

# Other Applications of Light

## Question Paper

Level	GCSE
Subject	Physics
Exam Board	AQA
Unit	P3
Topic	Other Applications of Light
Difficulty Level	Silver Level
Booklet	Question Paper

**Time Allowed:** 31 minutes

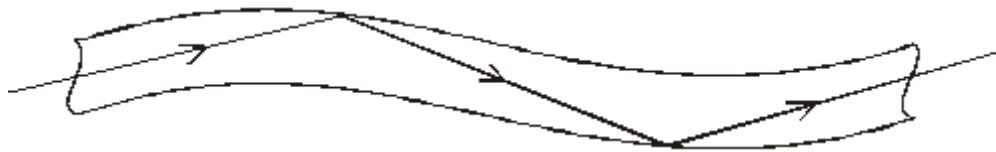
**Score:** /31

**Percentage:** /100

## Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at [www.savemyexams.co.uk](http://www.savemyexams.co.uk)

**Q1.** The diagram shows the path of a light ray through part of an optical fibre.



(i) Give **one** practical use for optical fibres.

.....  
.....

(1)

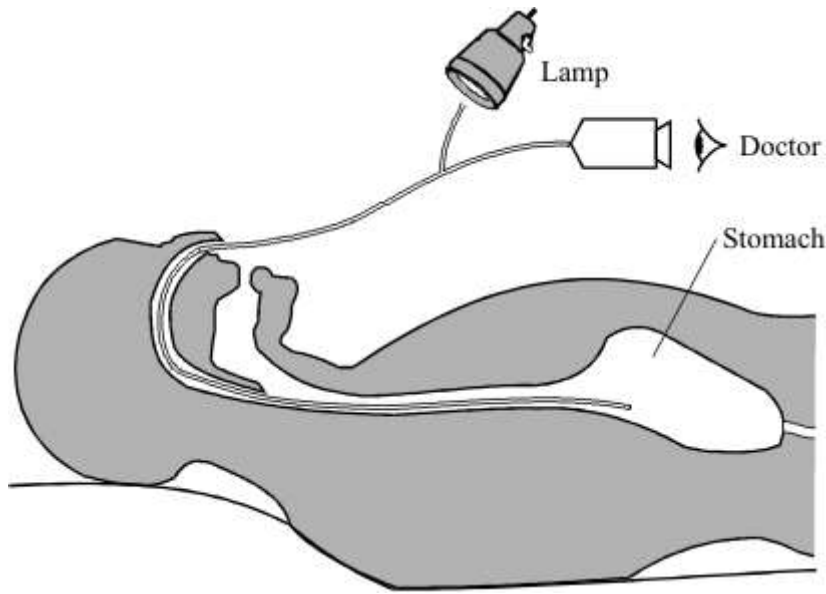
(ii) Explain, as fully as you can, why the light ray stays inside the optical fibre.

.....  
.....  
.....  
.....

(2)

(Total 3 marks)

**Q2.** (a) An endoscope is an instrument used by doctors for looking inside patients. A bundle of thin optical fibres pass light into the patient's body, a second bundle of fibres carry reflected light back to the doctor.



- (i) Complete the diagram below to show how an optical fibre is able to pass light into a patient's body.



(2)

- (ii) Give **one** advantage of using lots of thin fibres to make the bundles, rather than a few thick fibres.

.....  
.....

(1)

- (iii) Give **one** further example of the practical use of an optical fibre.

.....  
.....

(1)

(b) The diagram shows a wave travelling through a stretched spring.



In what way is this wave the same as a sound wave?

.....

(1)

(c) Sound waves travel faster in liquids than in gases. Why?

.....

.....

(1)

(d) A bat uses ultrasound to find its way around. Explain how.

.....

.....

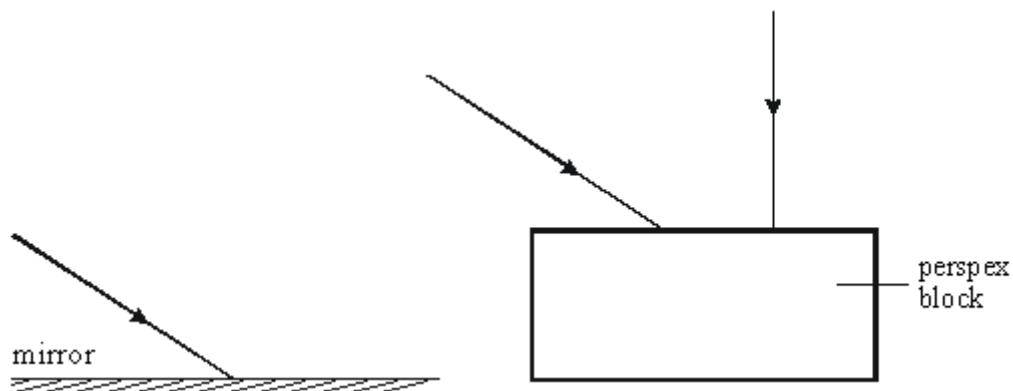
.....

.....

