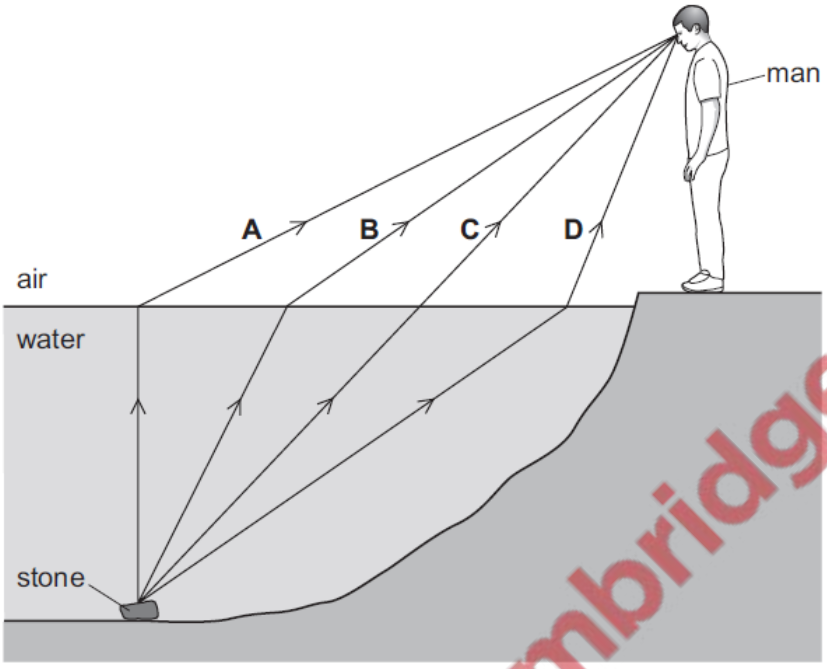
Light – 2020 IGCSE 0625

1. Nov/2020/Paper_11/No.22

A man sees a stone at the bottom of a pool of water.

Which path could be taken by light from the stone to the man?



2. Nov/2020/Paper_11/No.23

Which statement about a thin converging lens is correct?

A All rays of light refracted by the lens pass through the principal focus.

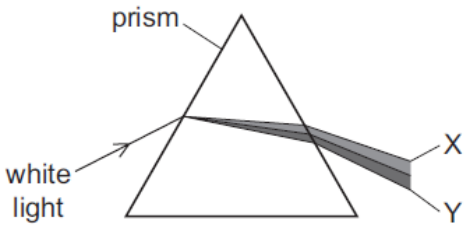
B All rays initially parallel to the principal axis of the lens are refracted through the principal focus.

C The focal length of the lens is the distance between the image and the principal focus.

D The focal length of the lens is the distance between the object and the image.

3. Nov/2020/Paper_11/No.24

The diagram shows a beam of white light passing through a triangular prism. A spectrum is produced.

