



Subject: Grade 10 Physical Sciences
Topic: Physical Sciences: Term 2 - Exam 1
Total: 60 Marks

Name: _____

Date: _____

Question 1: True/False

2 marks

A longitudinal wave is defined as:

"A wave where the particle in the medium moves perpendicular to the direction of propagation of the wave".

TRUE

FALSE

Question 2: Multiple Choice

4 marks

The energy of an electromagnetic wave is determined by:

- | | |
|----------|-----------|
| A | Amplitude |
| B | Frequency |
| C | Intensity |
| D | Speed |
-

This image refers to question: 3





Question 3: Multiple Choice

4 marks

A section of the triboelectric series is provided in the diagram.

A nylon cloth is rubbed against an aluminium rod. Which of the following correctly describes what will occur in this situation?

- | | |
|----------|---|
| A | The nylon cloth becomes more positively charged as it gave electrons to the aluminium rod. |
| B | The nylon cloth becomes more positive charged as it gained protons from the aluminium. |
| C | The aluminium rod become more positively charge because it gave electrons to the nylon cloth. |
| D | The aluminium rod becomes more positively charges because it gained protons from the nylon cloth. |

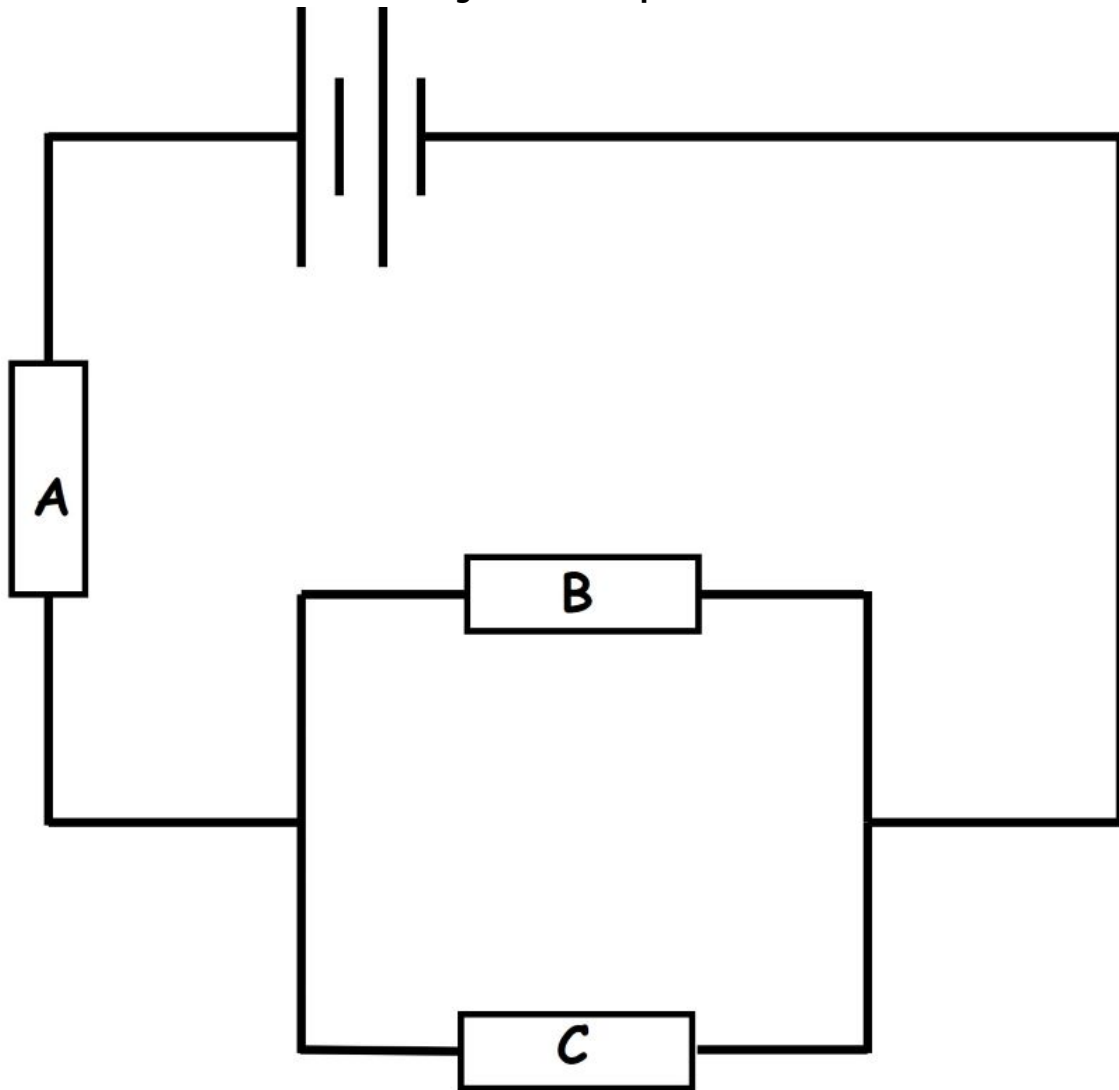
Question 4: Multiple Choice

4 marks

Which ONE of the following electromagnetic radiation has the **longest wavelength**?

- | | |
|----------|---------------|
| A | Gamma rays |
| B | Microwaves |
| C | Visible light |
| D | X-rays |
-

This image refers to question: 5



Question 5: Multiple Choice

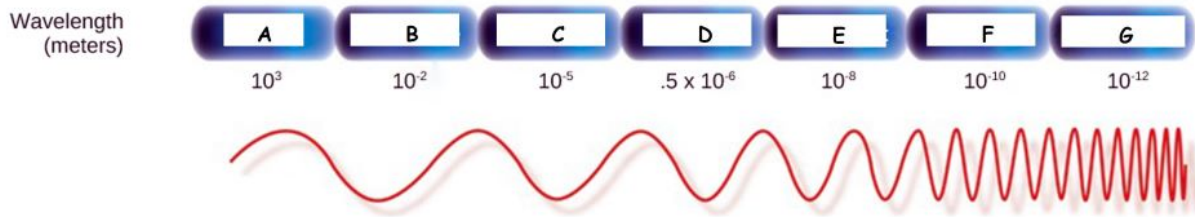
4 marks

In the circuit shown, three **identical** bulbs (A , B and C) are connected to a battery.

Which of the following statements regarding the brightness of the bulbs is CORRECT?

- | | |
|----------|---|
| A | Bulb A will be brighter than bulb B which will be brighter than bulb C . |
| B | Bulbs B and C will have the same brightness, and will be brighter than bulb A . |
| C | Bulbs B and C will have the same brightness, but bulb A will be brighter than both of them. |
| D | All the bulbs will have the same brightness. |

This image refers to question: 6



Question 6: True/False

2 marks

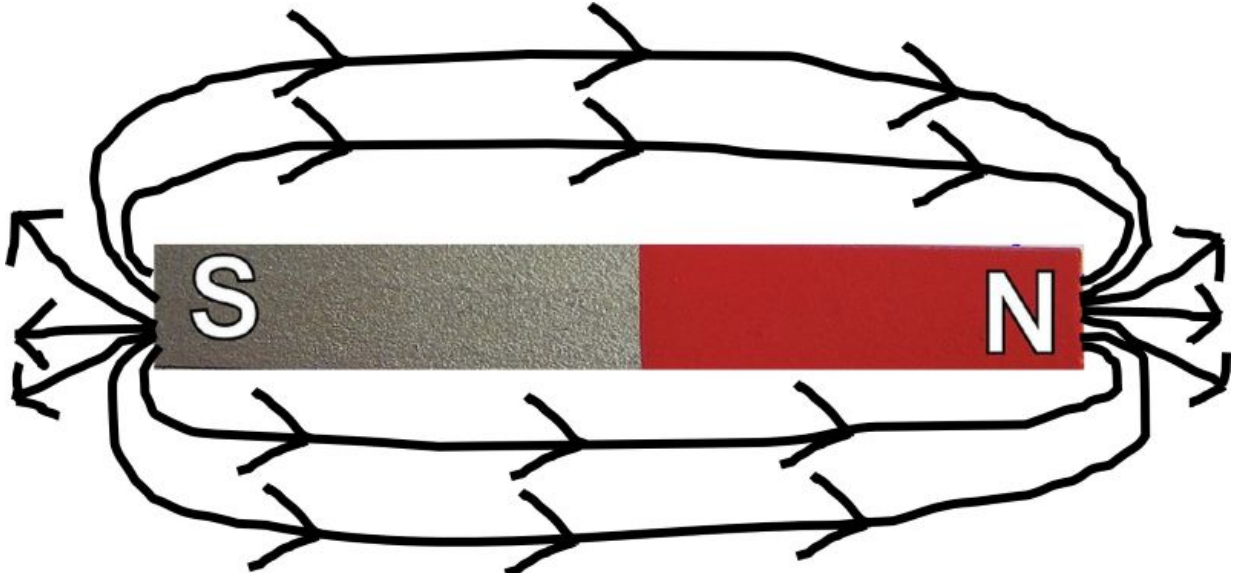
The diagram show the wavelengths of electromagnetic radiation spectrum.

