



**Coimisiún na Scrúduithe Stáit
State Examinations Commission**

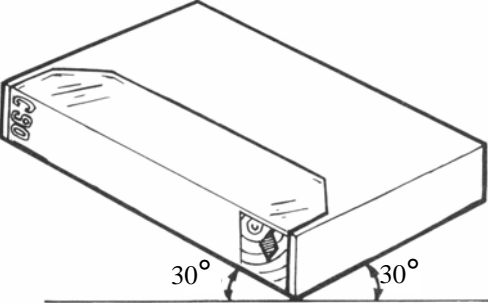
Junior Certificate Examinations, 2006


TECHNOLOGY

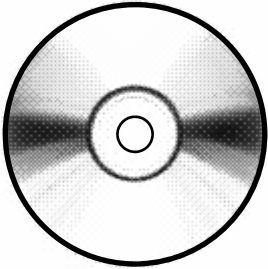
ORDINARY LEVEL

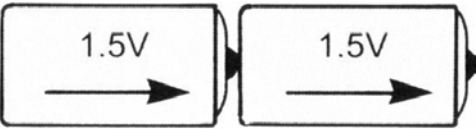
***Marking
Scheme***


SECTION A – 80 MARKS ANSWER ANY SIXTEEN QUESTIONS IN THIS SECTION


<p>1.</p> 	<p>This drawing is a(n):</p>	Plan view	
		Perspective view	
		Isometric view	(5)

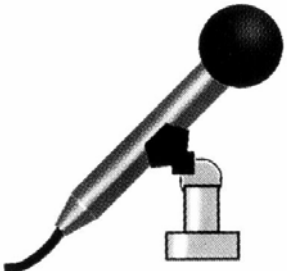
<p>2.</p> 	<p>An alloy is:</p>	A mixture of plastic and metal	
		A mixture of two or more metals	(5)
		A pure metal	

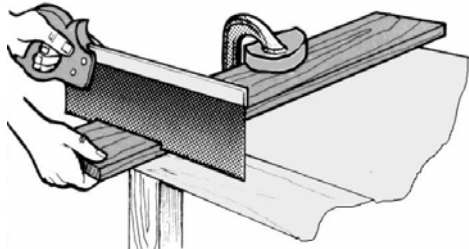
<p>3.</p> 	<p>The capacity of a DVD is measured in:</p>	Bytes	
		Kilobytes	
		Gigabytes	(5)

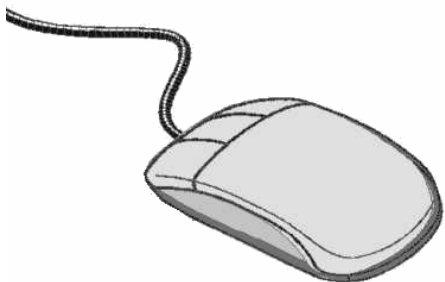
<p>4.</p> 	<p>The total voltage of this battery is:</p>	1.5 volts	
		3 Volts	(5)
		4.5 Volts	


<p>5.</p> 	<p>John Logie Baird invented the first:</p>	Radio	
		Television	(5)
		Tape recorder	

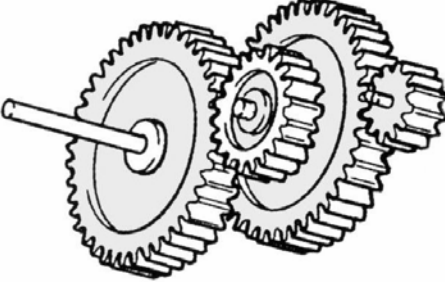
6.		<p>When the coil spring is pressed in the direction of the arrows it will:</p>	Bend	
			Shear	
			Compress	⑤

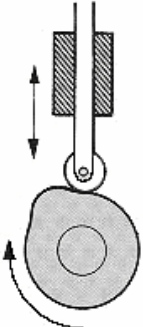
7.		<p>A microphone converts:</p>	Sound into electricity	⑤
			Electricity into sound	
			Sound into heat	

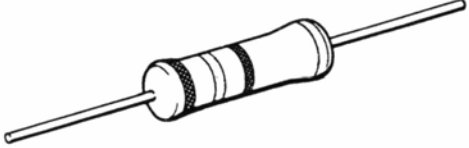
8.		<p>The saw in use here is a:</p>	Hacksaw	
			Tenon saw	⑤
			Coping saw	

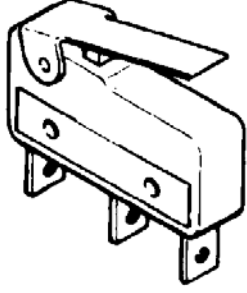
9.		<p>A computer mouse is:</p>	An output device	
			A storage device	
			An input device	⑤

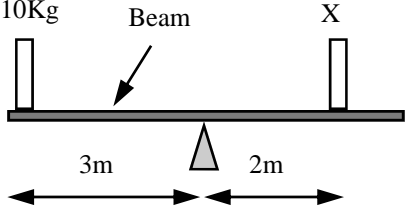
10.		<p>A motor cycle helmet is a:</p>	Shell structure	⑤
			A frame structure	
			A tensile structure	

11. 	This is a:	Simple gear train	
		Compound gear train	5
		Bevel gear system	

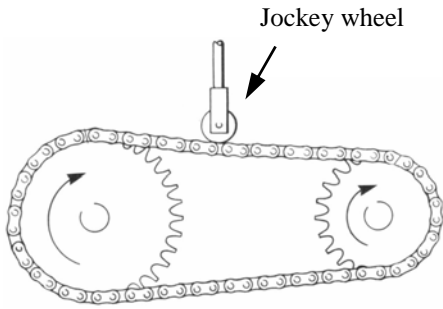
12. 	This mechanism uses a:	Cam and follower	5
		Ratchet and pawl	
		Chain and sprocket	

13. 	Resistance is measured in:	Amps	
		Farads	
		Ohms	5

14. 	This is a:	Toggle switch	
		Micro-switch	5
		Rocker switch	

15. 	When the beam is in equilibrium (balanced) the mass at X is:	15Kg	5
		30Kg	
		10Kg	

16.



A chain and sprocket mechanism and jockey wheel are shown. Explain what the jockey wheel is used for.

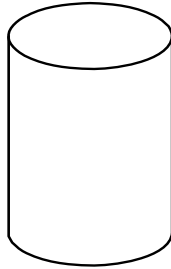
Function of the jockey wheel: _____

Tension

5

17.

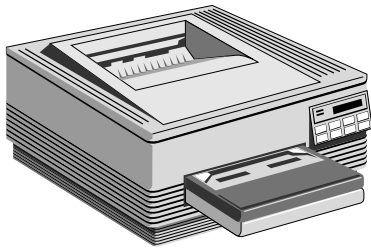
Draw a development of this open top container in the space opposite.



Rectangle = 3, Circle = 2

5

18.



A computer printer is:

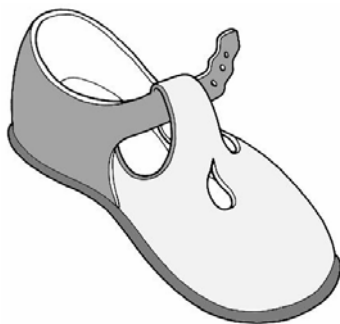
Software

Hardware

Shareware

5

19.



Leather is a:

Synthetic fabric

Natural fabric

Combined natural and synthetic fabric.

5

20.



Drinks cans are made from:

Steel

Copper

Aluminium

5

SECTION B – 80 MARKS
ANSWER ANY TWO QUESTIONS FROM THIS SECTION

40 Marks

1.

(a) A milk carton holder is shown. The milk carton is inserted into the holder which is then gripped by the handle. 10 Marks

(i) Suggest a suitable material from which the milk carton holder could be made.

Suitable material: Acrylic ①

(ii) List three reasons for selecting this material.

1. Easily worked. ②

2. Good range of colours available. ②

3. Lightweight. ①

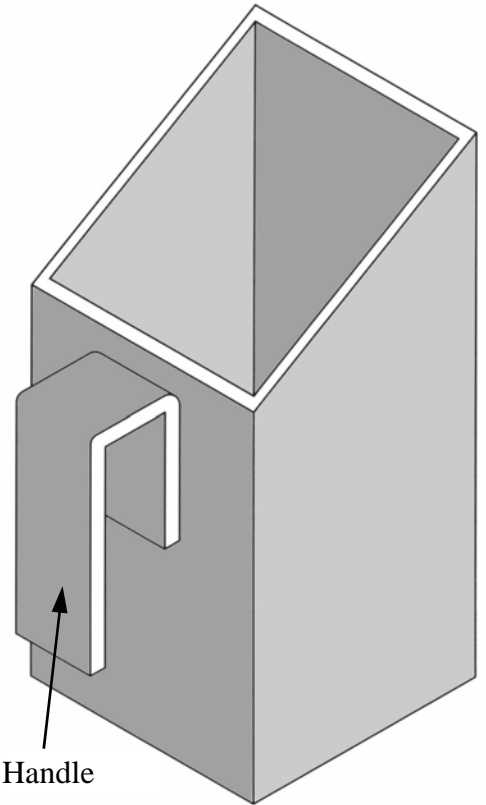
(iii) Suggest two methods of fixing the handle to the holder.

Method 1: Use adhesive.

_____ ②

Method 2: Countersunk screw and nut.

_____ ②



Milk carton holder

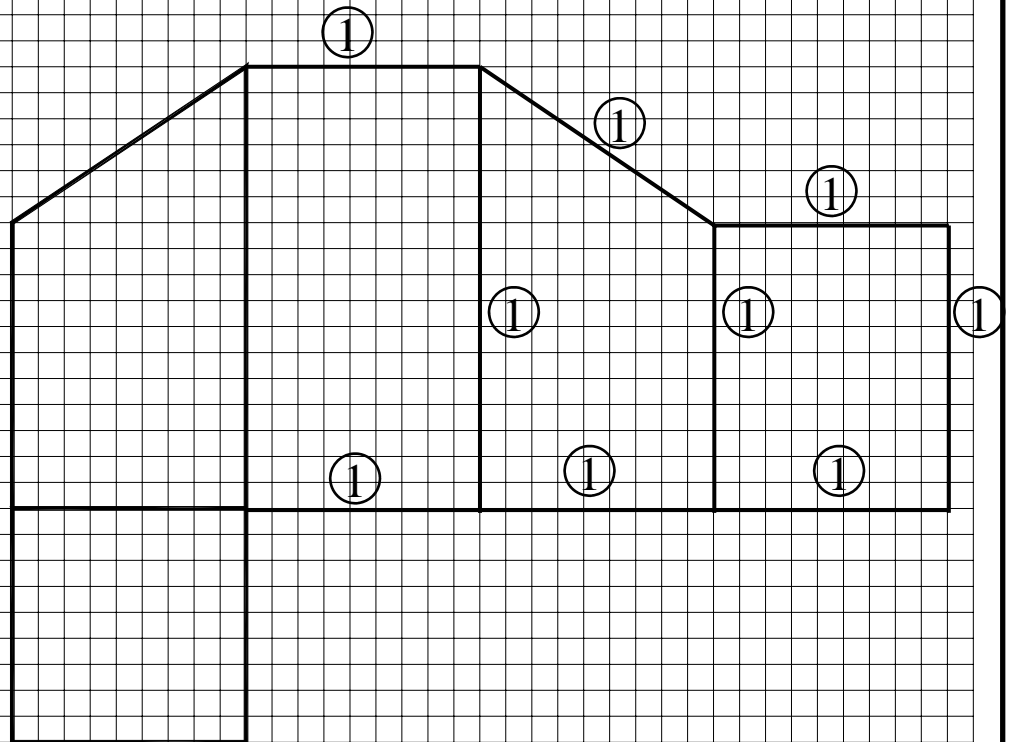
(b) Name two hand tools that you would use in the manufacture of the holder and make a sketch of each of the tools in the space provided. 10 Marks

Name of tool	Sketch
①	④ No Attempt 0 ← Fair 2 ← Good 3 ← Complete 4 ←
①	④ No Attempt 0 ← Fair 2 ← Good 3 ← Complete 4 ←

(c) The development of one side and the base of the milk carton holder is shown below. Complete this development showing the other three sides. (Omit the handle) .

12 Marks

Accuracy & quality of drawing = 3



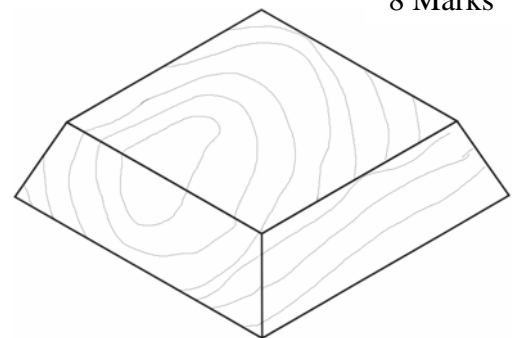
(d) The wooden base shown is to be attached to the milk carton holder. Name a suitable wood for the base. Describe three steps in the manufacture of the base.

8 Marks

Suitable wood: Oak (2)

Manufacturing steps:

Step 1: _____ (2)
Measure and cut to size.



Wooden base

Step 2: _____ (2)
Use a plane to form chamfered edges.

Step 3: _____ (2)
Use sandpaper to produce high finish.

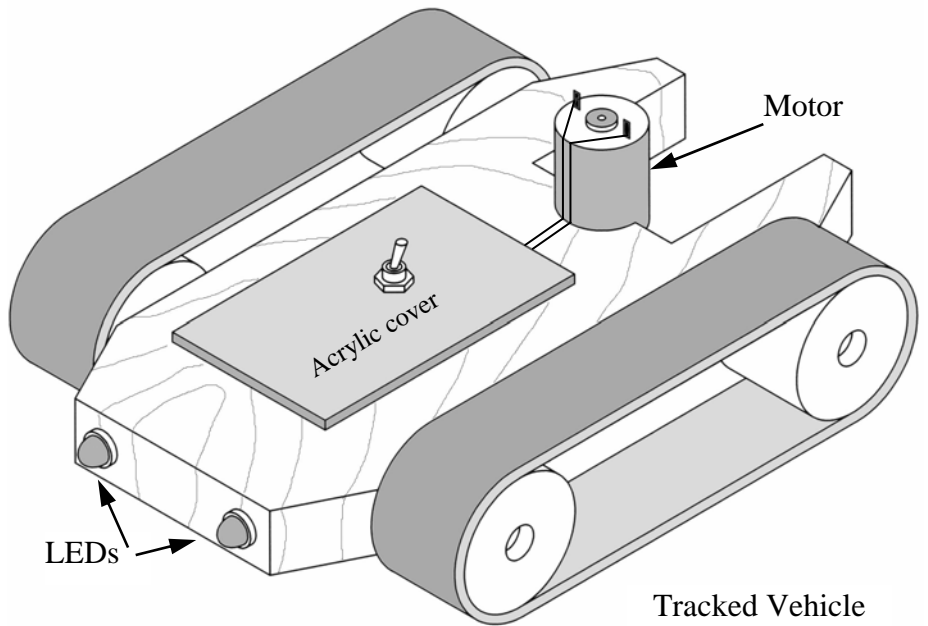
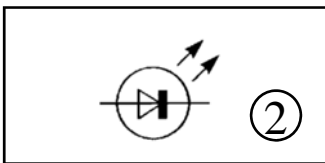
(a) A drawing of a model vehicle is shown. The body of the vehicle is made from wood. The switch activates the motor and the two flashing LEDs on the front of the vehicle.

