Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : Waves

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Name of the Student:_____

Max. **Marks : 24 Marks**   **Time : 24 Minutes**
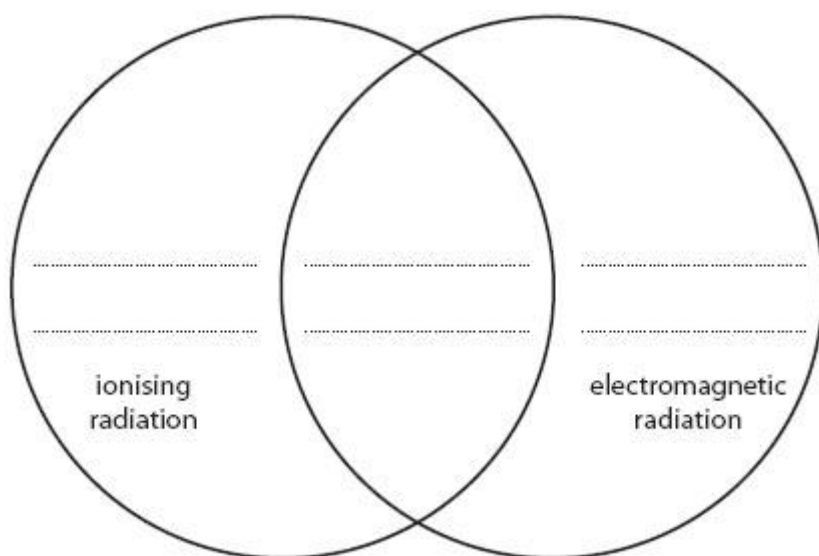
Q1.

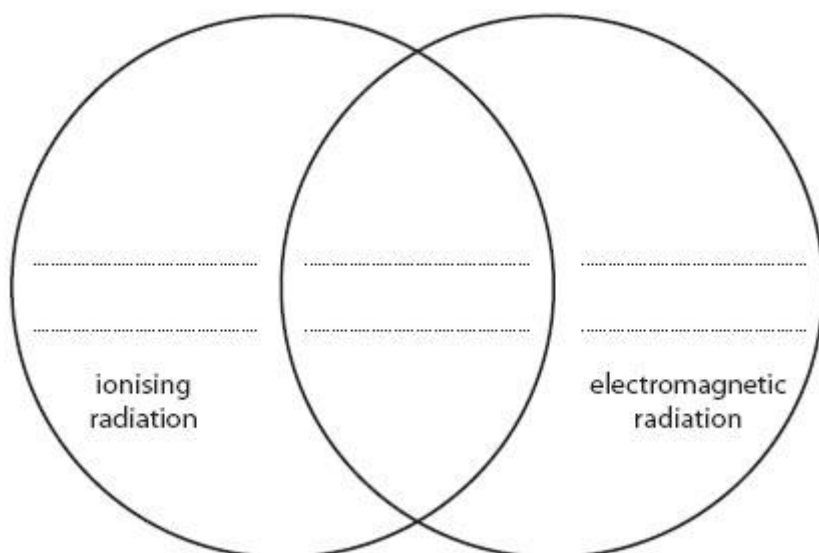   (a) Skin cancer can be caused by radiation from the Sun.

Complete the sentence by putting a cross (■) in the box next to your answer.

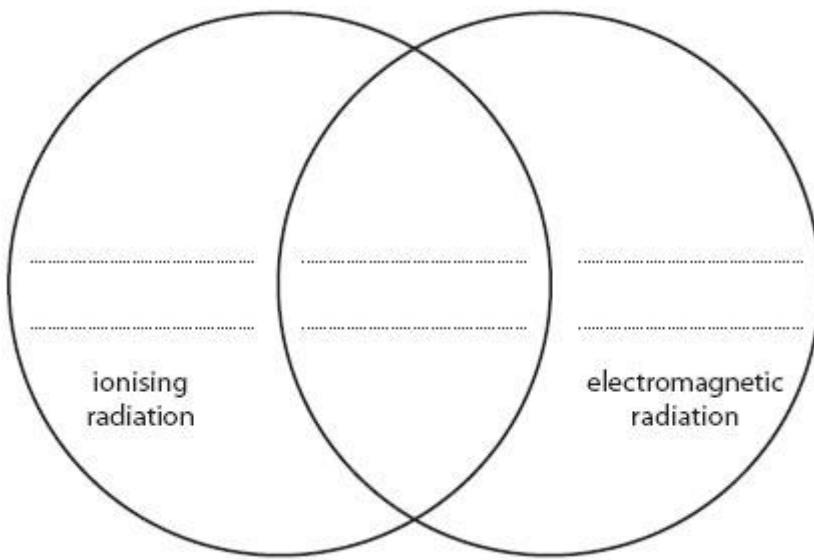The radiation that causes skin cancer is

(1)

