

## Q1. (2018)

0 4 . 3 UV radiation is used to treat a vitamin D deficiency.

People should **not** use a UV lamp for long periods of time.

State **two** risks of exposure to high levels of UV radiation.

[2 marks]

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

## Q2. (2019)

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 |
|-------------|------------|----------|---------------|-------------|--------|------------|

0 5 . 2 Explain why it is important that the Earth's atmosphere absorbs gamma rays emitted by the Sun.

[2 marks]

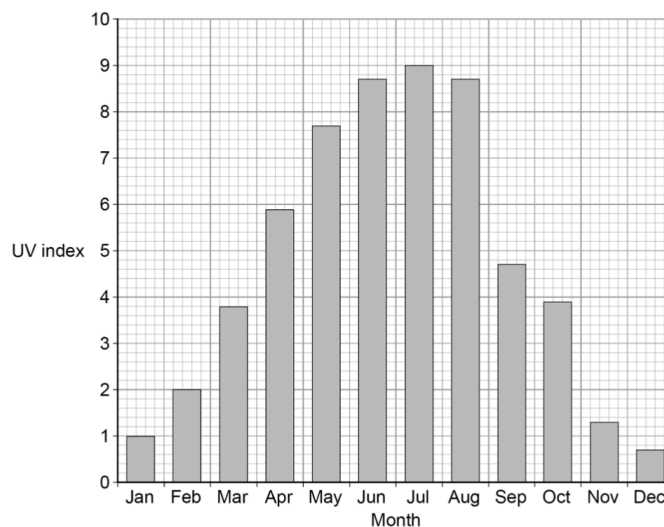
## Q3. (2019)

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



a)

0 5 . 4 Why is exposure to UV radiation harmful to humans?

[1 mark]

b)

0 5 . 5 Compare the risk from UV radiation at different times of year in the UK.

Use data from **Figure 8**.

[2 marks]

Q4. (2020)

**Table 1** shows the effect of exposure to different doses of radiation.

**Table 1**

| Dose in mSv | Effect on the human body          |
|-------------|-----------------------------------|
| 100         | slightly increased risk of cancer |
| 1000        | 5% increased risk of cancer       |
| 5000        | high risk of death                |

0 3 . 2 During one X-ray a person receives a dose of 0.100 mSv

Why is this dose unlikely to harm the person?

[1 mark]

Q5. (2020)

0 3 . 3 A doctor takes an X-ray photograph of a person.

When taking the X-ray photograph, the doctor stands behind a screen.

Suggest why.

[1 mark]

Q6. (2020)

0 3 . 5 Why are gamma rays and X-rays harmful to humans?

[1 mark]

Tick (✓) **one** box.

They are ionising

☐

They are radioactive

☐

They travel at the speed of light

☐

Q7. (2021)

0 5 Scientists are developing a rocket aeroplane designed to travel much faster than jet aeroplanes.

0 5 . 6 The rocket aeroplane will fly at a greater height than a jet aeroplane.

The height that an aeroplane flies at affects the radiation dose a passenger will receive each hour.

**Table 2** shows the speed of each aeroplane and the radiation dose a passenger will receive each hour.

**Table 2**

| <b>Aeroplane</b> | <b>Speed in metres per second</b> | <b>Radiation dose each hour in millisieverts</b> |
|------------------|-----------------------------------|--------------------------------------------------|
| Rocket aeroplane | 8000                              | 0.006                                            |
| Jet aeroplane    | 250                               | 0.003                                            |

Exposure to ionising radiation has risks and possible consequences.

Evaluate the risks and possible consequences of flying in a rocket aeroplane and in a jet aeroplane.

Assume the same journey is made in each aeroplane.

Use values from **Table 2**.

**[6 marks]**