

GCSE Physics A (Gateway)

J249/04 Physics A P5-P8 and P9 (Higher Tier)

Question Set 8

1

A student investigates reflection and refraction of light rays.

(a) The student sends a ray of red light into a glass prism.

Fig. 1.1 shows the light ray as it leaves the glass prism.

On **Fig. 1.1** complete the ray of light as it travels towards **and** through the glass prism.

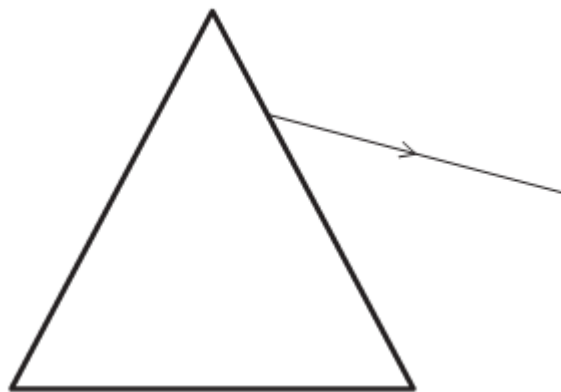


Fig. 1.1

[2]

(b) **Fig. 1.2** shows two mirrors placed at 90° to each other.

A light ray hits one of the mirrors at 45° .

On **Fig. 1.2** complete the ray of light as it reflects from both mirrors.

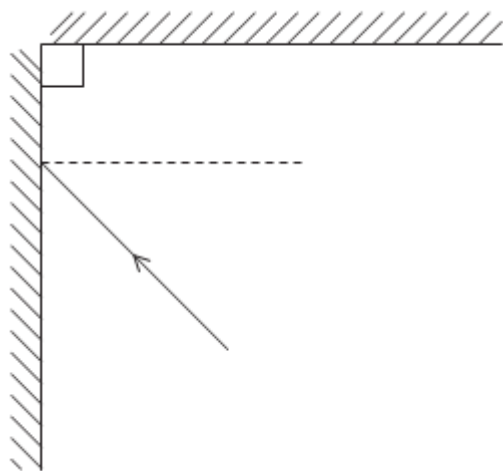


Fig. 1.2

[2]

(c) White light is made of different colours.

White light passes through a transparent filter **X**. Filter **X** absorbs green, blue, indigo and violet light.

The light then passes through another transparent filter **Y**, as shown in **Fig. 1.3**.

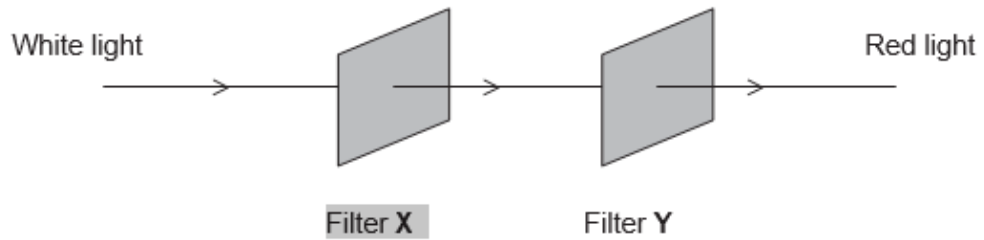


Fig. 1.3.

The light that leaves filter **Y** is red.

(i) What colours are transmitted by filter **X**?

[1]

(ii) What colours are absorbed by filter **Y**?

[1]

(d) A wall is painted red.

When some coloured lights shine on it, the wall appears black.

(i) Explain why.

[1]

(ii) Suggest **two** different colours of light that would cause the wall to appear black.

..... and

[1]

- (e) An optician uses red and green light to test vision.

Fig. 1.4 is a ray diagram showing red light passing through a lens.

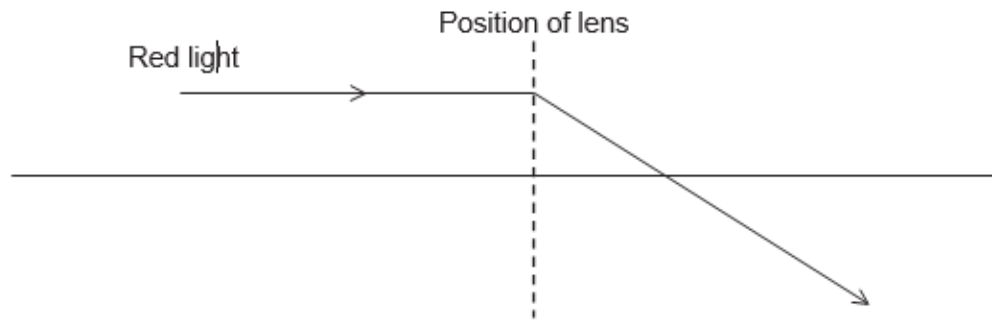


Fig. 1.4

- (i) Green light passes through the same lens as in Fig. 1.4.

Complete the ray diagram in Fig. 1.5 for green light. The focal point for red light F_R is shown.

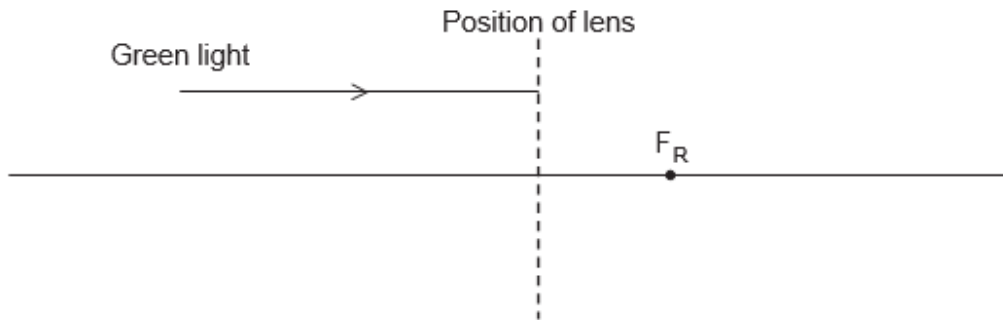


Fig. 1.5

- (ii) Explain your answer to (e)(i).

[1]

- (iii) Is the lens in Fig. 1.4 and 1.5 suitable for correcting long-sight or short-sight?

Tick (✓) **one** box.

Long-sight

Short-sight

Explain your answer.

[2]

Total Marks for Question Set 8: 12

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