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

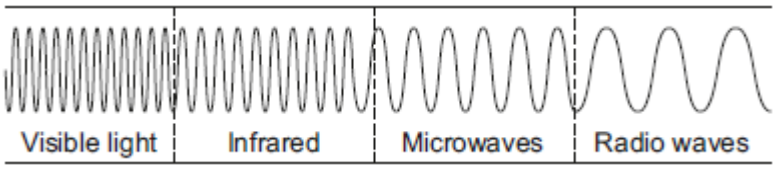
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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

Infrared and microwaves are two types of electromagnetic radiation.

The diagram below shows the positions of the two types of radiation within part of the electromagnetic spectrum.



(a) Name **one** type of electromagnetic radiation which has more energy than infrared.

_____

(1)

(b) Use the correct answer from the box to complete each sentence.

Each answer may be used once, more than once or not at all.

greater than	**less than**	**the same as**

The wavelength of infrared is _____ the wavelength of microwaves.

The frequency of microwaves is _____ the frequency of infrared.

The speed of microwaves in a vacuum is _____ the speed of infrared in a vacuum.

(3)
(Total 4 marks)

Q2.

Figure 1 shows an X-ray of an arm with a broken bone.

Figure 1

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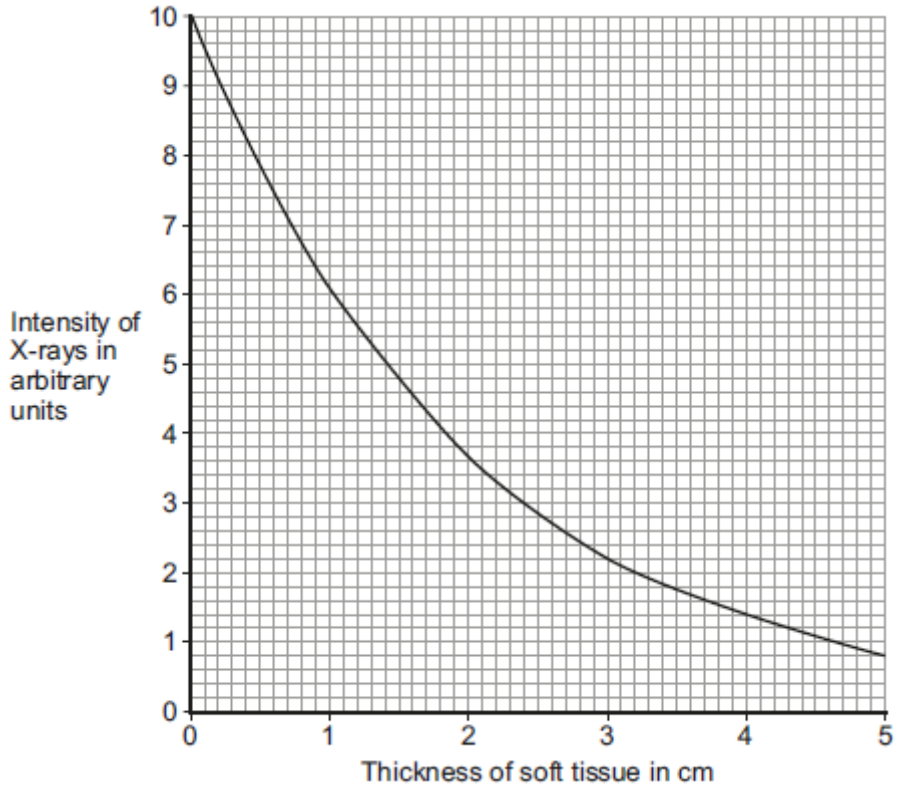
(a) Complete the following sentence.

X-rays are part of the _____ spectrum.

(1)

(b) **Figure 2** shows how the intensity of the X-rays changes as they pass through soft tissue and reach a detector.

Figure 2



(i) Use **Figure 2** to determine the intensity of X-rays reaching the detector for a 3 cm thickness of soft tissue.

Intensity of X-rays = _____ arbitrary units

(1)

(ii) Describe how the thickness of soft tissue affects the intensity of the X-rays.

_____

_____

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_____

_____

(2)

(iii) The data in **Figure 2** are shown as a line graph and not as a bar chart.

Choose the reason why.

Tick (✔) **one** box.

Both variables are categoric ☐

Both variables are continuous ☐

One variable is continuous and one is categoric ☐

(1)

(c) What happens to X-rays when they enter a bone?

_____

_____

(1)

(d) How are images formed electronically in a modern X-ray machine?

Tick (✔) **one** box.

With a charge-coupled device (CCD) ☐

With an oscilloscope ☐

With photographic film ☐

(1)

(e) Radiographers who take X-ray photographs may be exposed to X-rays.

(i) X-rays can increase the risk of the radiographer getting cancer.

Why can X-rays increase the risk of getting cancer?

Tick (✔) **one** box.

X-rays travel at the speed of light ☐

X-rays can travel through a vacuum ☐

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X-rays are ionising ☐

(1)

(ii) What should the radiographer do to reduce the risk from X-rays?

_____

_____

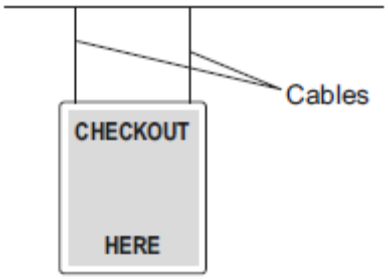
(1)

(Total 9 marks)

Q3.

A sign hangs from the ceiling using two cables, as shown in **Figure 1**.

Figure 1



(a) On **Figure 1**, mark the centre of mass of the sign using an X.

(1)

(b) Use the correct answer from the box to complete the sentence.

concentrated	**greatest**	**pivoted**

The centre of mass of an object is the point where the mass appears

to be _____ .

(1)

(c) A breeze made the sign swing forwards and backwards like a pendulum.
The frequency of oscillations of the sign was 2 hertz.

Calculate the periodic time for the sign.

_____

_____

_____

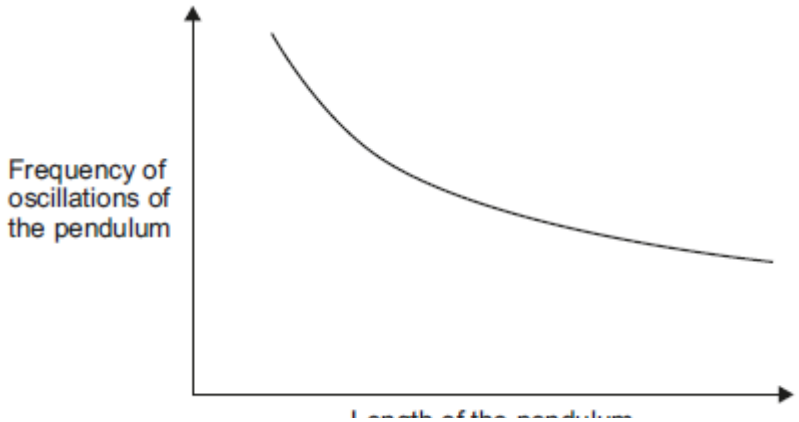
Periodic time = _____ seconds

(2)

(d) **Figure 2** is a sketch graph showing how the frequency of the oscillations of a pendulum changes as the length of the pendulum is increased.

Figure 2

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Give **one** way the sign could be made to swing with a lower frequency.

Use **only** the information in the sketch graph.

_____

_____

(1)

(Total 5 marks)

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