

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Q1.

Diagram 1 shows a glass prism which can be used to turn an image the right way up.

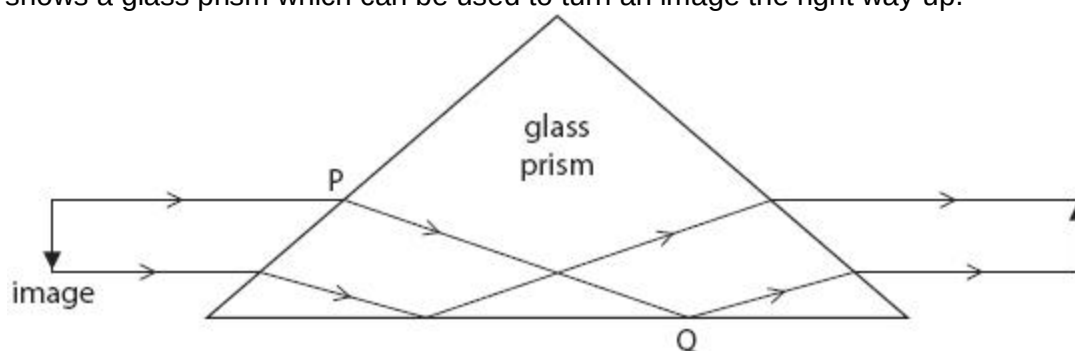


Diagram 1

- (i) In diagram 1, total internal reflection occurs at Q.
Explain why total internal reflection occurs at Q.

(2)

.....

.....

.....

.....

- (ii) The way in which the light changes direction at P is shown in diagram 2.

Mark on the diagram (i) for the angle of incidence and (r) for the angle of refraction for the ray of light shown.

(2)

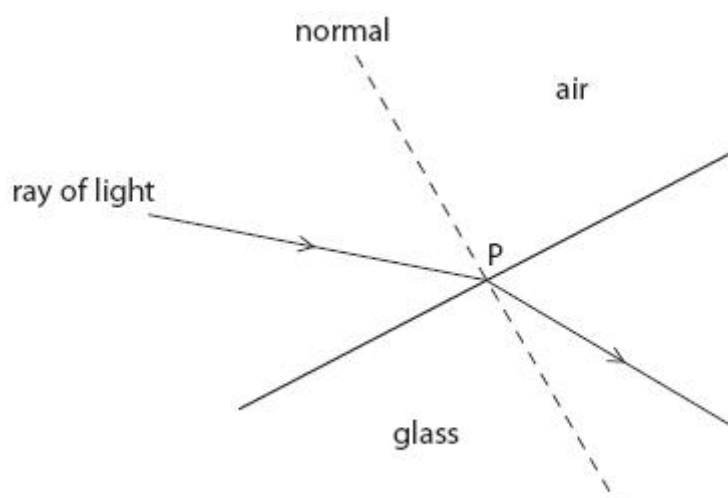


Diagram 2

- (iii) Which of these is correct for the light as it enters the prism at P?
Put a cross (☒) in the box next to your answer.

(1)

- ☐ **A** frequency decreases
- ☐ **B** frequency increases
- ☐ **C** speed decreases
- ☐ **D** speed increases

Q2.

There is a piece of music called "The Flight of the Bumble Bee."

This takes 4 minutes to play.

During this time, a bee flies 1608 m.