The type of electromagnetic radiation represented by G is gamma rays.

TRUE

FALSE

This image refers to question: 7



Question 7: True/False

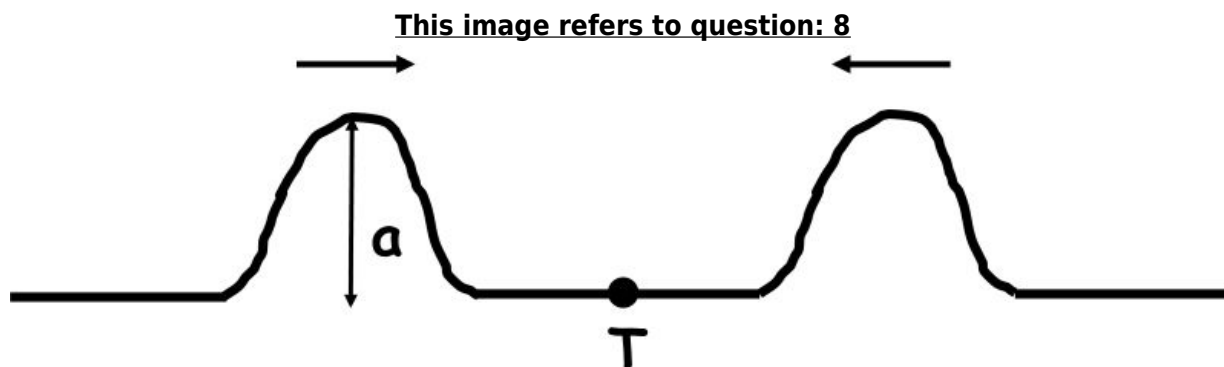
2 marks

A student was asked to draw the magnetic field lines for a given bar magnet.

The diagram represents the correct drawing of the magnetic field lines.

TRUE

FALSE



Question 8: Multiple Choice

4 marks

Two **identical** pulses are travelling towards each other, as shown in the diagram. The amplitude of the pulse on the left is given as a .

Which of the following correctly describes what will happen when the two pulses meet at point T?

- | | |
|----------|--|
| A | There will be destructive interference and the amplitude will be $2a$. |
| B | There will be destructive interference and the amplitude will be 0. |
| C | There will be constructive interference and the amplitude will be 0. |
| D | There will be constructive interference and the amplitude will be $2a$. |

Question 9: True/False

2 marks

Sphere A has a charge of $+6\mu\text{C}$ and sphere B has a charge of $-2\mu\text{C}$.

The two spheres are allowed to touch and are then separated.

During this contact, $1,25 \times 10^{13}$ electrons were transferred.

TRUE

FALSE

Question 10: True/False

2 marks

Sound waves travelling through air are an example of a longitudinal wave.

TRUE

FALSE

Question 11: Multiple Choice

4 marks

A negatively charged rod is brought near an insulated neutral metal sphere.

What happens to the charges in the metal sphere?

