

GCSE Physics B (Twenty First Century Science)
J259/01 Breadth in Physics (Foundation Tier)

Question Set 16

Multiple Choice Questions

1

A solar flare is an explosion on the surface of the Sun.

(a) Solar flares release huge amounts of radiation, including visible light and X-rays.

(i) Which statement is true?

Tick (✓) **one** box.

Visible light is ionising radiation.

Visible light has a higher frequency than X-rays.

X-rays have a shorter wavelength than visible light.

X-rays are longitudinal waves.

[1]

(ii) Why can humans see visible light but not X-rays?

Tick (✓) **one** box.

Our eyes can detect only a small range of frequencies.

X-rays cannot travel through space towards the Earth.

Our eyes cannot detect electromagnetic waves.

X-rays are absorbed by the atmosphere of the Sun.

[1]

(b) The speed of visible light in empty space is 300 000 km/s.

The distance from the Sun to the Earth is 150 000 000 km.

Speed can be calculated using the equation: speed = distance ÷ time

(i) Which is the correct way to calculate the **time** for visible light from a solar flare to reach the Earth?

Put a ring around the correct calculation.

$$\frac{150\,000\,000}{300\,000}$$

$$\frac{300\,000}{150\,000\,000}$$

$$300\,000 \times 150\,000\,000$$

[1]

(ii) When do the X-rays from the solar flare reach the Earth?

Tick (✓) **one** box.

After the visible light.

At the same time as the solar flare happens.

At the same time as the visible light.

Before the visible light.

[1]

(iii) Explain your answer to **(b)(ii)**.

[1]

Total Marks for Question Set 16: 5

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge