



*Coimisiún na Scrúduithe Stáit*  
State Examinations Commission

*Junior Certificate Examination, 2012*

# *Technology*

## *Ordinary Level*

*Wednesday, 20 June*  
*Afternoon, 2:00 - 4:00*

**Instructions:**

1. Answer **Section A** (short answer questions). 80 marks
2. Answer **two** questions from **Section B**. 80 marks
3. Hand up this paper at the end of the examination.
4. Write your examination number in the box below.

**Centre Number**

**Examination Number**

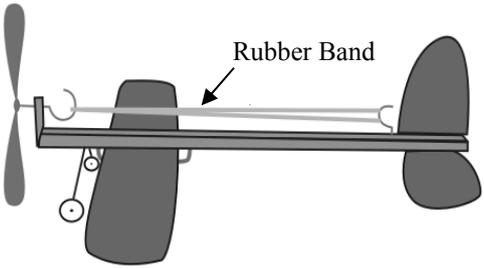
1.	Total of end of page totals	
2.	Aggregate total of all disallowed question(s)	
3.	Total mark awarded (1 minus 2)	
4.	Bonus mark for answering through Irish (if applicable)	
5.	Total mark if Irish Bonus applied (3+4)	
Note: The mark in row 3 (or row 5 if an Irish bonus is awarded) must equal the mark in the Móriomlán box on the script		

Total Mark	
Question	Mark
Section A	
Section B Q 1	
Q 2	
Q 3	
Q 4	
Total	
Grade	

Section A – 80 Marks. Answer **any sixteen** questions in this section.

<p>1.</p> 	<p>Shown is a graphic of a car. The graphic of the car is:</p>	<p>A Pictorial view</p>	
<p>2.</p> 	<p>In digital camera technology the number of Megapixels is a measure of:</p>	<p>The size of the lens</p>	
<p>3.</p> 	<p>To type a capital letter with a computer keyboard you can use the:</p>	<p>Tab key</p>	
<p>4.</p> 	<p>Shown is a resistor. Resistance is measured in:</p>	<p>Volts</p>	
<p>5.</p> 	<p>The toggle switch shown is:</p>	<p>DPDT</p>	
		<p>SPST</p>	
		<p>SPDT</p>	

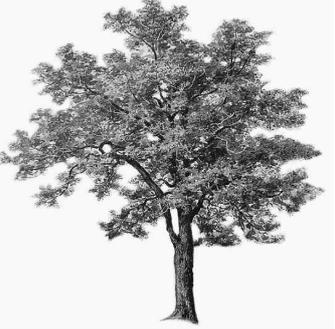
<p>6.</p> 	<p>The 'U' in USB stands for:</p>	Universal	
		Unicode	
		Unilateral	

<p>7.</p> 	<p>Shown is a toy plane which uses a rubber band. The force in the rubber band is:</p>	Compression	
		Tension	
		Bending	

<p>8.</p> 	<p>Shown is a geodesic dome. A geodesic dome is a:</p>	Frame structure	
		Shell structure	
		Tensile structure	

<p>9.</p> 	<p>On the stapler shown, 'A' marks the position of the:</p>	Load	
		Effort	
		Fulcrum	

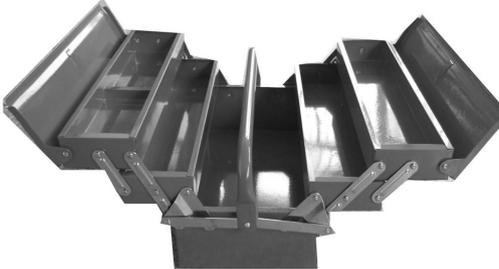
<p>10.</p>  <p><b>A</b>      <b>B</b>      <b>C</b></p>	<p>Three electronic components are shown.</p> <p>Which of these components is used for light or dark sensing?</p>	Component A	
		Component B	
		Component C	

