

0 5

The Sun emits all types of electromagnetic waves.

Figure 7 shows the electromagnetic spectrum.

Figure 7

Radio waves	Microwaves	Infrared	Visible light	Ultraviolet	X-rays	Gamma rays
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Complete the sentences.

Choose answers from the box.

[3 marks]

frequency	mass	power
velocity	wavelength	

In a vacuum, all electromagnetic waves travel at the same _____.

Gamma waves have the greatest _____.

Radio waves have the greatest _____.

0 5 . 2

Explain why it is important that the Earth's atmosphere absorbs gamma rays emitted by the Sun.

[2 marks]

0 5 . 3

Some microwaves are **not** absorbed by the Earth's atmosphere.

Why is this useful?

[1 mark]

Turn over ►

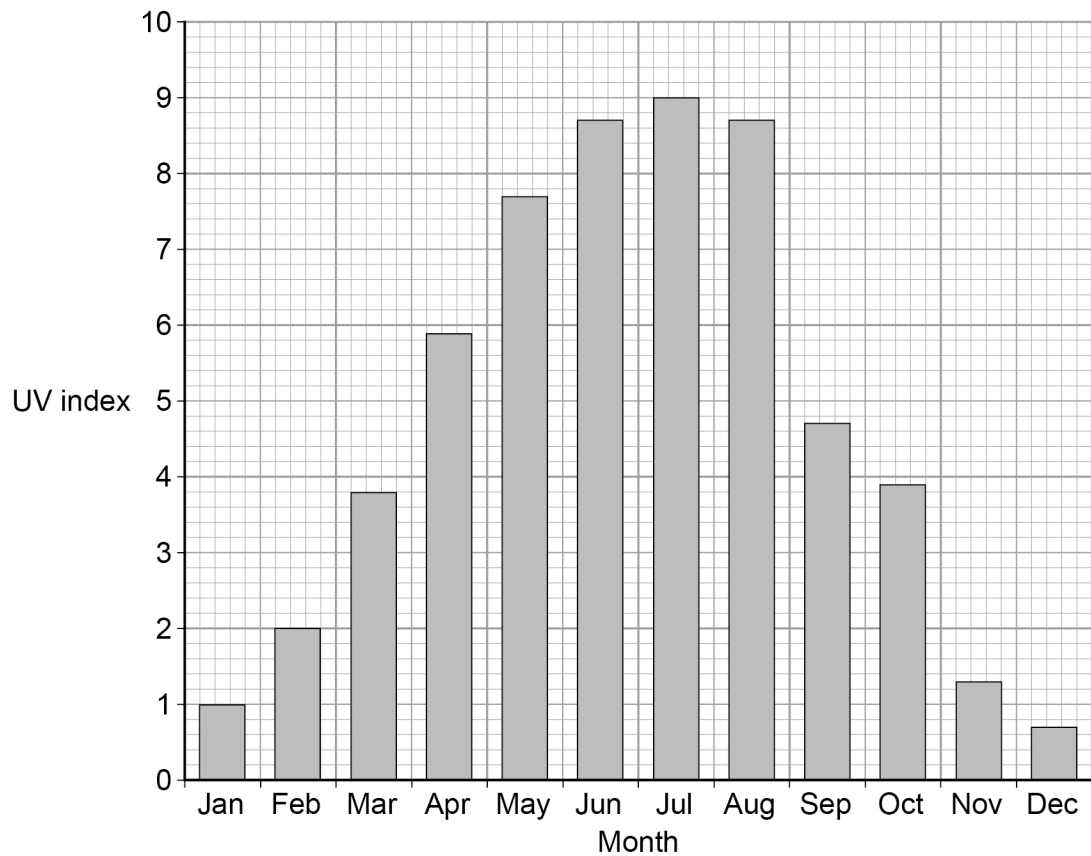


Some ultraviolet (UV) radiation from the Sun passes through the atmosphere and reaches the surface of the Earth.

The amount of UV radiation that reaches the surface of the Earth can be measured on a scale called the UV index.

Figure 8 shows the average midday UV index in the UK for 1 year.

Figure 8



0 5 . 4

Why is exposure to UV radiation harmful to humans?

[1 mark]



0 5 . 5

Compare the risk from UV radiation at different times of year in the UK.

Use data from **Figure 8**.**[2 marks]**

9**Turn over for the next question****Turn over ►**

Question	Answers	Extra information	Mark	AO / Spec. Ref.	ID
05.1	velocity		1	AO1 6.6.2.3	G
	frequency		1		
	wavelength		1		
05.2	so people are not exposed to (as much) gamma radiation	allow less gamma radiation reaches the Earth's surface	1	AO1 6.6.2.3	E
	because gamma radiation can damage human tissue	allow increases the risk of cancer or (cell) mutation	1		
		allow gamma rays are ionising ignore any reference to temperature / heating of the atmosphere			
05.3	(microwaves) are used in (satellite) communications	ignore any reference to temperature / heating of the atmosphere	1	AO2 6.6.2.4	E
05.4	can cause skin cancer / premature ageing	allow sunburn allow eye / skin damage cancer on its own is insufficient	1	AO1 6.6.2.3	E
05.5	risk from UV radiation is highest in July / summer	allow any sensible comparison of named months / seasons	1	AO3 6.6.2.3	E
	two correct readings from the bar chart which support their comparison	if no other mark scored, two correct readings from the graph scores 1 mark	1		
Total			9		