A   ultraviolet radiation

B   radio waves

ionising
radiation

electromagnetic
radiation

C microwaves

ionising
radiation

electromagnetic
radiation
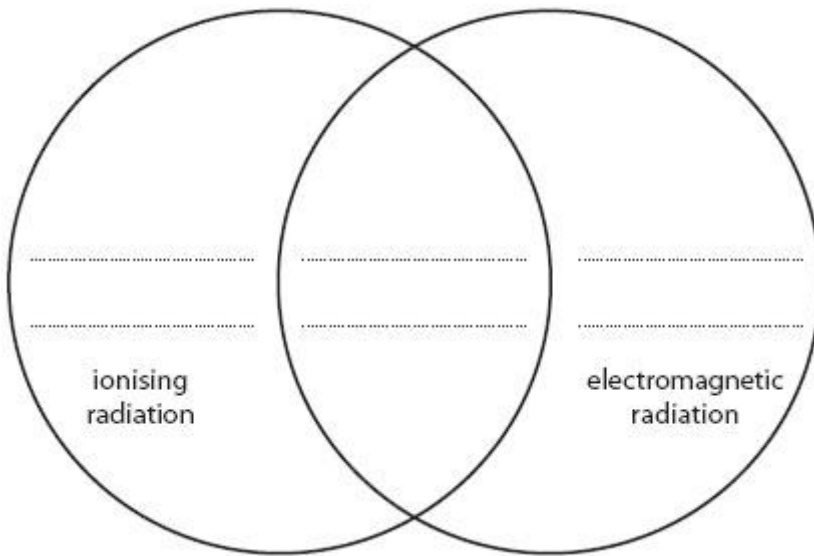
D infrared radiation

(b) The word box contains the names of three types of radiation.

| gamma rays   infrared radiation   alpha particles |

Use this diagram to classify the three types of radiation given in the word box.
Write the name of the radiation in the correct section of the diagram.

(2)

(c) Which of these is correct for all electromagnetic waves in a vacuum?

Put a cross (■) in the box next to your answer.

(1)

ionising radiation   electromagnetic radiation
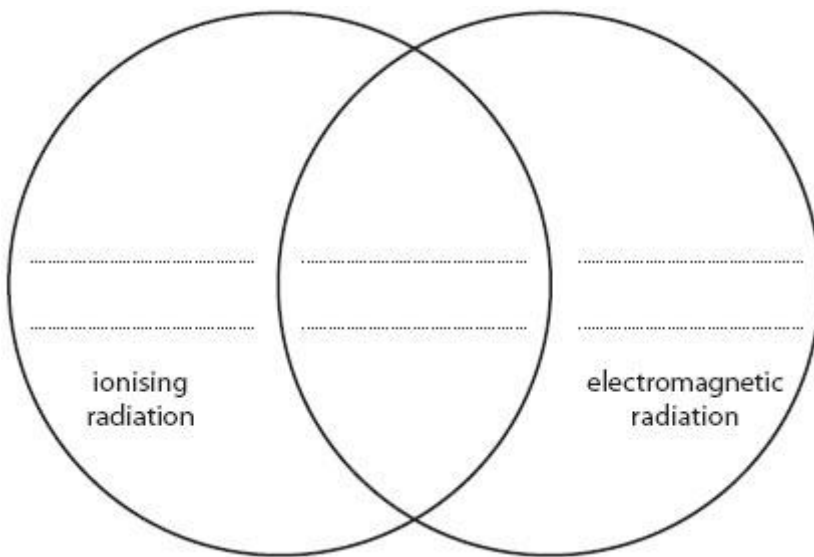
A   they have the same frequency