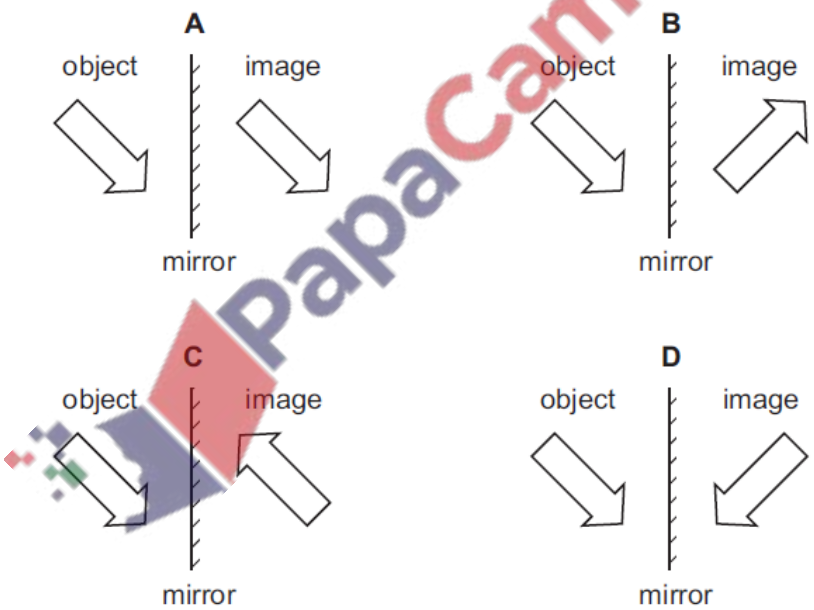


Which row correctly shows a wave property involved in producing the colours at X and Y?

	wave property	X	Y
A	diffraction	red	violet
B	dispersion	red	violet
C	reflection	violet	red
D	refraction	violet	red

4. Nov/2020/Paper_12/No.22

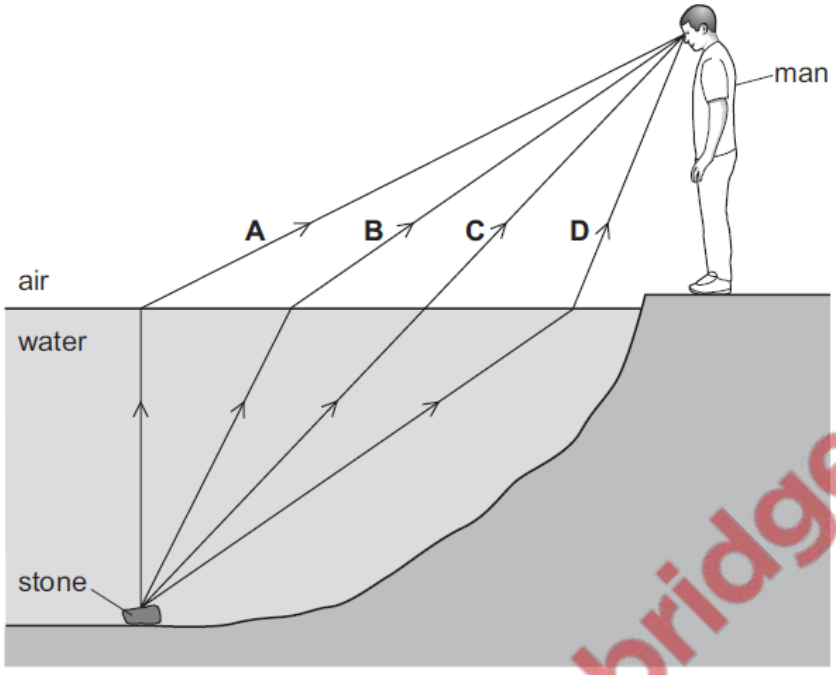
Which diagram shows the image correctly formed by reflection?



5. Nov/2020/Paper_12/No.23

A man sees a stone at the bottom of a pool of water.

Which path could be taken by light from the stone to the man?



6. Nov/2020/Paper_12/No.24

White light can be split into different colours by passing it through a prism.

What is the name of this process?

A diffraction

B dispersion

C reflection

D total internal reflection

7. Nov/2020/Paper_13/No.22

A boy is having his eyes tested. A letter is printed on a card placed over his head. He sees the card in a plane mirror placed on the far wall of the room.

He sees the letter 'R' in the mirror.

