



*Junior Certificate Examination, 2011*

# *Technology*

## *Ordinary Level*

*Wednesday, 22 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**

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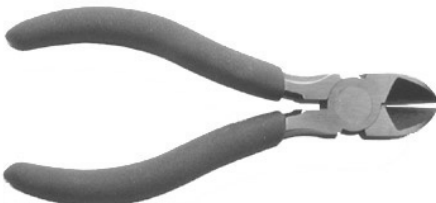
**Examination Number**


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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 awarded if Irish Bonus applies (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.

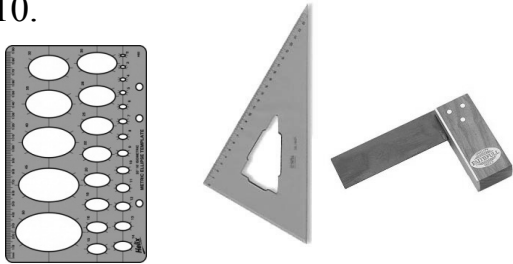
1.		The type of rendering shown is:	Shadow	
			Shade	
			Shadow and shade	
2.		Shown is a plasma HD television screen. HD stands for:	Half Definition	
			Huge Definition	
			High Definition	
3.		The computer shown is a:	Desktop	
			Laptop	
			Notebook	
4.		Shown is a capacitor. Capacitors store:	Sound energy	
			Electric charge	
			Chemical energy	
5.		The electronics tool shown is a:	Side cutter	
			Pliers	
			Wire stripper	

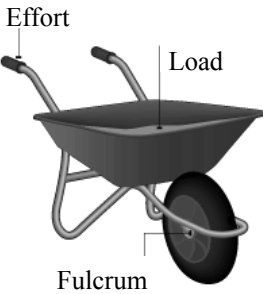
6. 	A moving swing is an example of:	Reciprocating motion	
		Linear motion	
		Oscillating motion	

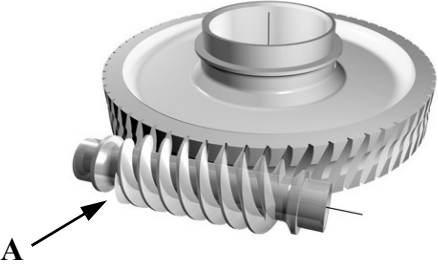
7. 	A method of reading for blind people was developed by:	Louis Pasteur	
		Louis Braille	
		Louis Vuitton	


8. 	The first 'D' in <b>D</b> VD stands for:	Durable	
		Digital	
		Double	


9. 	This is a:	Countersink bit	
		Auger bit	
		Flat bit	


10.  A                  B                  C	Which of the items shown is a set-square?	Item A	
		Item B	
		Item C	



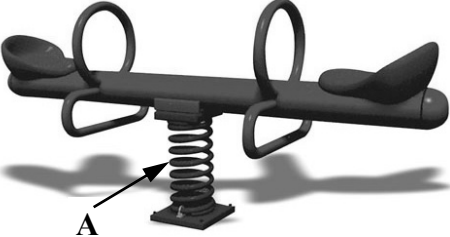
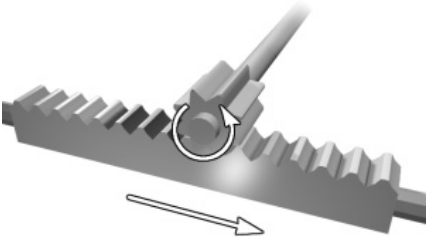

11.		For the wheelbarrow shown the effort force is:	Greater than the load	
			Less than the load	
			Equal to the load	

12.		In the graphic shown, gear A is a:	Worm wheel	
			Ratchet	
			Worm	

13.		Formula 1 cars have:	A high centre of gravity	
			A low centre of gravity	
			No centre of gravity	

14.		The force on the bar shown is:	Torsion	
			Bending	
			Compression	

15.		This basin is an example of a:	Shell structure	
			Frame structure	
			Shell and frame structure	

<p>16.</p> 	<p>Electric current is measured in:</p>	<p>Ohms</p>	
<p>17.</p> 	<p>This structural framework model is a:</p>	<p>Prism</p>	
<p>18.</p> 	<p>A suitable material for the spring A would be:</p>	<p>Steel</p>	
<p>19.</p> 	<p>The mechanism shown is a:</p>	<p>Crank and slider</p>	
<p>20.</p> 	<p>SatNav devices use a technology referred to as:</p>	<p>SPS</p>	
		<p>GPS</p>	
		<p>GGS</p>	



## Question 1

12 marks

- (c) (i) The following tools are useful when making Technology projects.  
Name these tools and give a use for each.