(2)

(Total 8 marks)

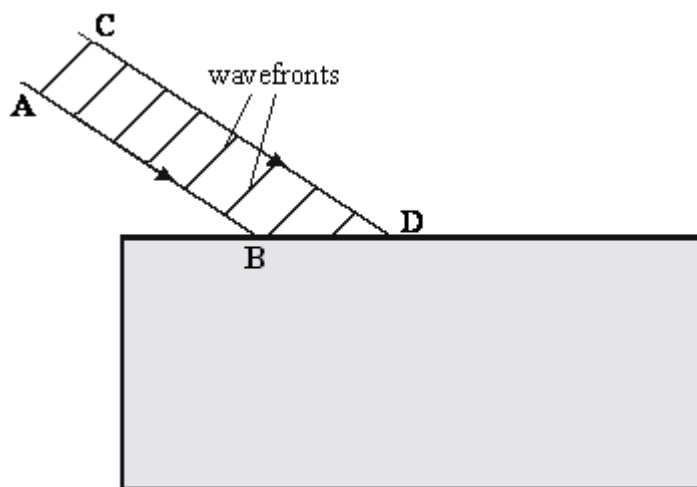
**Q3.** (a) The diagrams below show rays of light striking a mirror and a perspex block.



Complete the paths of the three rays of light on the diagrams to show the rays leaving the mirror and the perspex block.

(4)

(b) The diagram below shows a beam of light striking a perspex block.



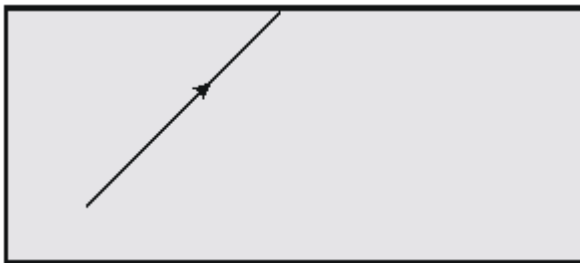
- (i) Continue the paths of the rays AB and CD inside the perspex block.
- (ii) Draw the wavefronts of the beam of light in the perspex.

(iii) Explain why the beam behaves in the way you have shown.

.....  
.....  
.....

(7)

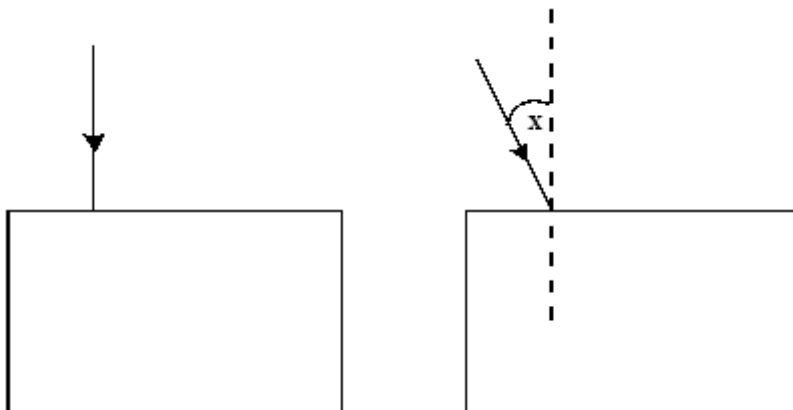
(c) The diagram below shows a ray of light striking a perspex-air surface from inside the perspex. The critical angle is  $45^\circ$ .



Draw the path of the ray after it reaches the perspex-air boundary.

(2)  
(Total 13 marks)

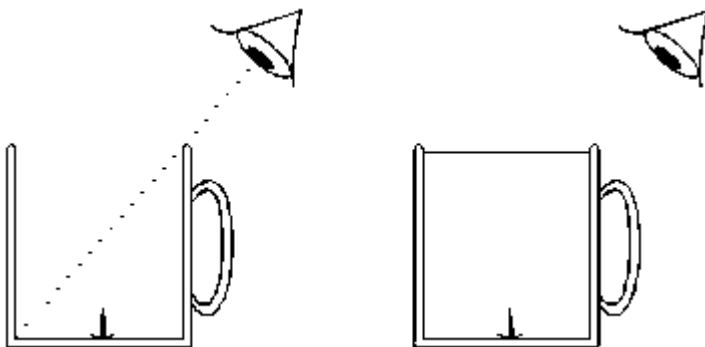
**Q4.** (a) The diagrams show rays of light. Each ray strikes a surface of a glass block.



- (i) On the diagram draw the path of each ray through the glass block and out into the air again.
- (ii) Label another angle on the diagram which is equal to the angle marked X. Label this angle Y.

(4)

- (b) The diagrams show two beakers. Both beakers have a drawing pin inside as shown.



The first beaker is empty. The eye cannot see the drawing pin.  
The second beaker is full of water and the eye can see the drawing pin.

Explain how the eye is able to see the drawing pin in the second beaker. You may add to the diagram if it helps your answer.

.....  
.....  
.....

(3)  
(Total 7 marks)



## Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at [www.savemyexams.co.uk](http://www.savemyexams.co.uk)