<p>11.</p> 	<p>Plastic drinks bottles are made using a process called:</p>	<p>Vacuum forming</p>	
		<p>Line bending</p>	
		<p>Blow moulding</p>	
<p>12.</p> 	<p>The wood from the ash tree is an example of a:</p>	<p>Hardwood</p>	
		<p>Softwood</p>	
		<p>Greenwood</p>	
<p>13.</p> 	<p>Copper is:</p>	<p>An alloy</p>	
		<p>A pure metal</p>	
		<p>A ferrous metal</p>	
<p>14.</p> 	<p>The television was invented by:</p>	<p>Thomas Edison</p>	
		<p>John Logie Baird</p>	
		<p>Nikola Tesla</p>	
<p>15.</p> 	<p>The production of the Model T Ford in 1920 was one of the first examples of:</p>	<p>One-off production</p>	
		<p>Just-in-time production</p>	
		<p>Mass Production</p>	

16.		The safety sign shown symbolises:	A danger zone	
			A toxic substance	
			A radioactive material	

17.		The tool shown is:	An open wrench	
			A ring spanner	
			A torque wrench	

18.		The blade of a scroll saw moves up and down. This is an example of:	Rotary motion	
			Oscillating motion	
			Reciprocating motion	

19.		The mechanism on the side of the toolbox shown is an example of a:	Rack and pinion	
			Parallel linkage	
			Simple gear train	

20.		This symbol, often found on packaging, means:	Reduce	
			Reuse	
			Recycle	

Section B – 80 Marks.  
Answer **any two** questions from this section.

**Question 1**

**40 Marks**

(a) A graphic of a desk tidy is shown. On the desk tidy, a folded plastic panel is used to display a timetable.

12 marks

(i) Name a suitable plastic for the folded panel shown and give a reason for your choice.

Plastic: \_\_\_\_\_

Reason: \_\_\_\_\_

\_\_\_\_\_

(ii) It was decided to add a plastic top surface to the wooden base. Suggest a reason for this.

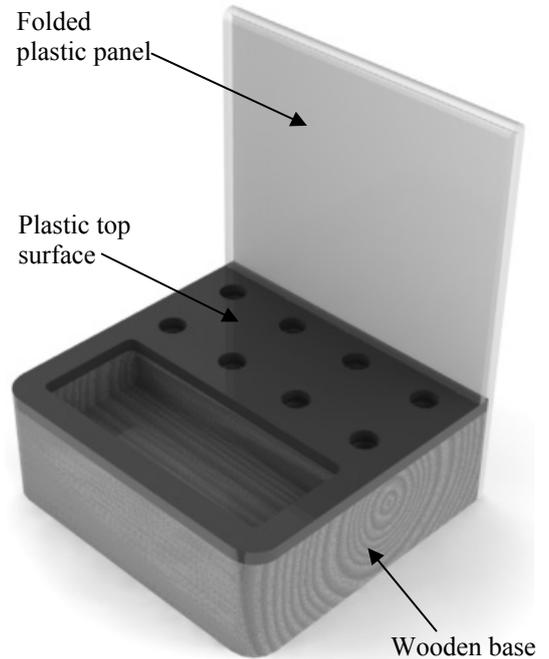
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(iii) List **three** woods suitable for the base:

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_



Desk Tidy

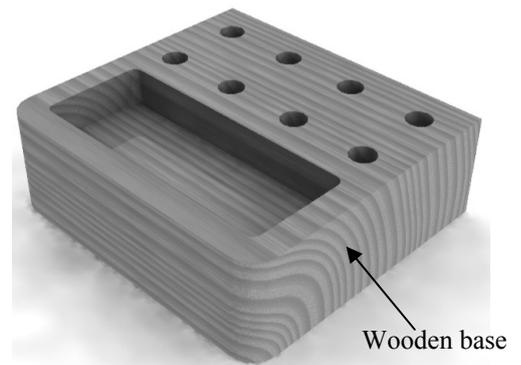
(b) (i) Eight holes had to be drilled in the wooden base to a depth of 20mm. Explain how you would ensure that the drill bit does not drill deeper than 20mm for these holes.