10 Marks

(i) Name a suitable material for the tracks.

Answer: Rubber (2)

(ii) In the box below draw the symbol for a LED.



(iii) In order to contain a battery, a rectangular hole is required in the body. Describe three stages in the making of the rectangular hole.

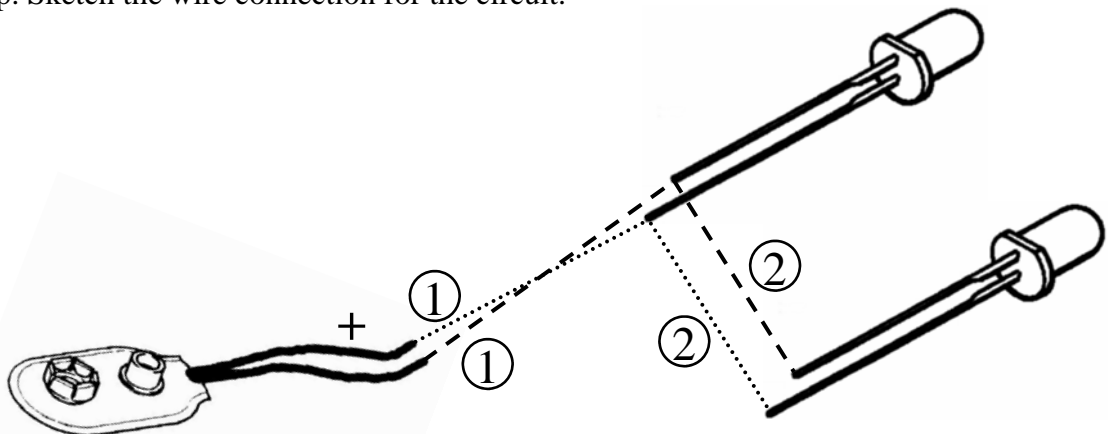
Stage 1: Mark out the area. (2)

Stage 2: Drill a series of holes and cut out with coping saw. (2)

Stage 3: Clean edges with sandpaper. (2)

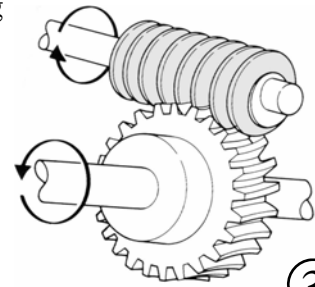
(b) The two LEDs are to be connected in parallel and then to the battery snap. Sketch the wire connection for the circuit.

6 Marks



8 Marks

- (c) The motor must be connected to the rear axle of the model vehicle using a worm drive mechanism. Give three reasons for using this mechanism.



Reasons for selection:

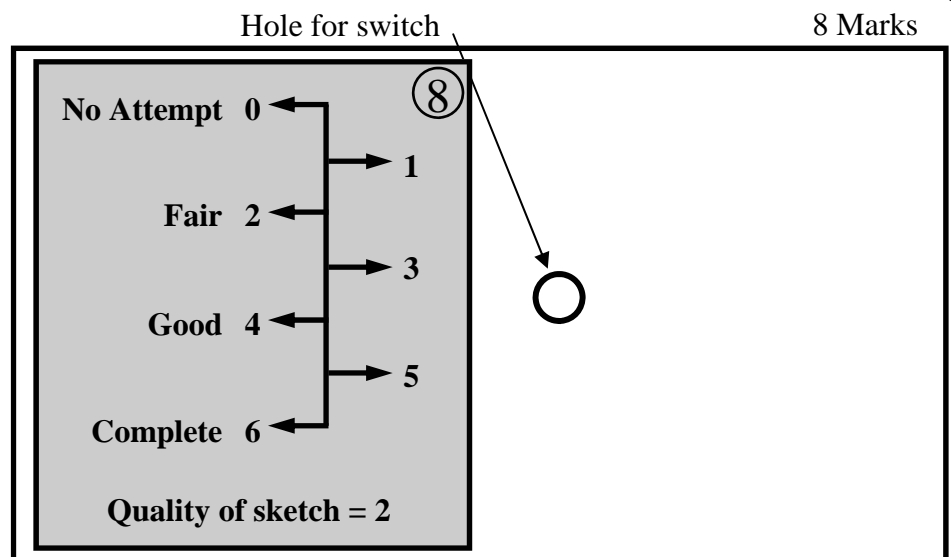
Reason 1: Transmission at right angles therefore easy to mount motor. (3)

Reason 2: Good gear ratio. (3)

Reason 3: Easy to incorporate into vehicle. (2)

8 Marks

- (d) A logo for the vehicle is to be placed on the acrylic cover. The plan of the acrylic cover is shown. Draw your design for a logo on this plan. Use shading where appropriate.



Plan of acrylic cover

8 Marks

- (e) List four precautions that the manufacturer of the vehicle must take to ensure that it is safe for young children.

1. No sharp edges. (2)

2. No loose wires. (2)

3. Place guard or cover over gears. (2)

4. Manufacture using suitable and safe materials. (2)

(a) A bookend made from sheet metal is shown. 12 Marks

(i) Name a suitable metal for the bookend.

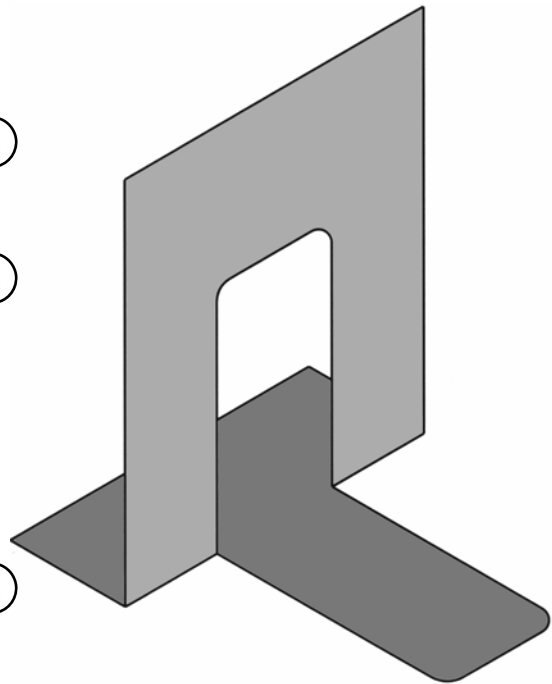
Metal: Aluminium ③

(ii) Identify one safety hazard in this design.

Safety hazard: Sharp edges ③

(iii) A number of bookends are to be made from a piece of sheet metal measuring 200mm x 130mm. How many bookends can be made from a sheet measuring 1300mm x 400mm?