- | | |
|----------|---|
| A | The protons in the metal sphere move towards the rod and the electrons move away. |
| B | The electrons in the metal sphere move towards the rod and the protons move away. |
| C | The electrons in the metal sphere move away from the rod and the protons do not move. |
| D | The protons in the metal sphere move towards the rod and electrons do not move. |
-

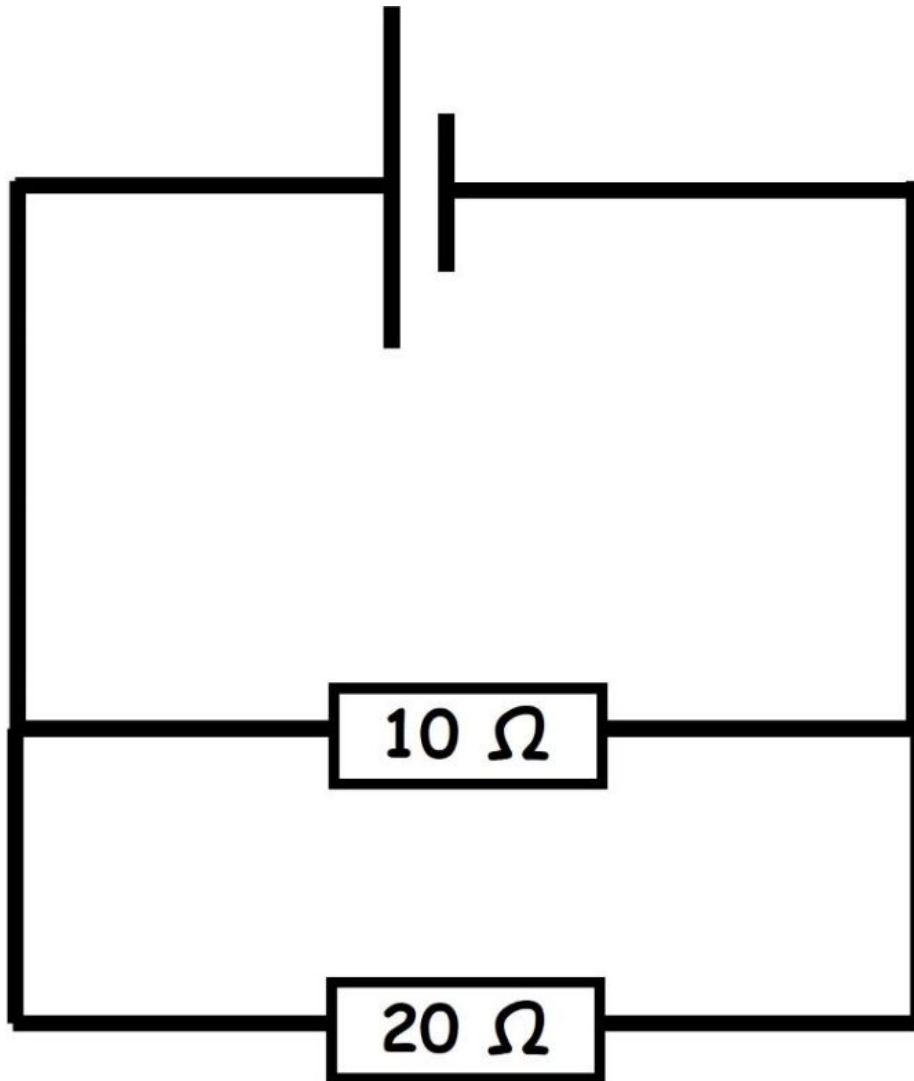
Question 12: True/False

2 marks

A sound wave of 500 Hz with a wavelength of 0,5 m will travel at $340 \text{ m} \cdot \text{s}^{-1}$, in air that is 20°C .

TRUE	FALSE
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This image refers to question: 13