8 marks

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



(ii) Describe the process of finishing the wood so that it is smooth and easily kept clean.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

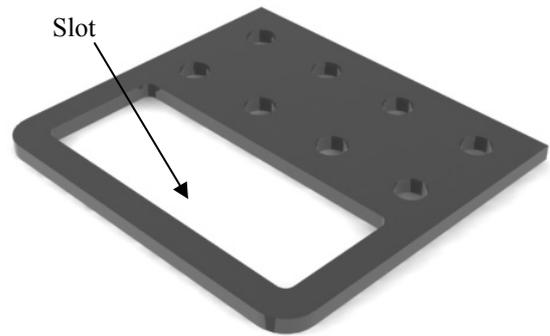
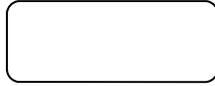
\_\_\_\_\_

\_\_\_\_\_

## Question 1

12 marks

- (c) (i) The shape of the slot removed from the plastic top surface of the desk tidy is rectangular with the corners rounded as shown.



To make the slot, a drill, scroll saw and file were used. Explain in detail how the tools listed were used to do this.

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- (ii) When deciding the size of the holes in the desk tidy, what did the designer have to consider?

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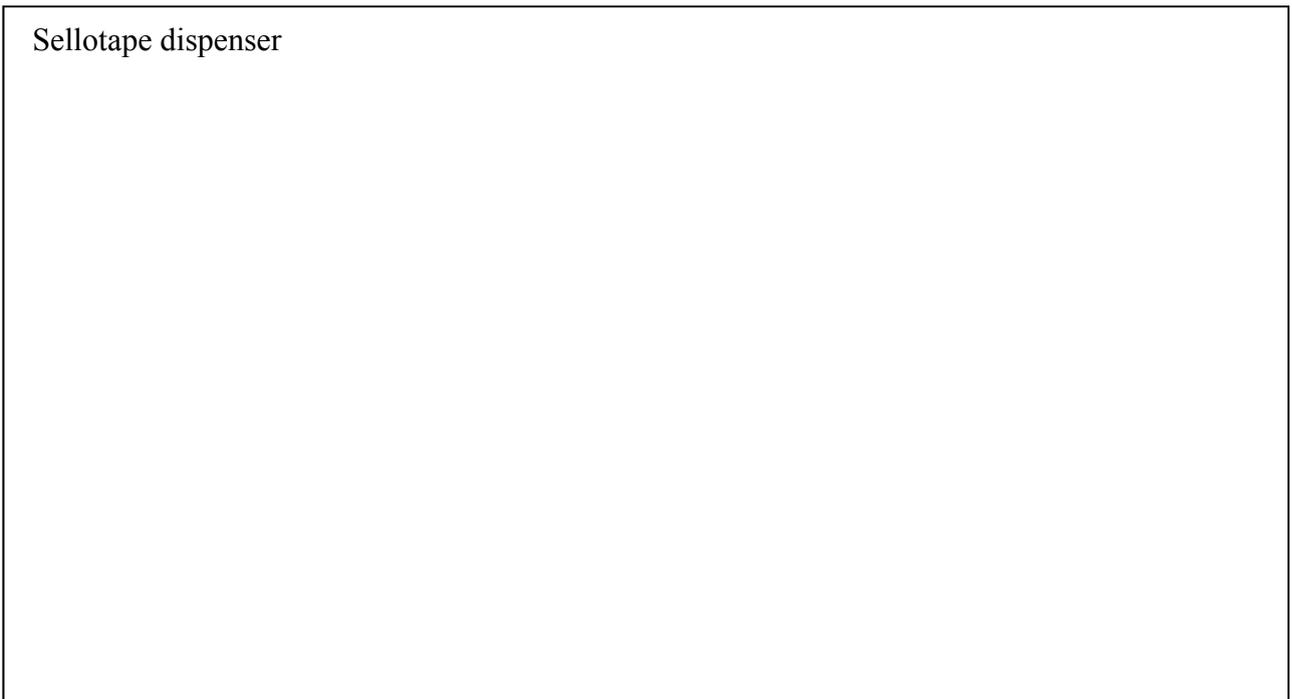
- (d) 8 marks

The designer of this desk tidy was also given the following design brief:

“Design and make a sellotape dispenser to accompany the desk tidy”.

In the space below, sketch your design for this dispenser. Use shading in your design sketch.