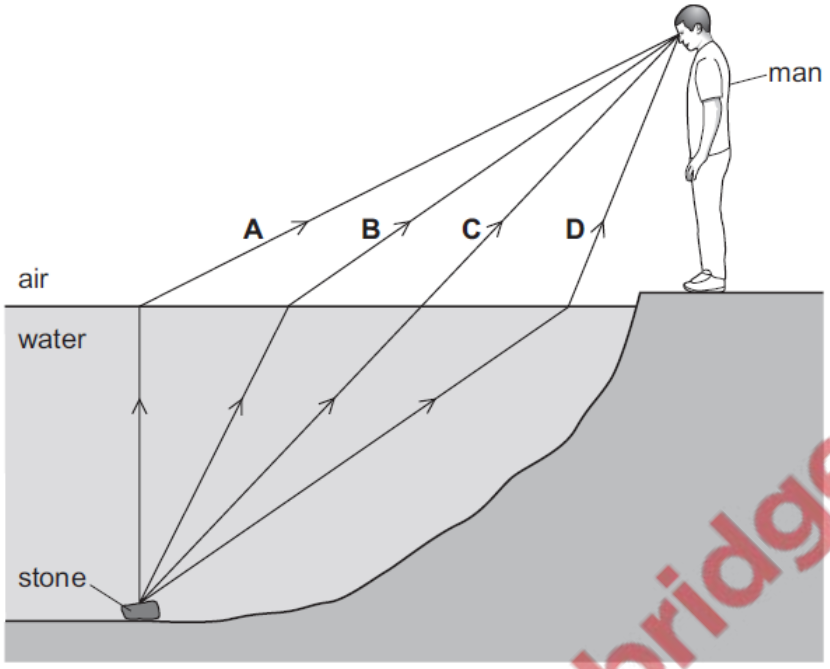
How is it printed on the card?

A R **B** Я **C** ꓤ **D** ꓤ

8. Nov/2020/Paper_13/No.23

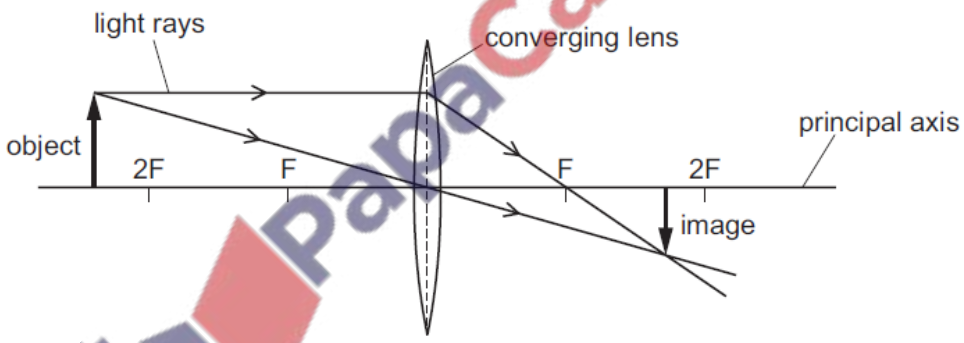
A man sees a stone at the bottom of a pool of water.

Which path could be taken by light from the stone to the man?



9. Nov/2020/Paper_13/No.24

The diagram shows the image made by a converging lens.



Which statement describes the image formed?

A diminished and inverted

B diminished and upright

C enlarged and inverted

D enlarged and upright

10. Nov/2020/Paper_21/No.23

Which statement about a thin converging lens is correct?

A All rays of light refracted by the lens pass through the principal focus.

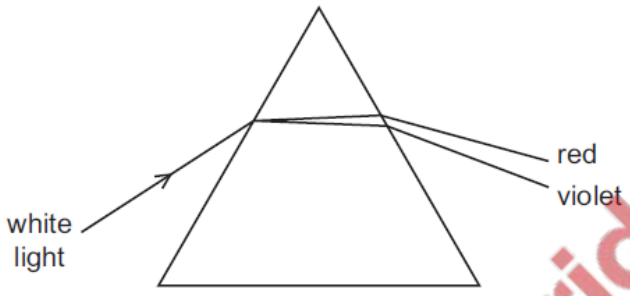
B All rays initially parallel to the principal axis of the lens are refracted through the principal focus.

C The focal length of the lens is the distance between the image and the principal focus.

D The focal length of the lens is the distance between the object and the image.

11. Nov/2020/Paper_21/No.24

The diagram shows white light passing through a prism.



