

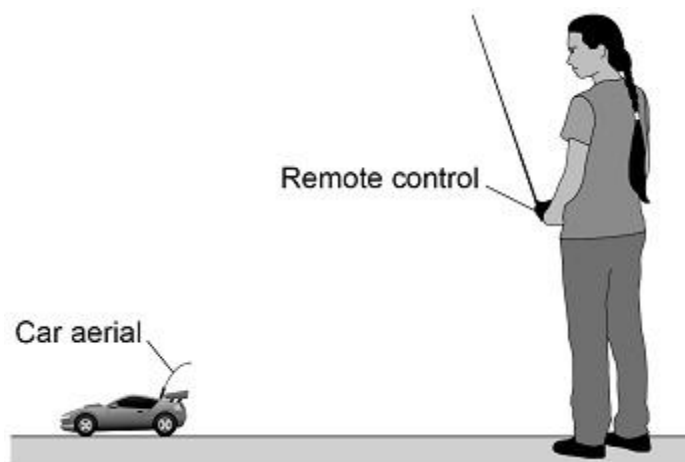
Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Q1.

The image below shows a student playing with a remote-controlled car.



- (a) The remote control transmits radio waves to the car aerial.

The transmitted radio waves have a frequency of 320 MHz.

speed of radio waves = 3.0×10^8 m/s

Calculate the wavelength of the radio waves.

Give the unit.

Wavelength = _____ Unit _____

(5)

- (b) The car aerial is connected to an electrical circuit in the car.

Describe what happens in the electrical circuit when the car aerial absorbs radio waves.

(2)

- (c) The car produces sound waves.

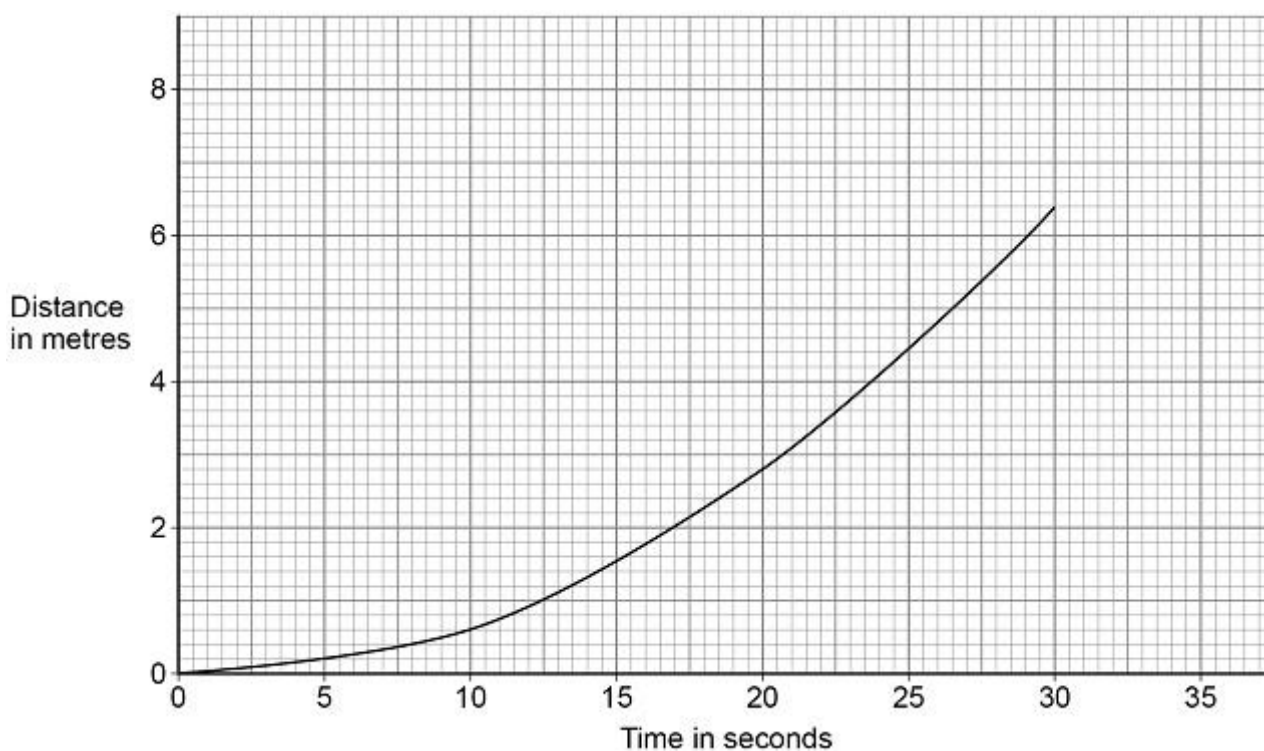
Give **two** ways in which radio waves are different to sound waves.

1 _____

2 _____

(2)

The graph below shows the distance-time graph for the first 30 seconds of the car's motion.



- (d) Describe the motion of the car during the first 30 seconds.

(1)

- (e) Determine the speed of the car 20 seconds after it started to move.

Speed = _____ m/s

(f) A different car accelerated from 0.12 m/s to 0.52 m/s.

The work done to accelerate the car was 0.48 J.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Resultant force = _____ N

(g) Explain why the car has a maximum speed.

(Total 24 marks)

(4)