Sellotape dispenser

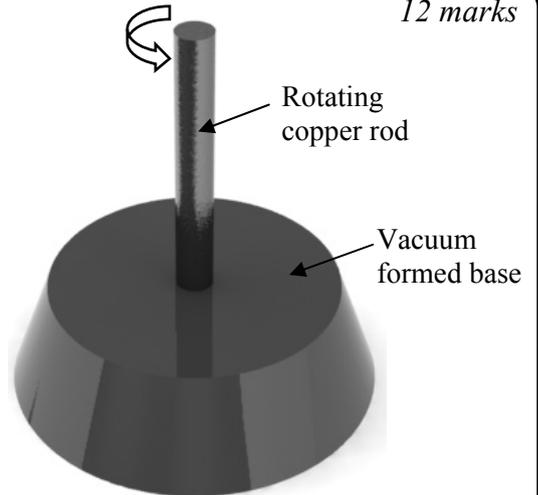


**Question 2**

**40 Marks**

*12 marks*

**(a)** The graphic shows a portion of a revolving jewellery tree. A drive mechanism which causes the copper rod to rotate is contained inside the vacuum formed base.



(i) Suggest a material for the base and give a reason for your choice.

Material: \_\_\_\_\_

Reason: \_\_\_\_\_

\_\_\_\_\_

(ii) A means of displaying jewellery must be designed and attached to the copper rod. In the space below, make a sketch of a possible design solution.

Design

**(b)** The drive mechanism shown is to be used to rotate the copper rod. Name the mechanism and list **three** advantages of using it for this purpose.

*8 marks*

Name: \_\_\_\_\_

1. \_\_\_\_\_

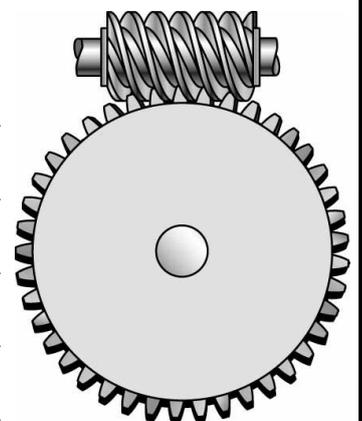
\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

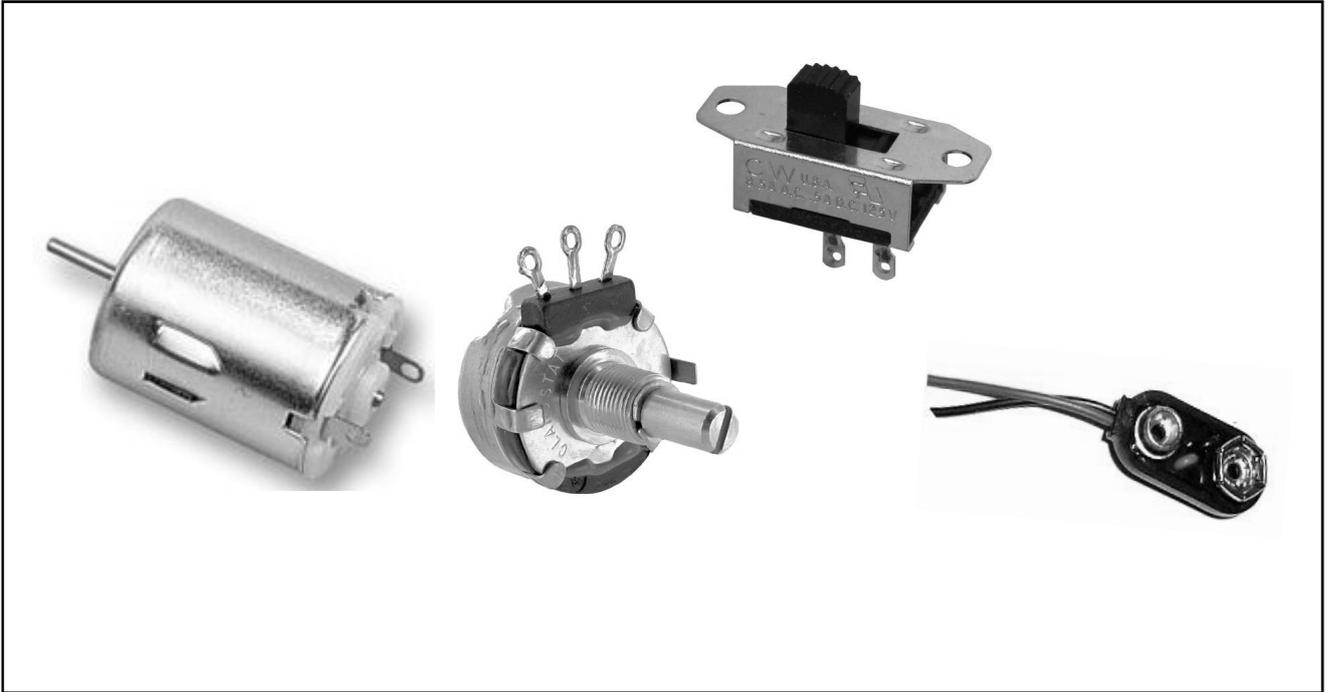
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Copper rod drive mechanism