Question 13: Multiple Choice

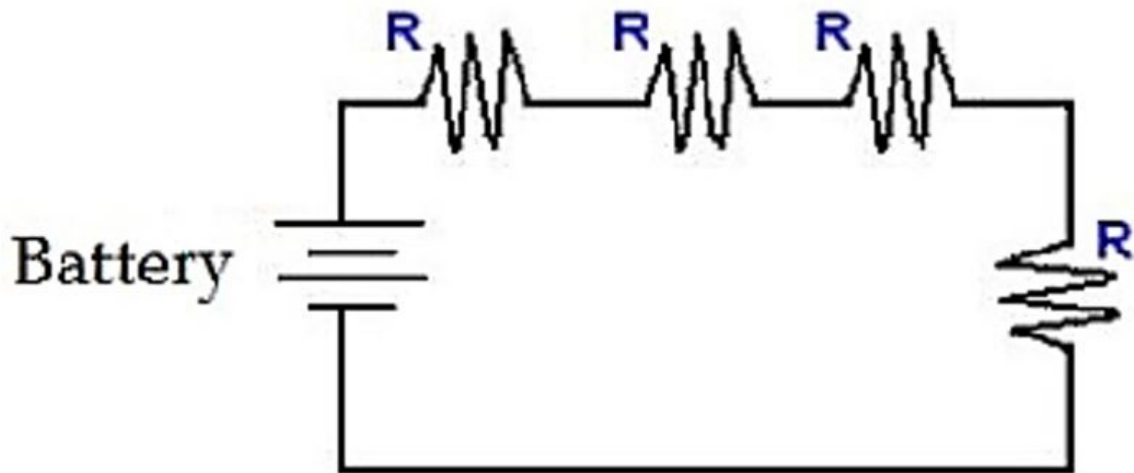
4 marks

Two resistors have been connected in the circuit shown. The battery has negligible internal resistance.

What is the equivalent resistance of this circuit?

- | | |
|----------|----------------|
| A | $6,67\ \Omega$ |
| B | $0,15\ \Omega$ |
| C | $30\ \Omega$ |
| D | $10\ \Omega$ |

This image refers to question: 14



Question 14: True/False

2 marks

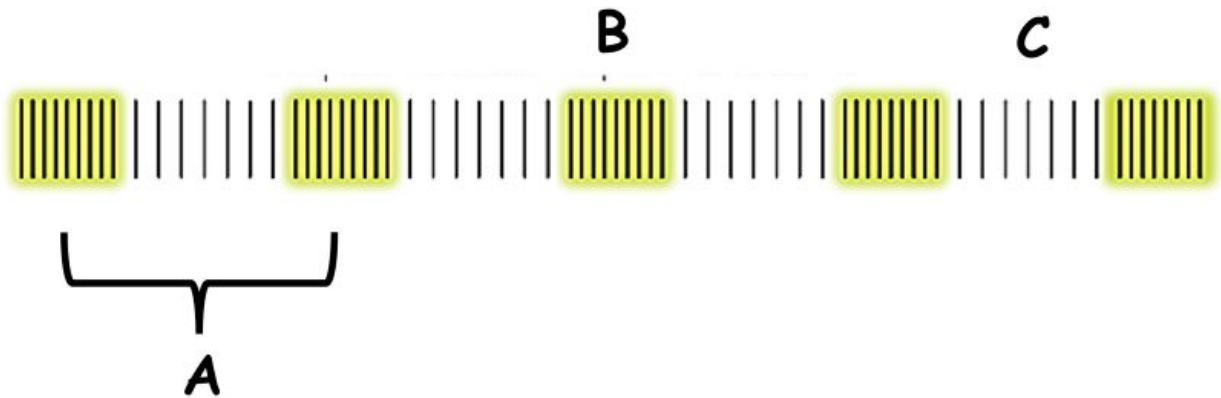
A circuit has been set up with four resistors that each have a resistance of R .

The total resistance of this circuit is $\frac{R}{4}$.

TRUE

FALSE

This image refers to question: 15



Question 15: Multiple Choice

4 marks

A wave is shown in the diagram.

Which option has the correct labels for *A*, *B* and *C*.

A	<i>A</i> - Rarefaction
	<i>B</i> - Compression
B	<i>C</i> - Wavelength
	<i>A</i> - Wavelength
C	<i>B</i> - Compression
	<i>C</i> - Rarefaction
D	<i>A</i> - Wavelength
	<i>B</i> - Rarefaction
	<i>C</i> - Compression
	<i>A</i> - Wavelength
	<i>B</i> - Amplitude
	<i>C</i> - Period

Question 16: Multiple Choice

4 marks

A bar magnet is cut exactly in half.

Which statement would be CORRECT about the two pieces of magnet?