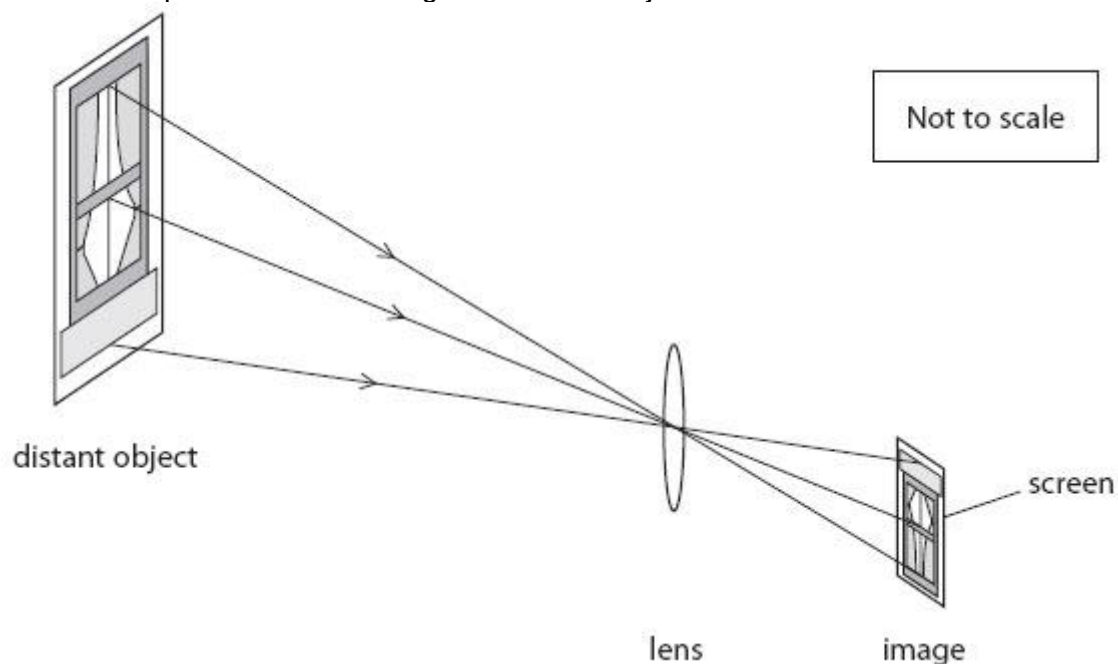
Calculate the average speed of the bee.

(3)

speed m/s

Q3.

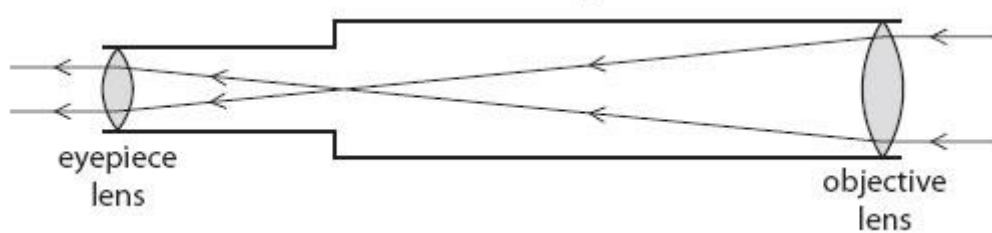
A lens can be used to produce a clear image of a distant object on a screen.



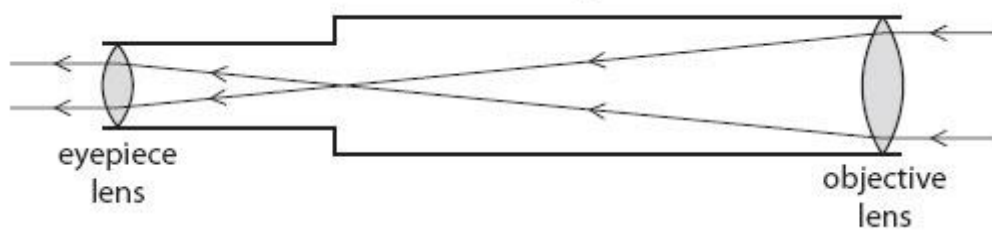
(a) (i) Complete the sentence by putting a cross (☐) in the box next to your answer.

The image produced is real because it is

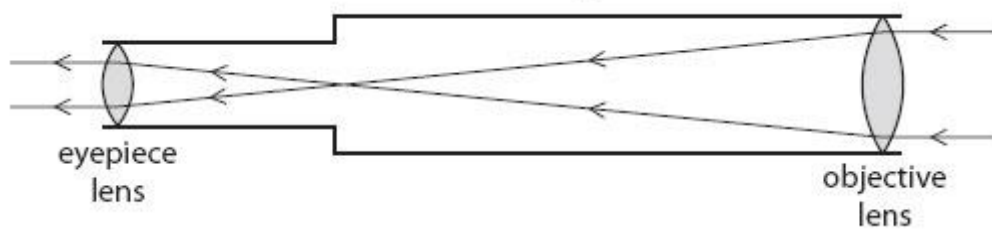
(1)



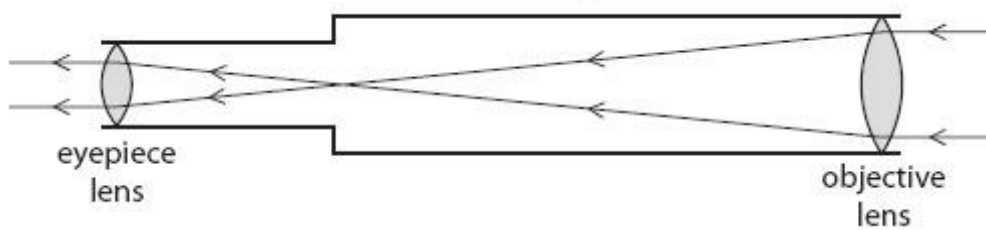
A in focus



B magnified



C on a screen



D smaller

(ii) Describe how to measure the focal length of the lens.