Tool: \_\_\_\_\_

Use: \_\_\_\_\_



Tool: \_\_\_\_\_

Use: \_\_\_\_\_



Tool: \_\_\_\_\_

Use: \_\_\_\_\_

- (ii) Glues are important in the assembly of products.  
In each of the following situations name a suitable glue:

Wood to wood: \_\_\_\_\_

Acrylic to wood: \_\_\_\_\_

- (d) (i) A graphic of a wooden toy is shown.  
Identify **two** features of good design in this toy:

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

\_\_\_\_\_

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

\_\_\_\_\_



8 marks

- (ii) The choice of surface finish for children's toys is very important. Why is this so?

\_\_\_\_\_

\_\_\_\_\_

- (iii) List **three** possible objectives identified by the designer of this toy.

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

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

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

**Question 2**

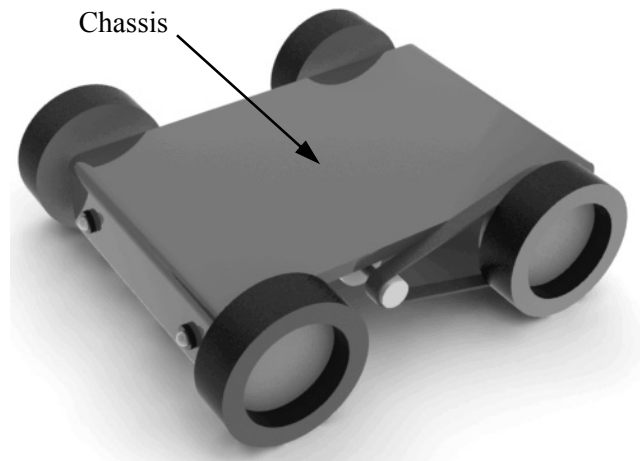
**40 Marks**

*12 marks*

**(a)** The chassis of a motorised toy buggy is shown.

(i) Suggest **two** reasons why rubber is a suitable material for the wheels.

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



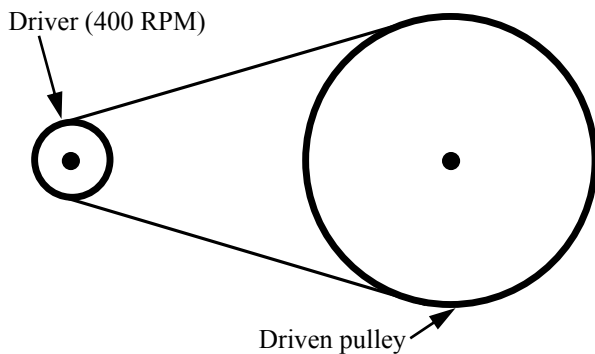
(ii) Using sketches show how the wheels could be attached to the chassis.

(iii) The edges of the chassis are smooth. List **two** processes used to obtain a smooth edge finish.

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

*8 marks*

**(b)** (i) The buggy is propelled using a motor and a pulley drive. The motor is rotating at 400 RPM. If the driver pulley has a diameter of 2 cm and the driven pulley has a diameter of 8 cm, calculate the speed of the driven pulley.