## Question 2

- (c) A miniature motor is used to power the drive mechanism and a variable resistor is used as a basic speed controller. Connect the components below to show how this could be achieved. 8 marks



- (d) The base of the jewellery tree has been vacuum formed. Describe the process of vacuum forming. 6 marks

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- (e) Copper is a non-ferrous metal. 6 marks

(i) What does non-ferrous mean?

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(ii) List **two** common uses for copper in the home.

1: 

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2: 

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**Question 3**

**40 Marks**

**(a)** The graphic shows a mobile phone holder.

*12 marks*

(i) Part **A** is made from a thermoplastic. What is meant by thermoplastic?

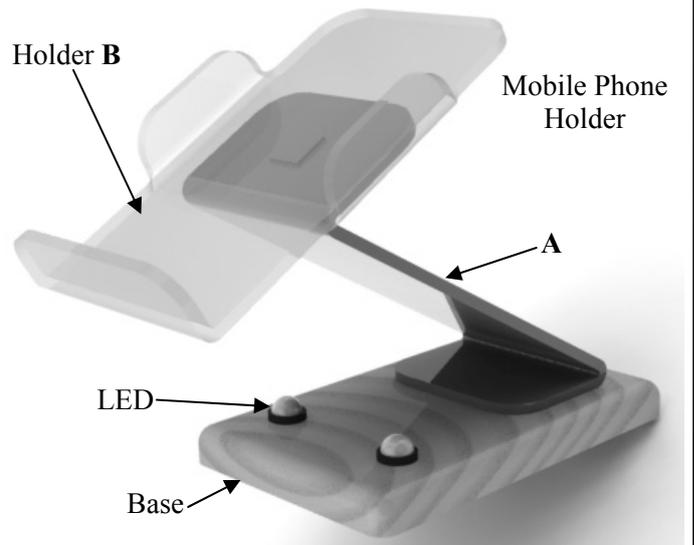
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Name the machine used to bend part **A**.

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(ii) Part **A** must be joined to both the base and to the holder **B**. Describe in detail a suitable method of joining in **each** case.