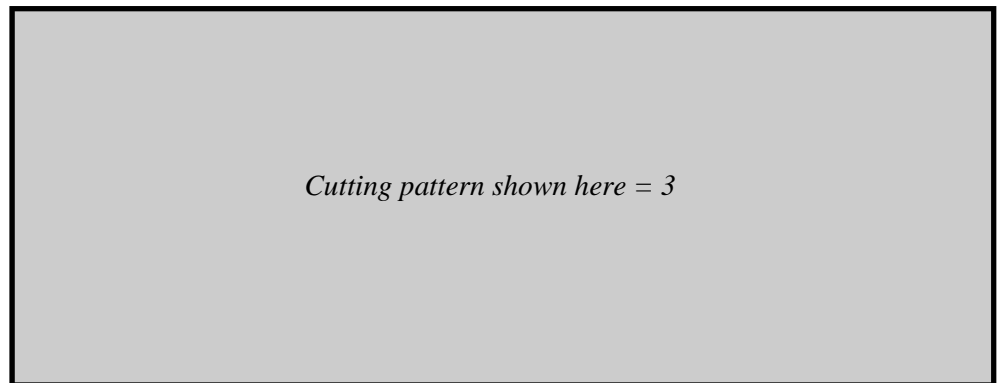
20 ③



Bookend

Show on the sheet below the rectangular cutting pattern that you would use to make bookends.

Show rectangular cutting pattern here →



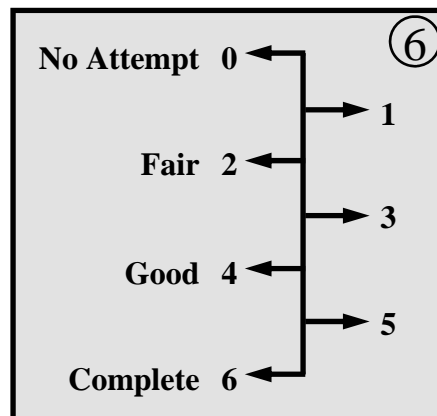
(b) In the space opposite, make a sketch of a design for a bookend from a material other than metal.

8 Marks

Name the material you have chosen.

Material: _____

Acrylic ②

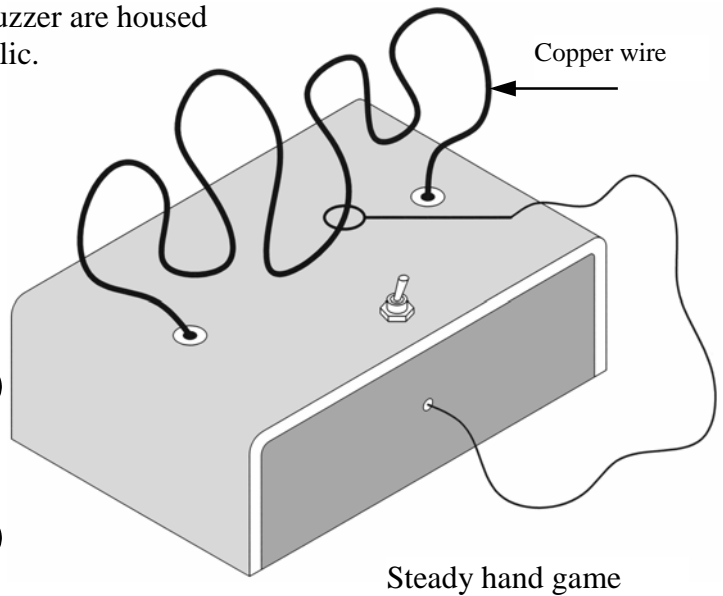


(c) A steady hand game for teaching children hand and eye co-ordination is shown. The battery and buzzer are housed inside the box. The box is made from acrylic. 12 Marks