ionising radiation   electromagnetic radiation
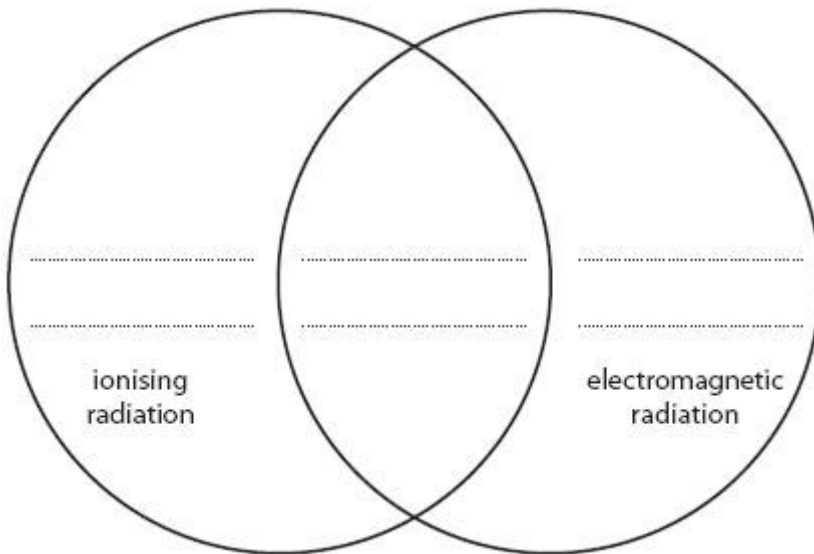
B   they have the same wavelength

ionising radiation   electromagnetic radiation
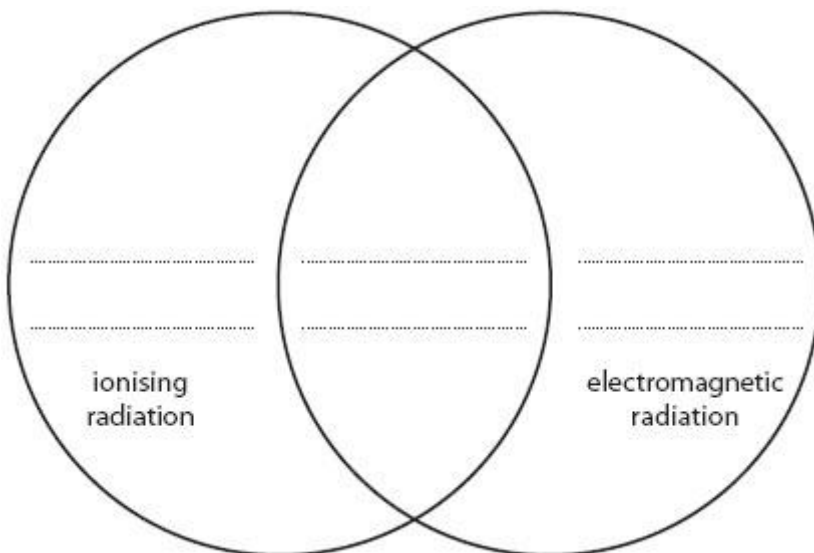
C   they are transverse waves

ionising radiation

electromagnetic radiation
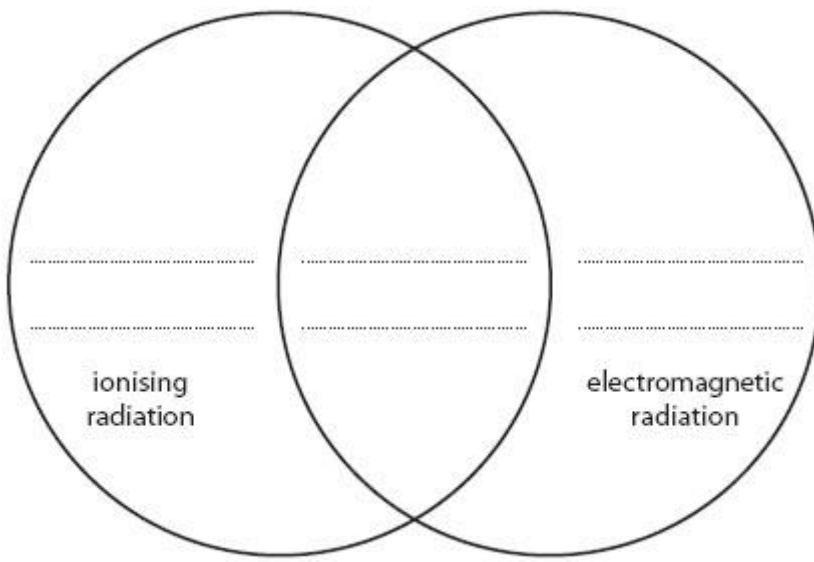
D   they are longitudinal waves

(d) Describe a use of gamma radiation.

(2)

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*(e) Herschel and Ritter carried out experiments that contributed to the discovery of infrared and ultraviolet radiation.

Explain how the results of the experiments carried out by Herschel and Ritter led to these discoveries.

(6)

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(Total for Question is 12 marks)

Q2.

This question is about ultrasound.

Ultrasound has many uses.