- | | |
|----------|--|
| A | Both pieces will lose their magnetism. |
| B | Both pieces will become a new magnet with one pole each. |
| C | It is impossible to cut a magnet in half. |
| D | Each piece will become a new magnet with two poles each. |
-

Question 17: True/False

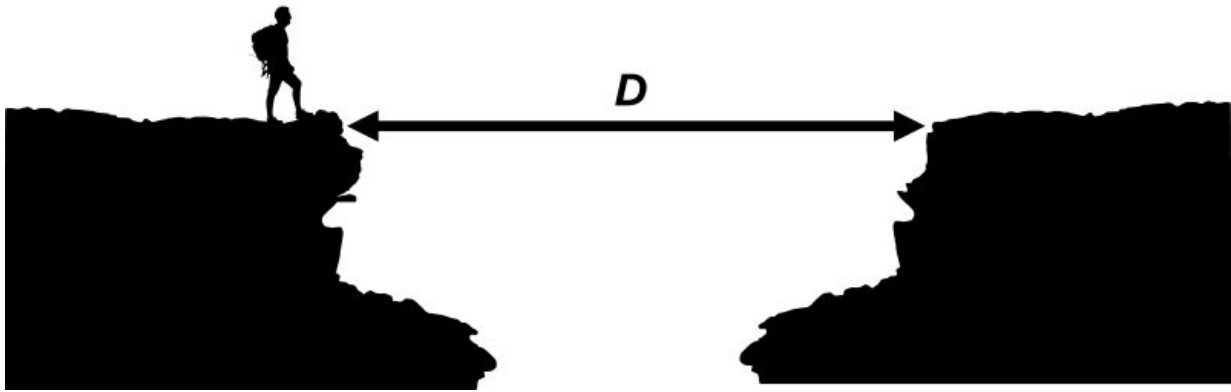
2 marks

If a negatively charged sphere is brought near an insulated neutral metal sphere, the neutral sphere will become positively charged through induction.

TRUE

FALSE

This image refers to question: 18



Question 18: Multiple Choice

4 marks

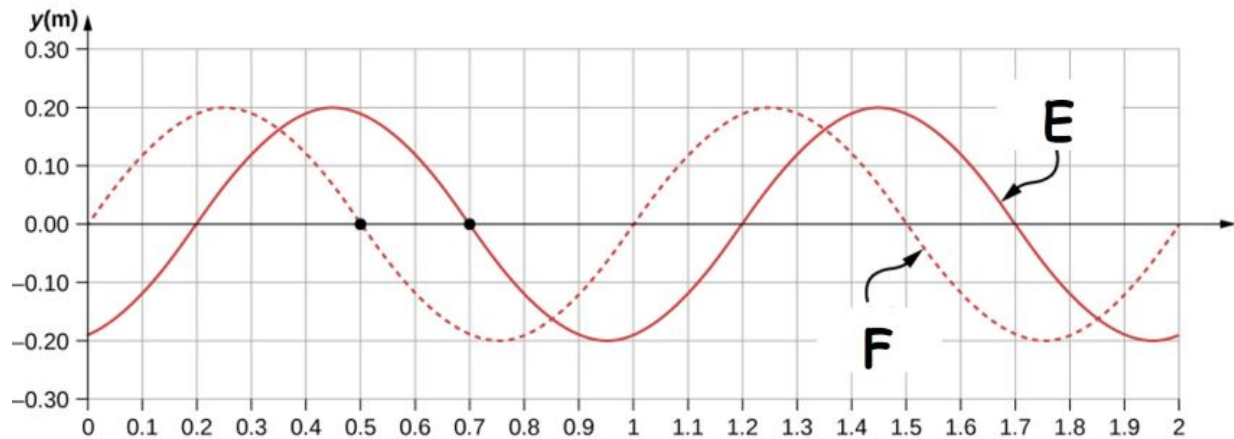
A hiker was standing at the edge of a cliff and shouted loudly into a gorge.

The sound wave from the hiker's voice bounces off the other side of the gorge (distance D) and returns back as an echo. It takes 0,4 seconds for the sound to return back to the hiker's ears after he shout.

If the speed of sound in air is $340 \text{ m} \cdot \text{s}^{-1}$, what is the length of D ?