Which description of what happens as the light passes into the prism is correct?

A The speed of the red light is less than the speed of the violet light and the red light is the least refracted.

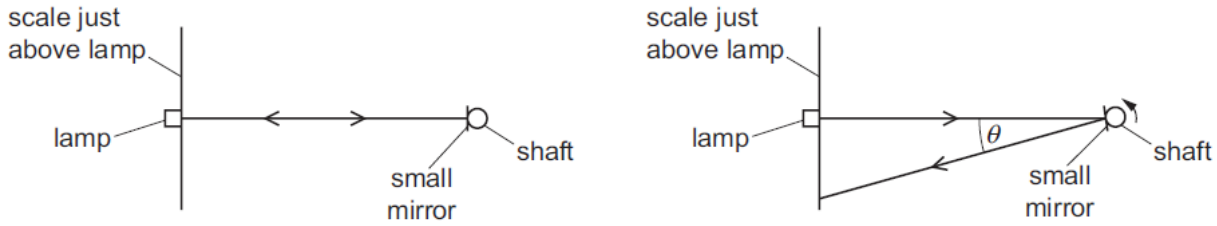
B The speed of the red light is greater than the speed of the violet light and the red light is the least refracted.

C The speed of the violet light is less than the speed of the red light and the violet light is the least refracted.

D The speed of the violet light is greater than the speed of the red light and the violet light is the least refracted.

12. Nov/2020/Paper_22/No.23

An optical lever is a very sensitive device for detecting small rotations. A lamp sends a narrow beam of light on to a small plane mirror attached to a shaft whose rotation is to be measured. The operation of the device is shown in plan view.



The beam from the lamp reflects from the mirror to give a small spot of light on a scale placed just above the lamp. The shaft and mirror rotate through 1°. The spot of light moves along the scale.

The table shows the angle θ through which the reflected beam rotates and the conditions required for high sensitivity.

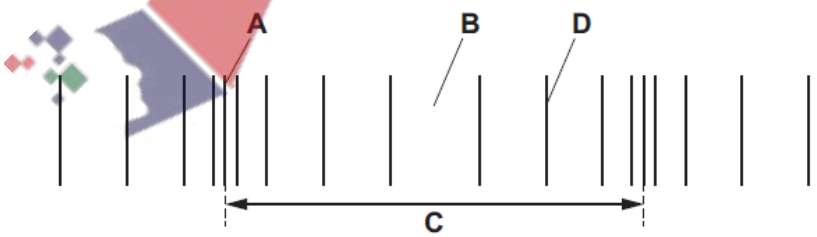
Which row is correct?

	angle θ	to achieve high sensitivity
A	1°	the lamp and scale need to be as close to the mirror as possible
B	1°	the lamp and scale need to be as far from the mirror as possible
C	2°	the lamp and scale need to be as close to the mirror as possible
D	2°	the lamp and scale need to be as far from the mirror as possible

13. Nov/2020/Paper_22/No.24

A student draws a diagram to illustrate the different sections of a longitudinal wave.

Which labelled section is a rarefaction?



14. Nov/2020/Paper_23/No.23

A driver sits in a car. She has a rear-view plane mirror 0.5 m in front of her. A bus is 7.5 m behind the driver.

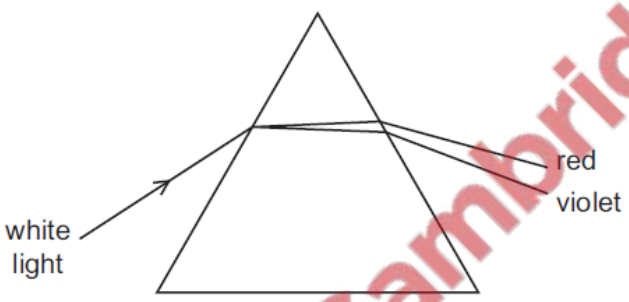
The driver looks at the image of the bus in her mirror.

How far is the image away from her?

A 1.0 m **B** 7.5 m **C** 8.0 m **D** 8.5 m

15. Nov/2020/Paper_23/No.24

The diagram shows white light passing through a prism.



Which description of what happens as the light passes into the prism is correct?

A The speed of the red light is less than the speed of the violet light and the red light is the least refracted.

B The speed of the red light is greater than the speed of the violet light and the red light is the least refracted.

C The speed of the violet light is less than the speed of the red light and the violet light is the least refracted.

D The speed of the violet light is greater than the speed of the red light and the violet light is the least refracted.

16. Nov/2020/Paper_31/No.7

(a) Fig. 7.1 shows a ray of light incident on a plane mirror at point X.

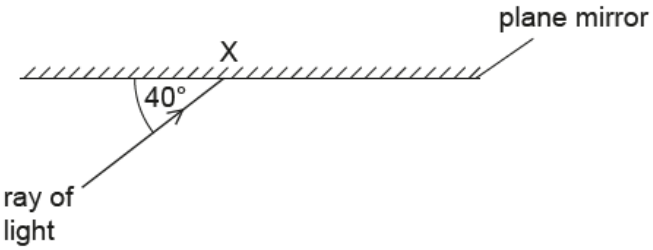


Fig. 7.1 (not to scale)

(i) Determine the value of the angle of reflection for the ray of light at point X.

..... [1]

(ii) On Fig. 7.1:

- draw the normal at point X and label the normal with the letter N
- draw the ray reflected from point X.

[2]

(b) Fig. 7.2 shows how a converging lens forms an image of an object.

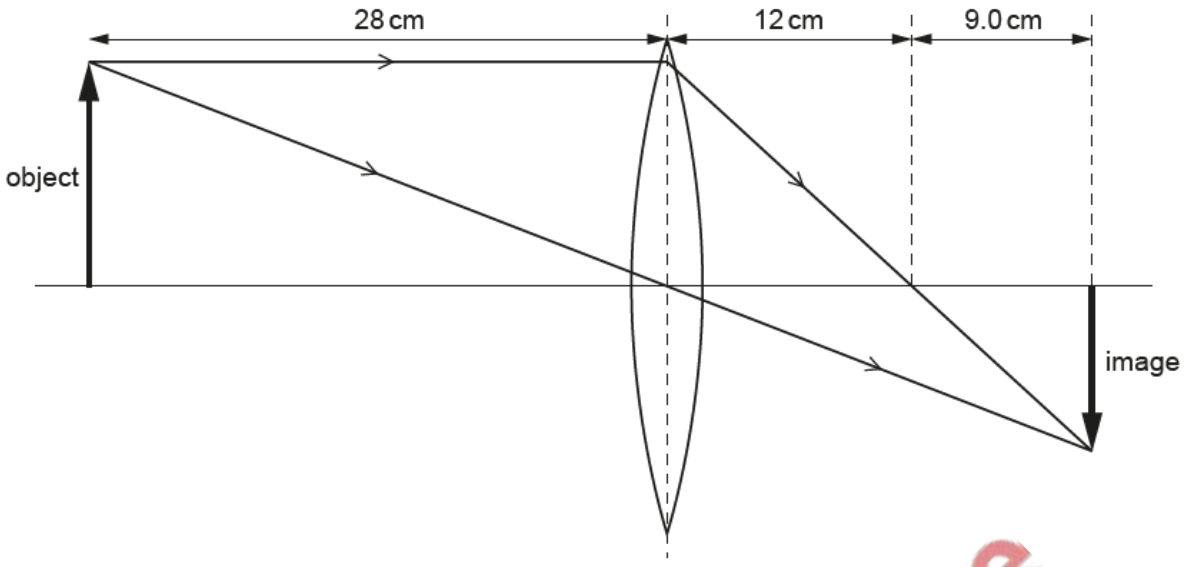


Fig. 7.2 (not to scale)

(i) Determine the focal length of the lens.

focal length = ... cm [1]

(ii) Determine the distance of the image from the lens.

distance = ... cm [1]

(iii) Describe the nature of the image formed by the lens in Fig. 7.2.

.....

.....

..... [2]

[Total: 7]

17. Nov/2020/Paper_32/No.8

Fig. 8.1 shows a converging lens and an object. The side of each square represents 0.5 cm.

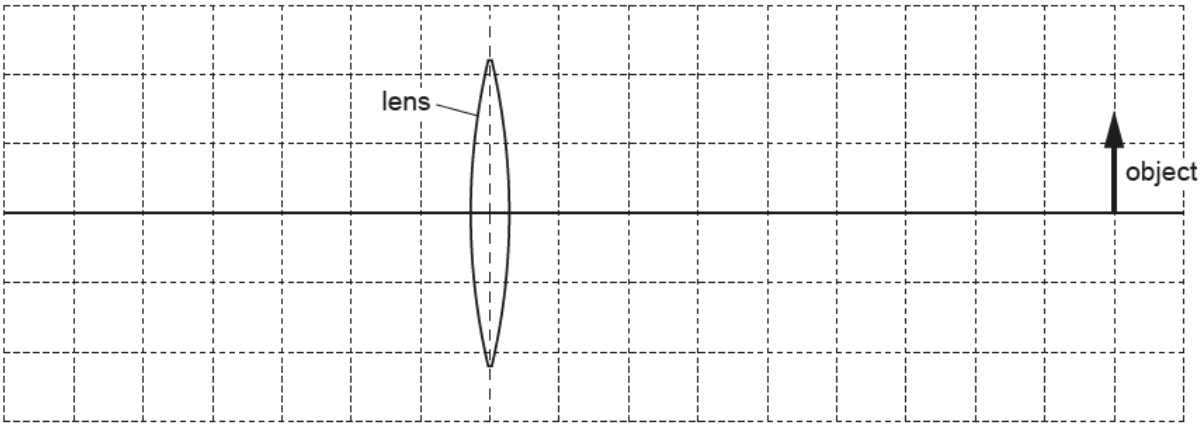


Fig. 8.1

(a) Using Fig. 8.1, determine the distance of the object from the centre of the lens.

distance = ... cm [2]

(b) Fig. 8.2 shows another lens forming the image IY of object OP.