Calculation

(ii) What do the letters RPM stand for? \_\_\_\_\_

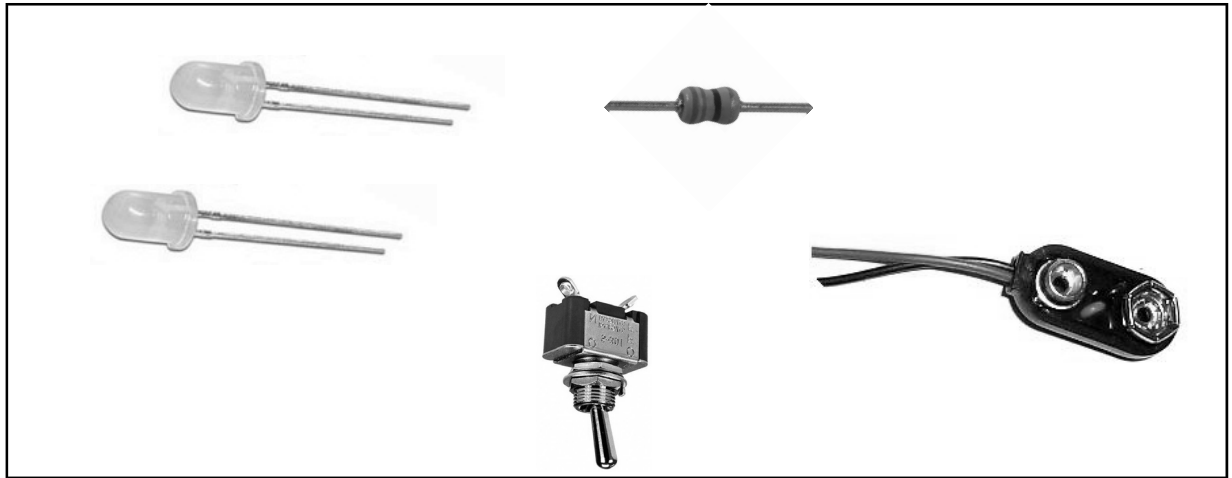


## Question 2

(c) Two LEDs are used as lights for the buggy. The LEDs are wired in series.

8 marks

- (i) Connect the components below to show how the LEDs and resistor would be connected in series to the battery snap and the switch.

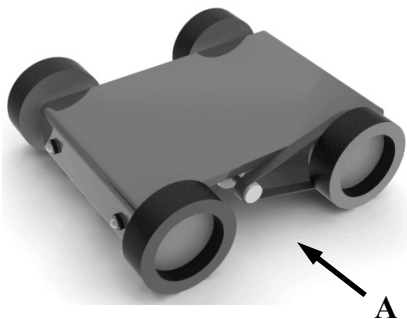


- (ii) The switch shown is a SPST toggle switch. What does SPST stand for?

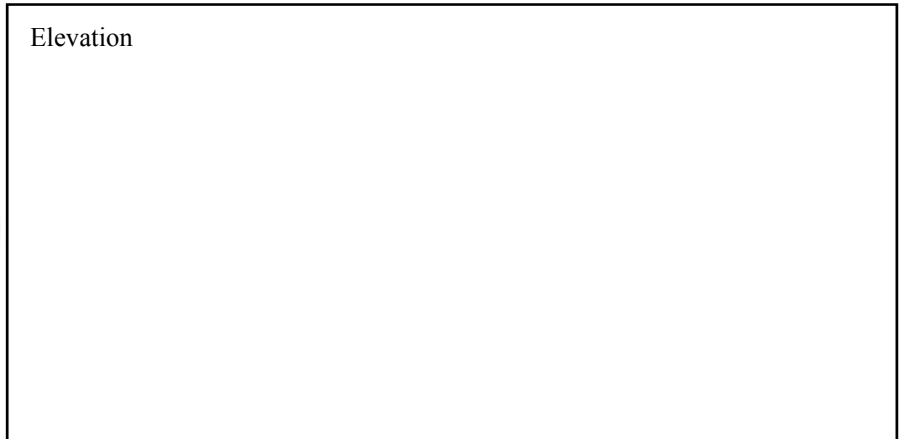
\_\_\_\_\_

(d) Sketch an elevation of the buggy when viewed in the direction indicated by arrow A.

6 marks



Elevation



(e) When in use the belt on the pulley drive was found to slip. Suggest **two** methods of overcoming this problem.

6 marks

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

**Question 3**

**40 Marks**

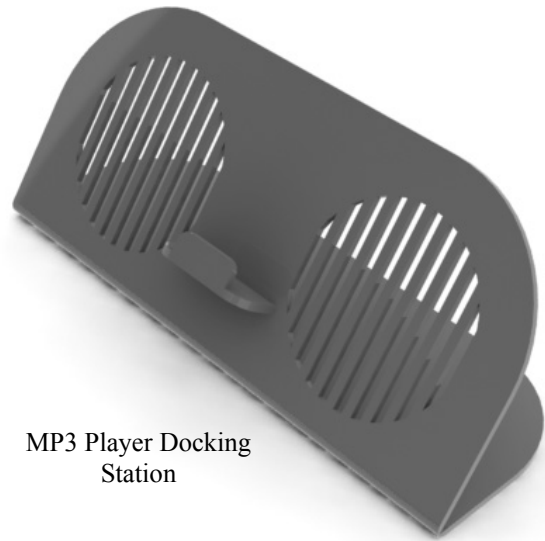
**(a)** The body of an MP3 player docking-station is shown. The unit is to be made from Acrylic.

