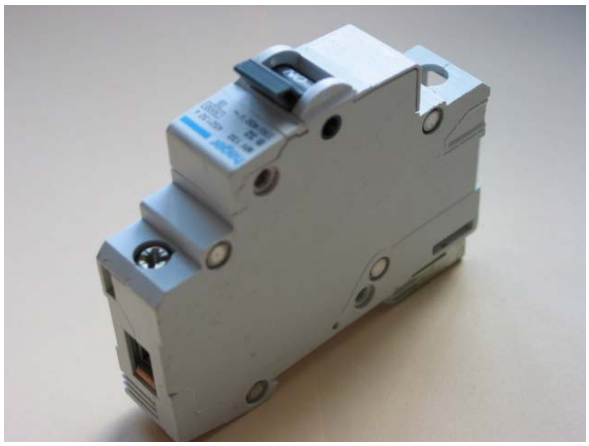
(b) Sketch a circuit diagram below, to show how the circuit could be changed to detect a drop in temperature.



Correct sequence—7x1 mks each
Correct symbols —7x2 mks each

(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. **3 steps—3 mks each**

_____

2. _____

_____

3. _____

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

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

Socket circuit : **2 mks**

Lighting circuit : **2 mks**

Cooker circuit : **2 mks**

5. Tools (50 marks)

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
	5 correct names—2 mks each	**5 correct uses—2 mks each**

(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 : _____

Correct tool—2 mks

Sketch 0—10 mks

Storage : **Correct storage method—6 mks**

_____

(c) (1) Name **a** tool which is used to plumb the edge of a door frame .
Correct tool—2 mks

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

Sketch 0– 10 mks

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For Examiner use only	
QUESTION	MARKS
Q.1.	
Q.2.	
Q.3.	
SECTION 2	
Q.1.	
Q.2.	
Q.3.	
Q.4.	
Q.5.	