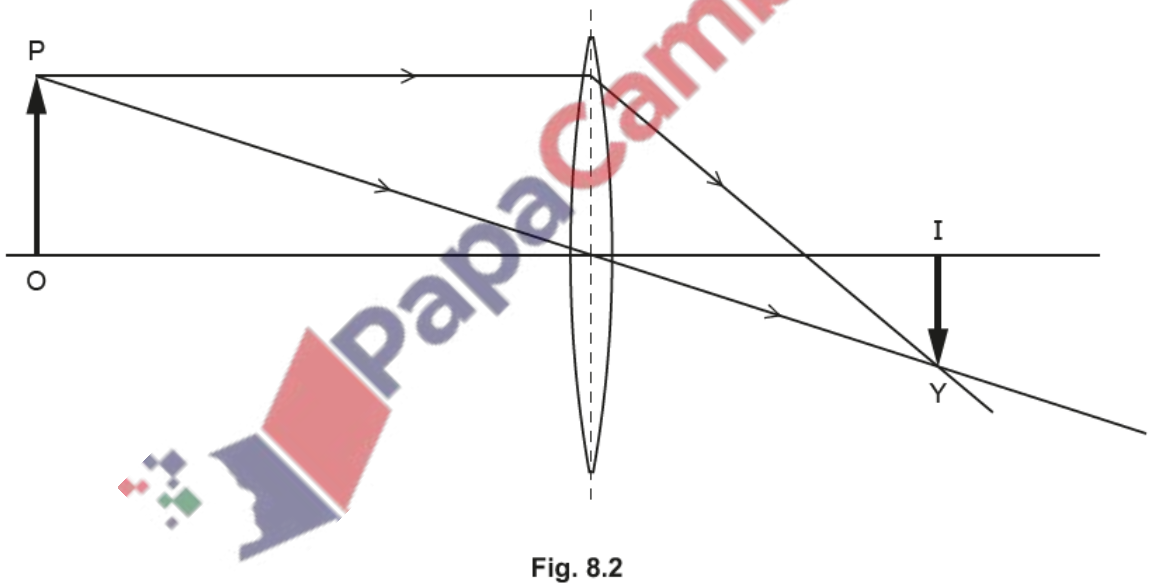


Fig. 8.2

(i) On Fig. 8.2, draw an arrow to represent the focal length of the lens. Label this arrow f. [2]

(ii) Circle **two** words or phrases from those shown to describe the image formed in Fig. 8.2.

enlarged **upright** **inverted** **same size** **diminished** [2]

[Total: 6]

18. Nov/2020/Paper_33/No.7

(a) Complete the following sentences about light.

Use words from the list.

atomic **blue** **three** **electromagnetic**

electronic **violet** **five** **red** **seven**

Light is part of a spectrum of radiation called the ..... spectrum.

A glass prism disperses white light into ..... colours.

The colour of light that is refracted least is ..... .

[3]

(b) Fig. 7.1 shows light reflected by a plane mirror.

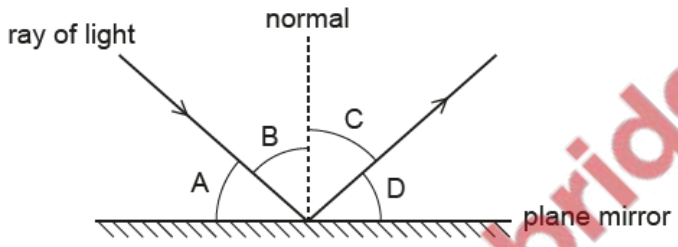


Fig. 7.1

(i) State which angle A, B, C or D is the angle of incidence. ..... [1]

(ii) State which angle A, B, C or D is the angle of reflection. ..... [1]

[Total: 5]

19. Nov/2020/Paper_41/No.9

(a) **(i)** Describe what is observed during *total internal reflection*.

.....

..... [1]

(ii) State **two** conditions required for light to be totally internally reflected.

1. .....

.....

2. .....

.....

[2]

(b) Describe and explain the action of optical fibres in communication technology. You may draw a diagram in your answer.

.....

.....

.....

..... [3]

[Total: 6]

20. Nov/2020/Paper_42/No.7

Fig. 7.1 shows a ray of light passing through an optical fibre.

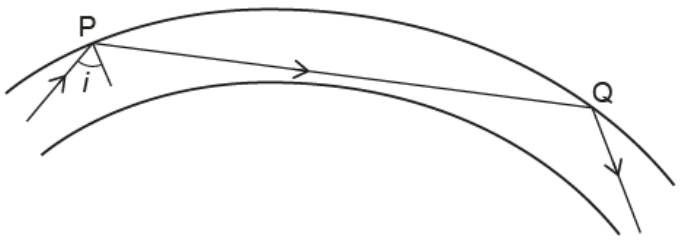


Fig. 7.1

The optical fibre is made of glass that has a refractive index of 1.4.

(a) **(i)** No light refracts from the fibre at points P and Q.

State the name of the process that occurs at P and Q.

..... [1]

(ii) Calculate the minimum value of angle *i* for there to be no refraction at point P.

angle = ... [2]

(b) State and explain the use of optical fibres in medicine.

.....

.....

.....

.....

.....

..... [3]

(c) The ray of light shown in Fig. 7.1 is monochromatic light from a laser.

State what is meant by monochromatic light. Use **one** of the following quantities in your answer.

amplitude **brightness** **frequency** **refractive index** **speed**

.....

..... [2]

[Total: 8]