*12 marks*

(i) Suggest **two** advantages of using acrylic for this unit.

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

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



MP3 Player Docking Station

(ii) The final stage in making this unit is to bend the acrylic sheet. Explain in detail the steps required to bend the acrylic to the angle shown.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(b)** The slots on the docking station have been cut out using a laser cutter.

*8 marks*

(i) Suggest **two** reasons why a laser cutter was used for this purpose.

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

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



Laser Cutter

(ii) Laser cutters are a type of CAD/CAM machine. What does CAD\CAM stand for?





CAD: \_\_\_\_\_

CAM: \_\_\_\_\_

### Question 3

- (c) (i) Two speakers are to be fitted to the docking station. Speakers convert electrical energy into sound energy. For each component shown below, state the type of energy conversion which takes place.

12 marks

Component	Energy Input	Energy Output
		
		
		
		

- (ii) The circuit for the docking station is on a Printed Circuit Board (PCB). Name the two components shown below which are used in this circuit board.



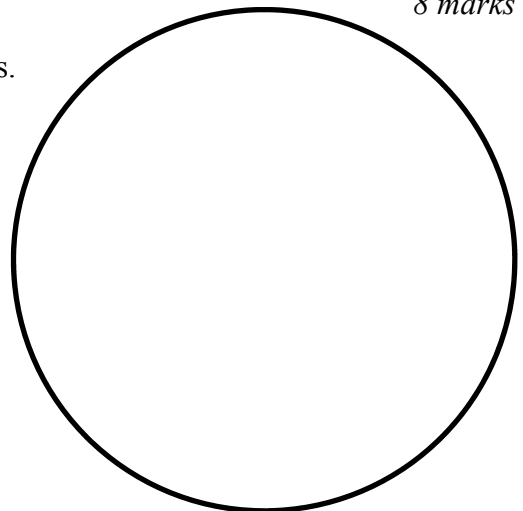
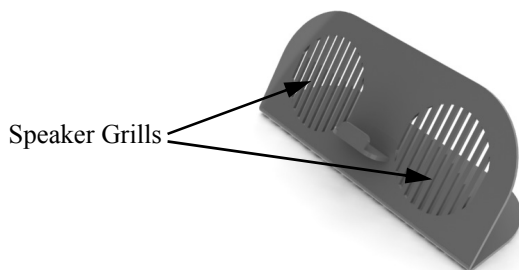
1. \_\_\_\_\_

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

- (d) The slots of the speaker grill on the MP3 docking station allow the sound to come through from the speakers.

8 marks

- (i) Make a drawing of your design for a speaker grill pattern in the circle given.



- (ii) When researching this project suggest **two** pieces of information that the designer would need to know in order to design this product.

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

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

**Question 4**

**40 Marks**

**(a)** Data storage technology has changed in recent years.

*16 marks*

(i) Name **two** portable data storage devices.

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

(ii) Outline **two** uses of portable data storage devices.

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

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

(iii) What are the units of data storage capacity? \_\_\_\_\_

(iv) Suggest **one** possible disadvantage of using a portable data storage device.

\_\_\_\_\_  
\_\_\_\_\_

**(b)** Give an example of **one** activity that can be carried out using each of the following:

*12 marks*

1. Word Processor: \_\_\_\_\_

\_\_\_\_\_

2. Desktop Publisher: \_\_\_\_\_

\_\_\_\_\_

3. CAD: \_\_\_\_\_

\_\_\_\_\_

4. Spreadsheet: \_\_\_\_\_

\_\_\_\_\_

**(c)** Many changes have taken place in the music industry as a result of developments in technology.

*12 marks*

(i) Describe **two** changes in the music industry that have occurred in recent years.

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

\_\_\_\_\_

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

\_\_\_\_\_

(ii) Suggest **two** ways in which developments in technology have helped older people.

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

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