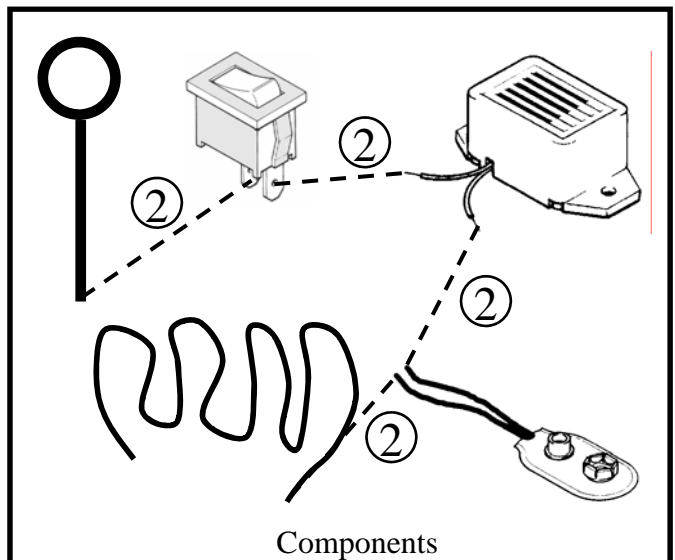
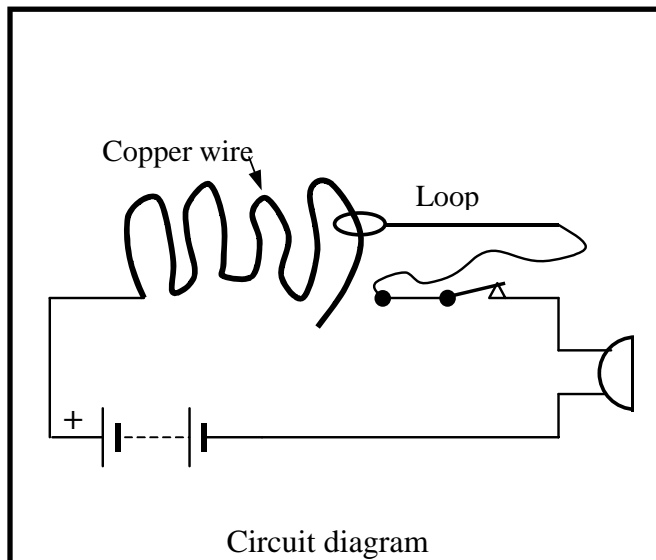
(i) A number of holes are drilled in the acrylic box. State two precautions that you would take when drilling these holes.

1. _____
Use correct drill & speed. (2)

2. _____
Hold the acrylic box correctly. (2)



(ii) The circuit diagram for this game is shown below on the left. The components used are shown on the right. Using the circuit diagram as a guide, show how the components on the right are joined together to make the game.



(d) When the loop touches the copper wire in the steady hand game a buzzer sounds. 8 Marks

(i) Name the two types of energy in this energy conversion:

Answer: From Electricity (2) to Sound (2)

(ii) The switch in the steady hand game circuit is a SPST switch. What does SPST stand for?

Answer: Single Pole Single Throw (2)

(iii) Which of the following metals is the best conductor of electricity?

(i) Aluminium, (ii) Steel, (iii) Copper.

Answer: Copper (2)

(a) List three ways in which technology has influenced the methods of constructing buildings.

9 Marks

1. New and better insulation materials. (3)
2. Hoist machines. (3)
3. Faster construction methods; timber-frame housing. (3)



(b) List three ways in which technology can help to make the elderly feel safer in their homes.

9 Marks

1. Burglar alarm systems (3)
2. Better communication systems; mobile phones. (3)
3. Smoke alarms (3)

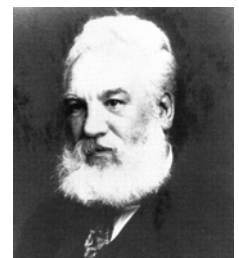
(c) (i) List three technological developments that have influenced the movie industry in recent years.

14 Marks

1. Special effects. (3)
2. Computer animation. (2)
3. Surround sound. (2)

(ii) There have been many developments in communications since Bell invented the first telephone. List three recent developments.

1. The Internet and associated services such as the web and email. (3)
2. Mobile phone technology such as text messages etc. (2)
3. Fax machines. (2)



Alexander Graham Bell

(d) Henry Ford introduced the idea of manufacturing cars on an assembly line. Name two other products which are manufactured on an assembly line and identify two advantages of this type of production.

8 Marks

- Product 1: Computers (2) Product 2: Tractors (2)
- Advantage 1: Quick and reliable method of manufacturing. (2)
- Advantage 2: Cost saving over individual manufacturing methods. (2)



Henry Ford