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

Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

(a) Microwaves and visible light are two types of electromagnetic wave. Both can be used for communications.

(i) Give **two** properties that are common to both visible light and microwaves.

1. _____

_____

2. _____

_____

(2)

(ii) Name **two** more types of electromagnetic wave that can be used for communications.

_____ and _____

(1)

(b) Wi-Fi is a system that joins computers to the internet without using wires. Microwaves, with a wavelength of 12.5 cm, are used to link a computer to a device called a router. Microwaves travel through the air at 300 000 000 m/s.

Calculate the frequency of the microwaves used to link the computer to the router.

Show clearly how you work out your answer and give the unit.

_____

_____

_____

Frequency = _____

(3)

(c) Wi-Fi is used widely in schools. However, not everyone thinks that this is a good idea.

A politician commented on the increasing use of WiFi. He said: 'I believe that these systems may be harmful to children.'

However, one group of scientists said that there is no reason why Wi-Fi should not be used in schools. These scientists also suggested that there is a need for further research.

(i) Suggest what the politician could have done to persuade people that what he said was not just an opinion.

_____

_____

(1)

(ii) Why did the group of scientists suggest that there is a need for further research?

_____

_____

(1)

(Total 8 marks)

Q2.

Radio waves and microwaves are two types of electromagnetic wave.

Both waves:

- can be used for communications
- travel at the same speed through air.

(a) Give **two** more properties that are the same for both radio waves and microwaves.

1. _____

_____

2. _____

_____

(2)

(b) Some satellites are used to transmit television programmes. Signals are sent to, and transmitted from, the satellites using microwaves.

What is the property of microwaves that allows them to be used for satellite communications?

_____

_____

(1)

(c) Electromagnetic waves travel at a speed of 3.0×10^8 m/s.

A radio station transmits waves with a wavelength of 2.5×10^2 m.

Calculate the frequency of the radio waves.

Show clearly how you work out your answer and give the unit.

_____

_____

_____

Frequency = _____

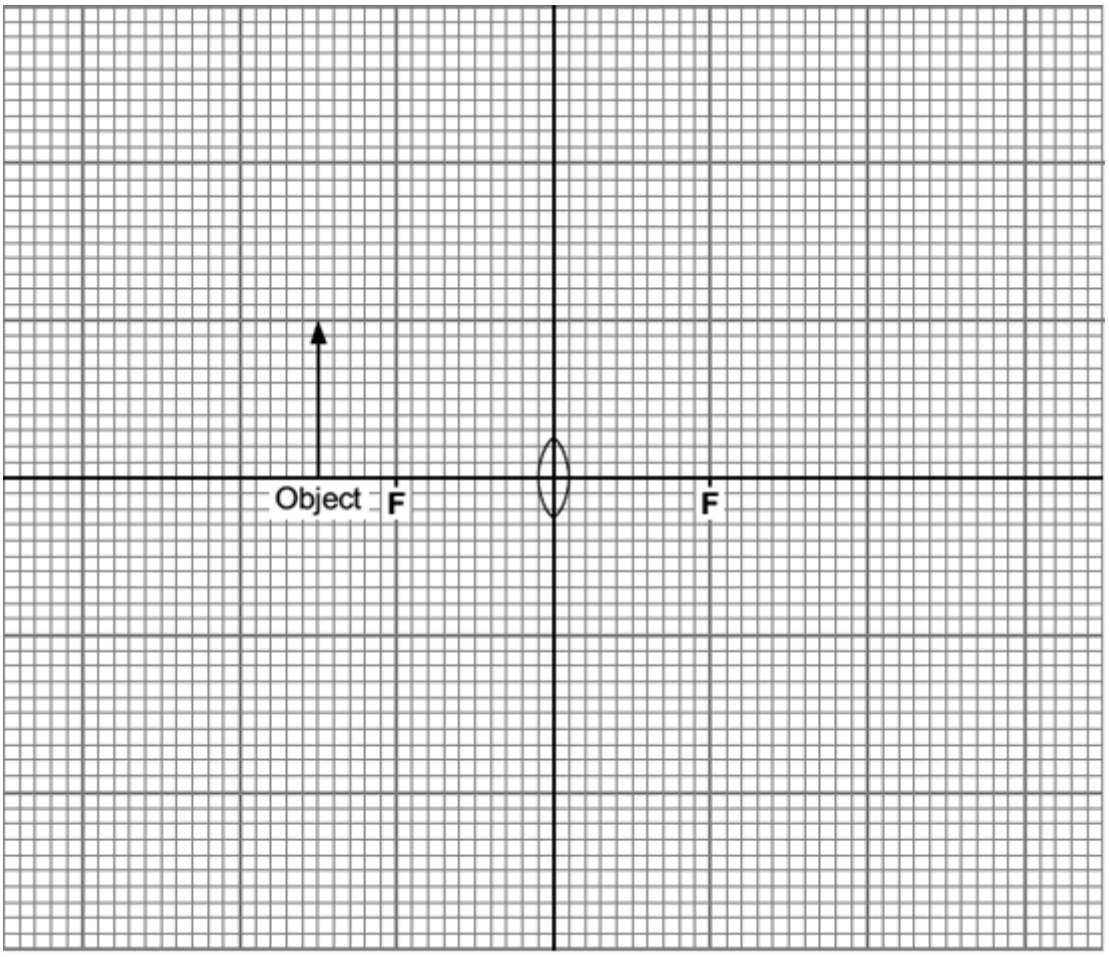
(3)
(Total 6 marks)

Q3.

A student investigated how the nature of the image depends on the position of the object in front of a large converging lens.

The diagram shows one position for the object.

(a) Use a ruler to complete a ray diagram to show how the image of the object is formed.



Key: **F** = principal focus

(4)

(b) Describe the nature of this image relative to the object.

_____

_____

_____

(2)
(Total 6 marks)