

**Name of the Student:** \_\_\_\_\_

**Max. Marks : 24 Marks**

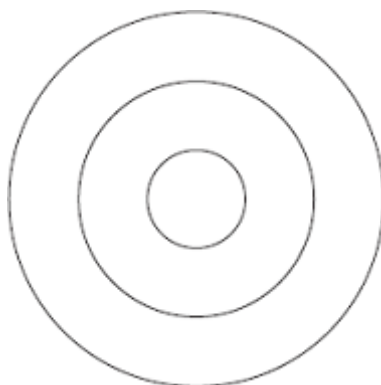
**Time : 24 Minutes**

**Q1.**

A teacher demonstrates the production of circular waves in a ripple tank.

**Diagram 1** shows the waves at an instant in time.

**Diagram 1**



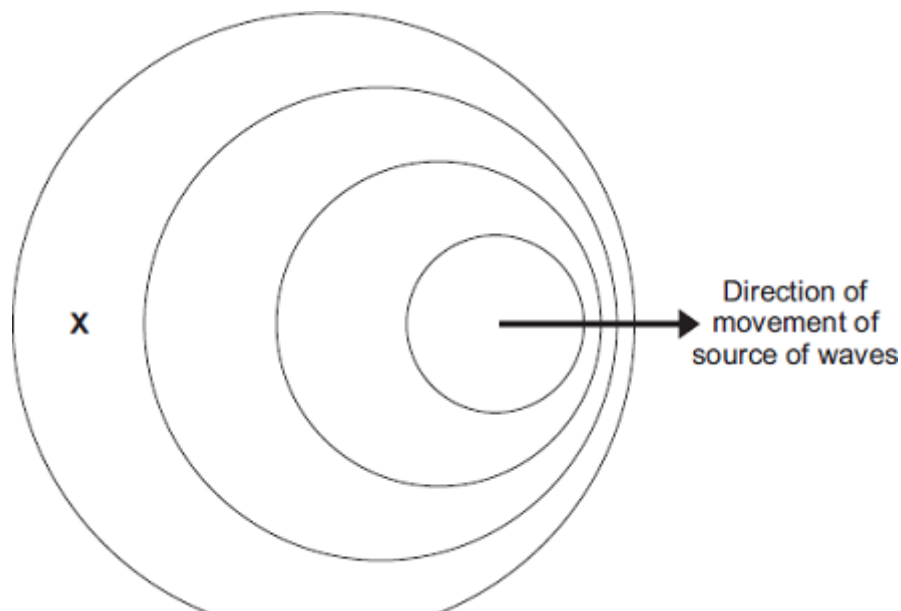
- (a) Show on **Diagram 1** the wavelength of the waves.

**(1)**

- (b) The teacher moves the source of the waves across the ripple tank.

**Diagram 2** shows the waves at an instant in time.

**Diagram 2**  
(Actual size)



- (i) Use the correct answer from the box to complete each sentence.

|           |           |                 |
|-----------|-----------|-----------------|
| decreased | increased | stayed the same |
|-----------|-----------|-----------------|

In **Diagram 2**, the observed wavelength of the waves at **X**  
has \_\_\_\_\_.

In **Diagram 2**, the frequency of the waves at **X**  
has \_\_\_\_\_.

(2)

- (ii) Take measurements from **Diagram 2** to determine the wavelength of the waves received at **X**.

Give the unit.

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Wavelength = \_\_\_\_\_

(3)

- (c) The teacher uses the waves in the ripple tank to model the changes in the wavelengths of light observed from distant galaxies.

When observed from the Earth, there is an increase in the wavelength of light from distant galaxies.

- (i) State the name of this effect.

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(1)

- (ii) What does this increase in wavelength tell us about the movement of most galaxies?

**(1)**

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**(4)**

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**(1)**

**(Total 13 marks)**

**Q2.**

Lenses can be used to correct visual defects.

**Figure 1** shows a child wearing glasses. Wearing glasses allows a lens to correct a visual defect.

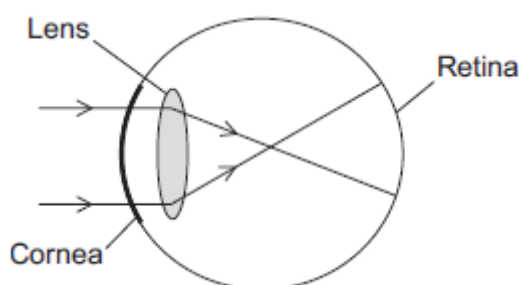
## Figure 1



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- (a) **Figure 2** shows rays of light entering a child's eye and being focused at a point. This point is not on the retina so the child sees a blurred image.

**Figure 2**



- (i) What is the visual defect of this eye?

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(1)

- (ii) Use the correct answer from the box to complete the sentence.

|            |        |           |
|------------|--------|-----------|
| converging | convex | diverging |
|------------|--------|-----------|

The type of lens used to correct this visual defect is a \_\_\_\_\_ lens.

(1)

- (b) Visual defects may be corrected with eye surgery. A laser may be used in eye surgery.

Use the correct answer from the box to complete the sentence.

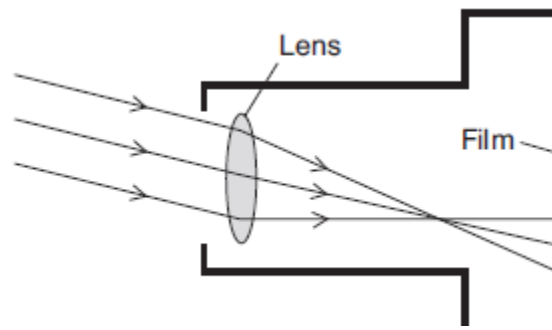
|       |       |        |
|-------|-------|--------|
| light | sound | X-rays |
|-------|-------|--------|

A laser is a concentrated source of \_\_\_\_\_ .

(1)

- (c) **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**





Describe the adjustment that has to be made to focus the image on the film.

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(2)

(Total 11 marks)