Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Waves (High Demand Questions)

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

(a) Microwaves are one type of electromagnetic wave.

(i) Which type of electromagnetic wave has a lower frequency than microwaves?

_____

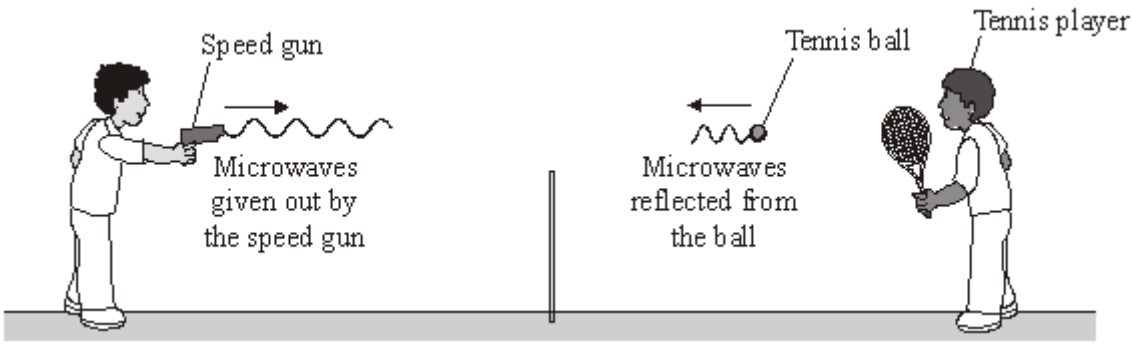
(1)

(ii) What do all types of electromagnetic wave transfer from one place to another?

_____

(1)

(b) The picture shows a tennis coach using a speed gun to measure how fast the player serves the ball.



(i) The microwaves transmitted by the speed gun have a frequency of 24 000 000 000 Hz and travel through the air at 300 000 000 m/s.

Calculate the wavelength of the microwaves emitted from the speed gun.

Show clearly how you work out your answer.

_____

_____

Wavelength = _____ m

(2)

(ii) Some of the microwaves transmitted by the speed gun are absorbed by the ball.

What effect will the absorbed microwaves have on the ball?

_____

Downloaded from www.merit-minds.com

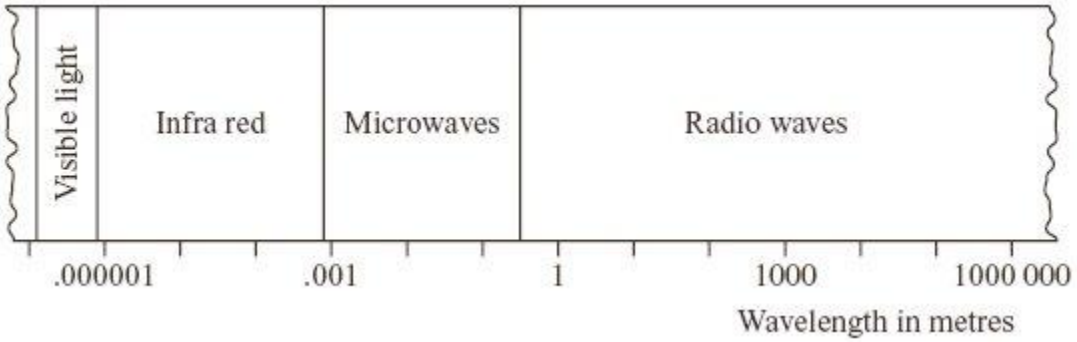
_____

(1)

(Total 5 marks)

Q2.

The diagram represents part of the electromagnetic spectrum.



(i) Visible light travels through air at 300 000 000 m/s.

Why can we assume that radio waves travel through air at the same speed as light?

_____

(1)

(ii) A radio station broadcasts at a frequency of 200 kHz.

Calculate the wavelength of the waves broadcast by this radio station. Show clearly how you work out your answer.

_____

_____

Wavelength = _____ m

(2)

(iii) Draw a vertical line on the diagram above to show the position of this radio wave in the electromagnetic spectrum.

(1)

(Total 4 marks)

Q3.

(a) The wavelengths of four different types of electromagnetic wave, including visible light waves, are given in the table.

Type of wave	Wavelength
Visible light	0.0005 mm
A	1.1 km
B	100 mm
C	0.18 mm

Downloaded from www.merit-minds.com

Which of the waves, **A**, **B** or **C**, is an infra red wave? _____

(1)

(b) A TV station broadcasts at 500 000 kHz. The waves travel through the air at 300 000 000 m/s.

Calculate the wavelength of the waves broadcast by this station.

Show clearly how you work out your answer.

_____

_____

Wavelength = _____ m

(2)

(c) What happens when a metal aerial absorbs radio waves?

_____

_____

_____

_____

(2)

(d) Stars emit all types of electromagnetic waves. Telescopes that monitor X-rays are mounted on satellites in space.

Why would an X-ray telescope based on Earth not be able to detect X-rays emitted from distant stars?

_____

_____

(1)

(Total 6 marks)

Q4.

(a) The new Tetra communications system to be used by the police transmits signals using microwaves of wavelength 75 cm.

Calculate the frequency of the microwaves used by the Tetra system. Show clearly how you work out your answer.

_____

_____

Frequency = _____ hertz

(2)

(b) Read the following extract from a newspaper and then answer the questions that follow.

> Residents of Stag Hill Court, a luxury block of flats, are shocked at the plans to site a mobile phone mast on the roof of the flats. They oppose the mast on

Downloaded from www.merit-minds.com

health grounds, quoting research in Germany that has found a possible increase in cases of cancer around mobile phone masts.

A spokesperson for the telecoms company said, 'The residents should not worry. The research carried out by our own scientists has found no link between ill health and mobile phone masts'.

This has not reassured the residents, who argue that new independent research is urgently needed.

(i) Explain why living near a mobile phone mast could cause ill health.

_____

_____

_____

_____

_____

_____

(3)

(ii) Suggest **two** reasons why the residents have **not** been reassured by the research carried out by the telecoms company.

1. _____

_____

2. _____

_____

(2)

(Total 7 marks)

Downloaded from www.merit-minds.com