- | | |
|----------|-------|
| A | 136 m |
| B | 850 m |
| C | 68 m |
| D | 340 m |

This image refers to question: 19



Question 19: True/False

2 marks

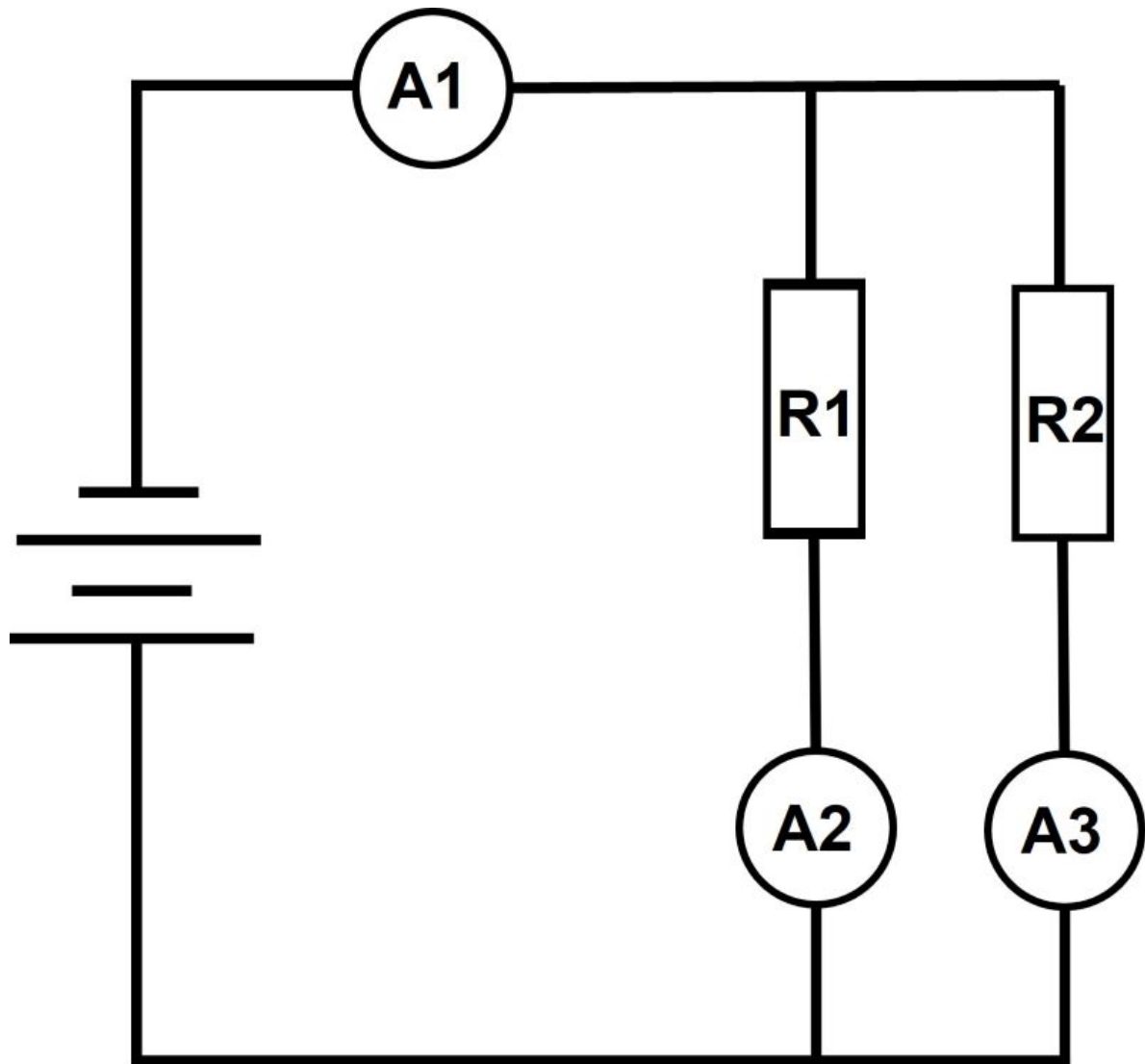
Two transverse waves, E and F are shown in the diagram. The values on the x -axis represents the time in seconds.

Both waves have the same amplitude and wavelength.

TRUE

FALSE

This image refers to question: 20



Question 20: True/False

2 marks

A circuit with two resistors connected in parallel is shown in the diagram.

If another resistor was added in parallel, it would decrease the overall resistance of the circuit.

TRUE

FALSE

Total: 60 Marks