(2)

.....

.....

.....

(b) The diagram shows a simple telescope which uses two lenses to look at stars.

(i) Explain what the eyepiece lens does.

(2)

.....

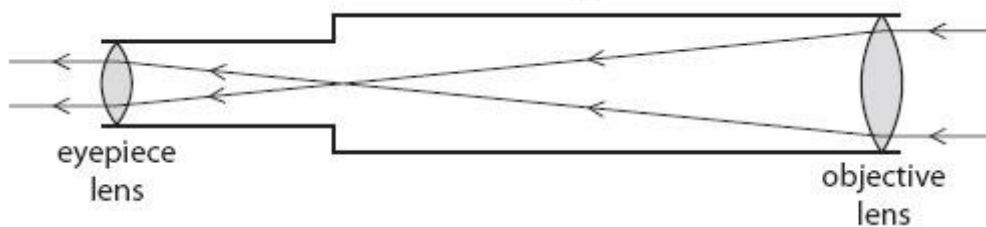
.....

.....

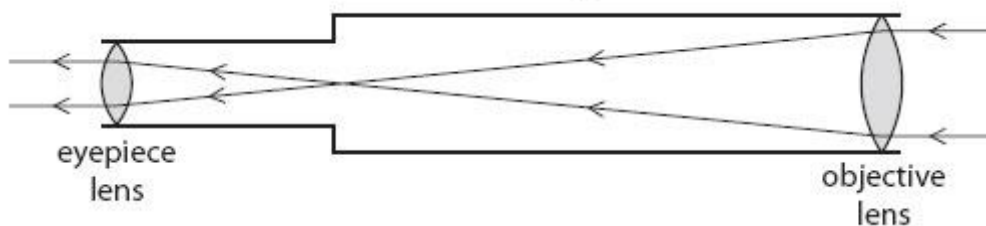
(ii) Complete the sentence by putting a cross (☐) in the box next to your answer.

The light that travels from the stars transfers

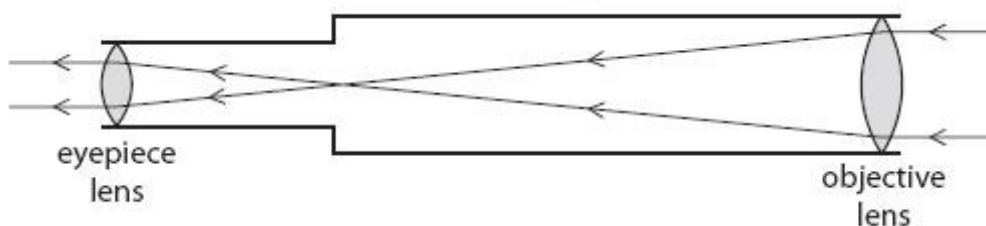
(1)



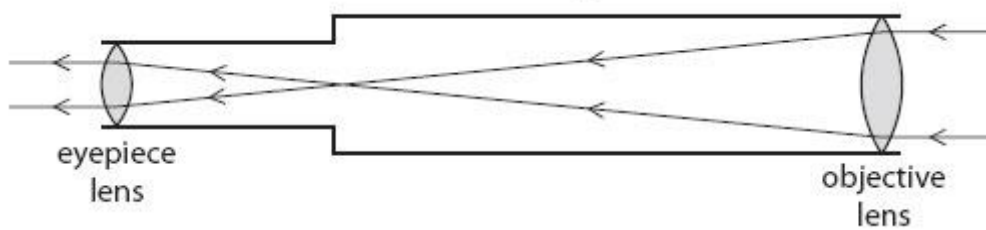
A charge



B energy



C mass



D matter

(c) Light and sound waves are produced at the same time by an explosion on Earth.

(i) The sound of the explosion is heard 1920 metres away 6.0 seconds after the explosion has happened.

Calculate the speed of sound in air.

(2)

.....

(ii) A scientist is standing a long way from the explosion.

Explain why he hears the explosion a few seconds after he sees it.

(2)

.....

(Total for Question = 10 marks)