(i) One device called a pest repeller emits ultrasound.

The ultrasound keeps mice out of the garden.
Explain why the device affects mice but does not affect humans.

(2)

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(ii) A technician has a different ultrasound device.

This device can emit and detect short pulses of ultrasound.
The device can also measure the time, in ms, from emitting a pulse to detecting the same pulse.
Describe how the technician can use this device to determine the speed of ultrasound in air.

(3)

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(Total for question = 5 marks)

Q3.

Ultrasound from a fishing boat is used to find fish.

(i) Which of these is correct for ultrasound waves?

Put a cross (■) in the box next to your answer.

(1)

☒ **A** ultrasound waves have a frequency above 20 000 Hz

☒ **B** ultrasound waves have a frequency below 20 Hz

☒ **C** ultrasound waves have a wavelength above 20 000 Hz

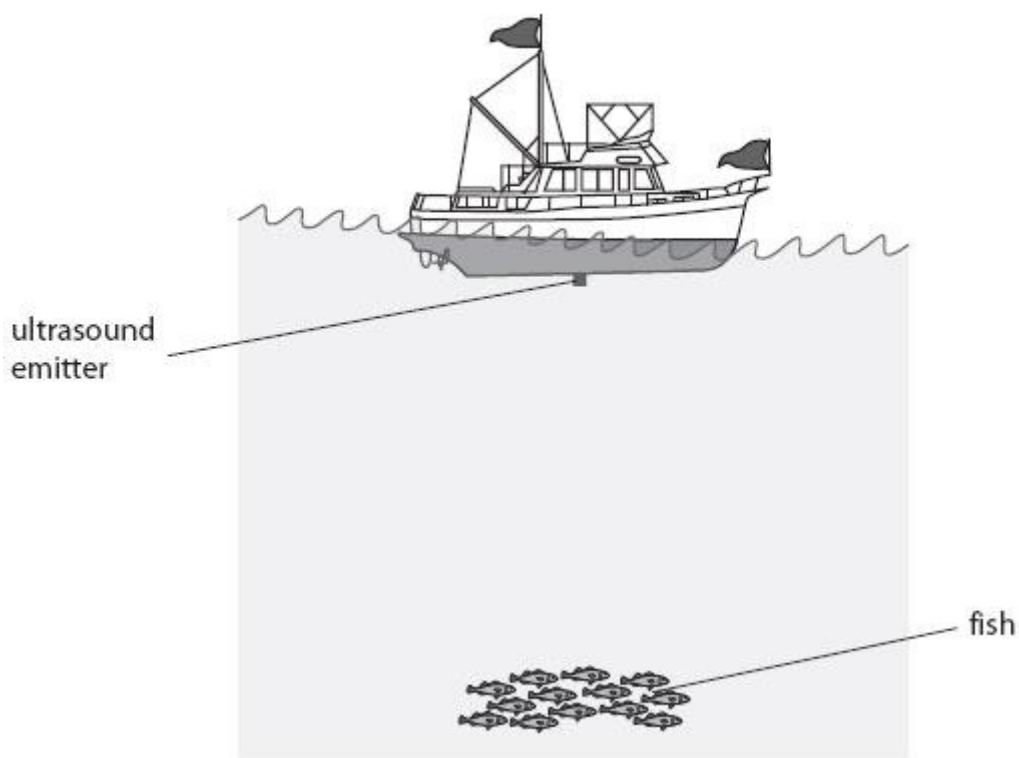☒ **D** ultrasound waves have a wavelength below 20 Hz

(ii) Complete the sentence by putting a cross (■) in the box next to your answer.

The system that uses ultrasound to find fish is called

(1)

☒ **A** fibre optics

☒ **B** satellite transmission

☒ **C** sonar

☒ **D** thermal imaging

(iii) The diagram shows a fishing boat above some fish.

ultrasound
emitter

fish

Describe how ultrasound waves are used to detect the fish.

You may add to the diagram to help with your answer.

(2)

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Q4.

Sound travels slower in cold air than it does in warm air.

The equation relating the speed of sound in air to the density of the air is

$$\text{speed of sound} = \frac{K}{\sqrt{(\text{density})}}$$ where K is a constant.

The table in Figure 10 gives some data about the speed of sound in air and the density of air.

	speed of sound in m/s	density of air in kg / m³
in cold air	331	1.29
in warm air		1.16

Figure 10

Use the equation and the data in the table in Figure 10 to calculate the speed of sound in warm air.

Give your answer to an appropriate number of significant figures.

(3)

speed of sound in warm air = ... m/s

(Total for question = 3 marks)