

Electromagnetic Spectrum

Question Paper

Course	CIE IGCSE Physics
Section	3. Waves
Topic	Electromagnetic Spectrum
Difficulty	Easy

Time Allowed 50

Score /35

Percentage /100

Question 1a

Fig. 7.1 shows some devices that each use one type of electromagnetic radiation.

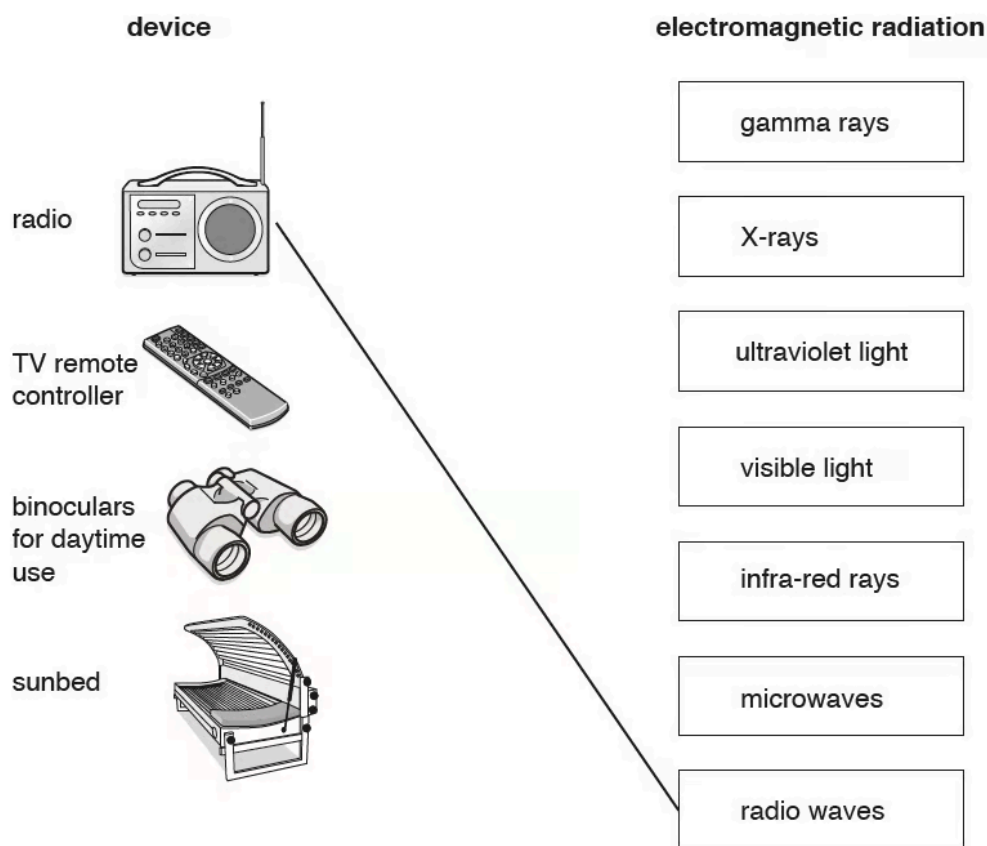


Fig. 7.1

Draw one line from each device to the correct type of electromagnetic radiation. One has been done for you.

[3 marks]

Question 1b

- (i) State the name of one type of radiation that has a longer wavelength than visible light.

[1]

- (ii) Complete the sentence about electromagnetic radiation. Use a word from the list below.

amplitude**frequency****speed****wavelength**

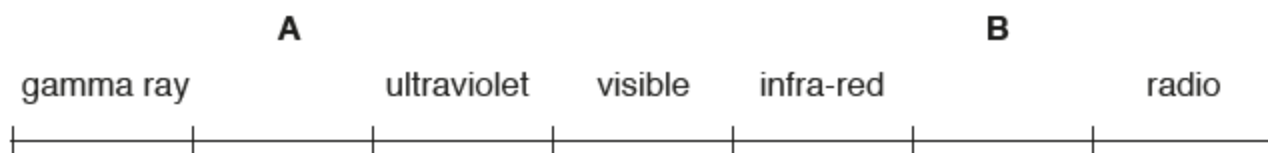
All types of electromagnetic radiation travel through a vacuum with the same _____

[1]

[2 marks]

Question 2a

Fig. 9.1 shows a partially-labelled diagram of the electromagnetic spectrum.

**Fig. 9.1**

- (i) On Fig. 9.1, add the names of the missing radiations at **A** and at **B**.
- (ii) Indicate the radiation that has the lowest frequency. On Fig. 9.1, draw a ring around the radiation.

[2]

[1]

[3 marks]

Question 2b

State two safety precautions when handling sources that emit gamma radiation.

[2 marks]

Question 3a

Fig. 8.1 shows an incomplete diagram of the electromagnetic spectrum.

