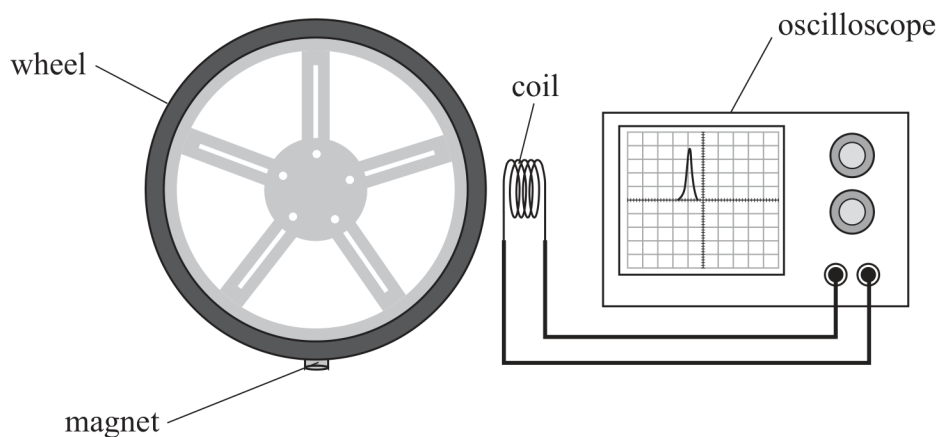


**Answer ALL questions.**

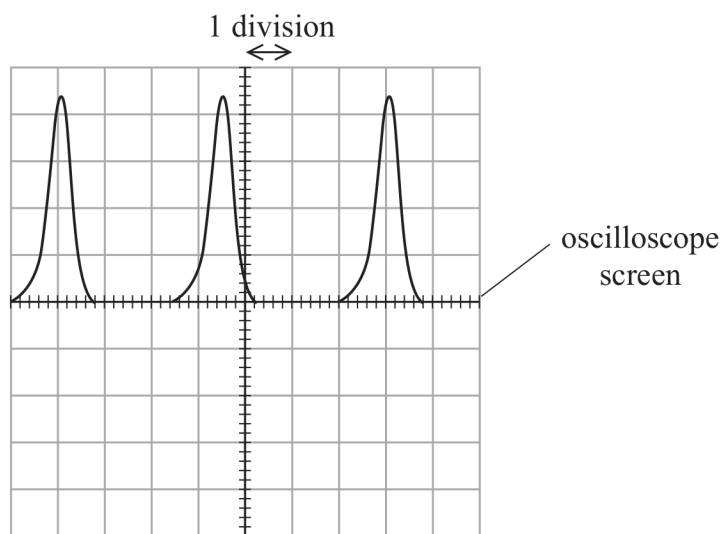
- 1 The time period of a rotating wheel can be determined using the apparatus shown.



A magnet is attached to the edge of the wheel. When the magnet passes the coil, a single pulse is displayed on the oscilloscope screen.

The horizontal axis of the oscilloscope screen represents time. The number of milliseconds per division on the horizontal scale can be adjusted.

- (a) As the wheel rotates, a series of pulses is displayed as shown.



Describe how a value of the time period should be determined from these pulses.

(3)

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(b) When the wheel is tested, the speed of the magnet is  $22.2 \text{ ms}^{-1}$ .

The oscilloscope can be adjusted to give the following values for the horizontal scale.

millisecond per division	1	2	5	10
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Explain which of these scales would display two complete pulses on the screen.

wheel diameter = 25.4 cm

(4)

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(Total for Question 1 = 7 marks)