Part **A** to the base: \_\_\_\_\_

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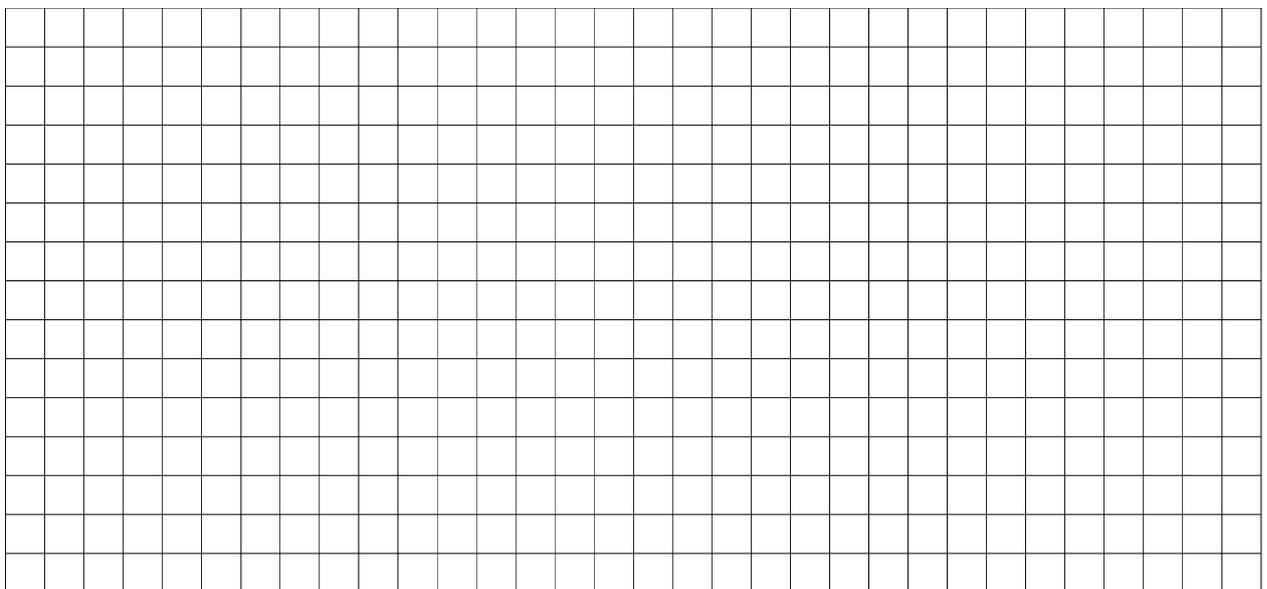
Part **A** to the holder **B**: \_\_\_\_\_

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**(b)** Draw a well-proportioned development of the holder **B** on the square grid below.

*8 marks*



### Question 3

12 marks

(c) Two LEDs are to be used to light up the mobile phone holder from underneath.

(i) What is meant by the term LED?

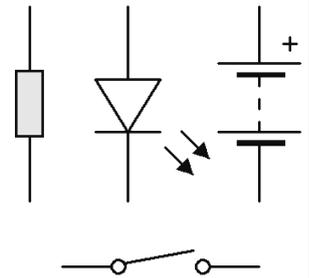
LED: \_\_\_\_\_

List **two** other uses of LEDs.

1. \_\_\_\_\_ 2. \_\_\_\_\_

(ii) Use the symbols below to draw a diagram of a circuit that can be switched off and on and includes **two** LEDs which are connected in parallel.

Circuit Diagram



(d) (i) List **four** important things that the designer had to know before designing the mobile phone holder.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

(ii) Sketch your design for part A of the mobile phone holder in the box given.

Design for part A

**Question 4**

**40 Marks**

**(a)** *16 marks*

The scientist Michael Faraday invented the electric motor.

(i) List **four** household devices that use an electric motor.

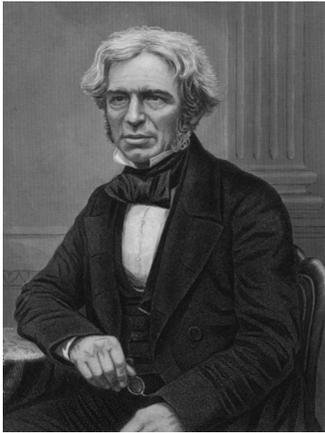
1. \_\_\_\_\_ 2. \_\_\_\_\_  
3. \_\_\_\_\_ 4. \_\_\_\_\_

(ii) There are two types of motor - AC motors and DC motors.  
What is meant by each of the terms AC and DC?

AC: \_\_\_\_\_ DC: \_\_\_\_\_

(iii) Name **one** energy conversion taking place in an electric motor.

From: \_\_\_\_\_ to \_\_\_\_\_



**(b)** *12 marks*

Electric cars are becoming more popular every year. Suggest **two** reasons for this.

1: \_\_\_\_\_  
2: \_\_\_\_\_

Describe **two** ways in which electric motorised devices are helping people with physical disabilities to be more independent.

1. \_\_\_\_\_  
2. \_\_\_\_\_

**(c)** *12 marks*

List **two** environmentally friendly methods of generating electricity.

1. \_\_\_\_\_ 2. \_\_\_\_\_

For **each** method, state **one** advantage and **one** disadvantage.

Method 1: Advantage \_\_\_\_\_  
Disadvantage \_\_\_\_\_

Method 2: Advantage \_\_\_\_\_  
Disadvantage \_\_\_\_\_