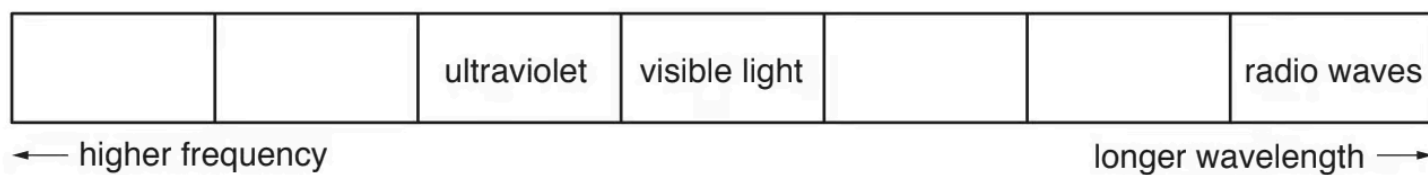


Fig. 8.1

Complete Fig. 8.1 with the names of the missing types of radiation in the correct boxes.

[4 marks]

Question 3b

State one use for ultraviolet radiation.

[1 mark]

Question 4a

Complete the sentence below.

Gamma rays have the same _____ as visible light, but different _____ and _____.

[1 mark]

Question 4b

Match the type of electromagnetic radiation with the object most similar in size to its wavelength.

X rays

Carrot

Radio
waves

Atom

Microwaves

Fruit fly

[3 marks]

Question 4c

- (i) State the name of the process by which electromagnetic radiation can remove electrons from atoms.

[1]

- (ii) Radiographers operate X-ray equipment as part of their profession. Lead absorbs a lot of radiation. Explain why radiographers stand behind lead screens when performing X-ray scans all day.

[2]

[3 marks]

Question 4d**Extended tier only**

A student sees that an oscilloscope shows a signal, shown in Fig. 1.1.

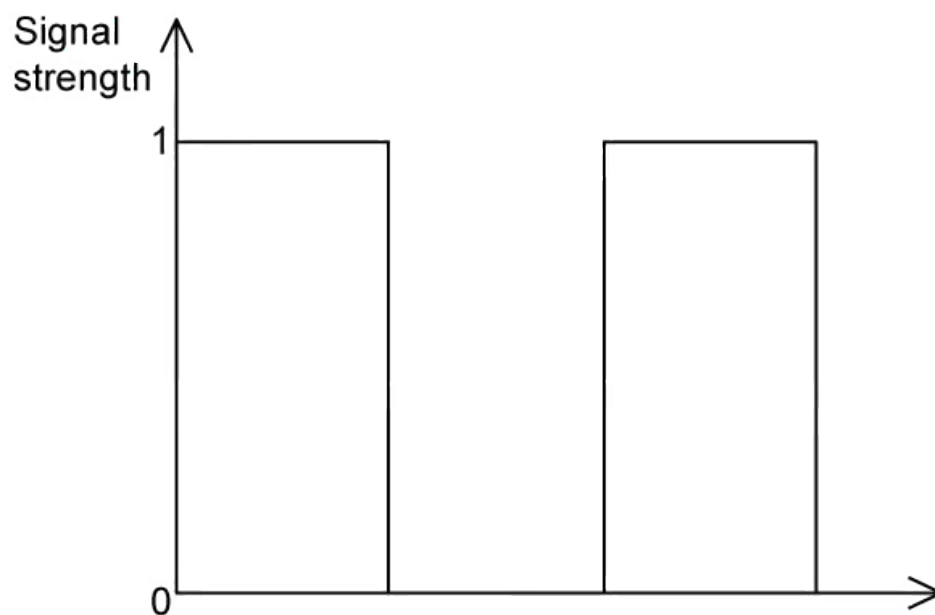


Fig. 1.1

- (i) State the type of signal the oscilloscope shows.
- (ii) Explain how the student can tell what type of signal is shown.

[1]

[1]

[2 marks]

Question 5a

Complete the sentences using the numbers from the box. Use **one** number for each blank space.

A geostationary satellite has an orbital period of _____ hours.

A Polar satellite has an orbital height of _____ km above sea level, whereas this is _____ km for geostationary satellites.

72	36 000	200	12	24
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[3 marks]**Question 5b**

(i) State two uses of a polar satellite.

[2]

(ii) State one use of a geostationary satellite.

[1]**[3 marks]**

Question 5c

A satellite phone allows users to communicate across the globe by sending signals to a satellite, which then sends the signal to the user receiving the signal.

Using your answer from part (a), explain why there is a time delay in calls when using a geostationary satellites compared to calls which use polar satellites.

[2 marks]**Question 5d****Extended tier only**

Rhys lives in a valley and is surrounded by hills on all sides. He likes to follow the local news with his radio and his television.

- (i) Rhys receives radio station signals and TV signals. State which signal has the longer wavelength.

[1]

- (ii) Explain why the TV has poor signal even though the radio is clear.

[2]**[3 marks]**