Practice Question Set For GCSE
**Subject : Physics**
**Paper-2 Topic: GCSE Triple Science_Waves (HDQ)**



**Name of the Student**:_____
**Max. Marks : 22 Marks** **Time : 22 Minutes**

## Q1.

(a) The wavelengths of four different types of electromagnetic wave, including visible light waves, are given in the table.

| Type of wave | Wavelength |
|---|---|
| **Visible light** | 0.0005 mm |
| **A** | 1.1 km |
| **B** | 100 mm |
| **C** | 0.18 mm |

Which of the waves, **A**, **B**, or **C**, is an infra red wave?

_____

**(1)**

(b) A TV station broadcasts at 500 000 kHz. The waves travel through the air at 300 000 000 m/s.

Calculate the wavelength of the waves broadcast by this station.

Show clearly how you work out your answer.

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_____

Wavelength = _____ m

**(2)**

(c) What happens when a metal aerial absorbs radio waves?

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_____

**(2)**

(d) Stars emit all types of electromagnetic waves. Telescopes that monitor X-rays are mounted on satellites in space.

Why would an X-ray telescope based on Earth **not** be able to detect X-rays emitted from distant stars?

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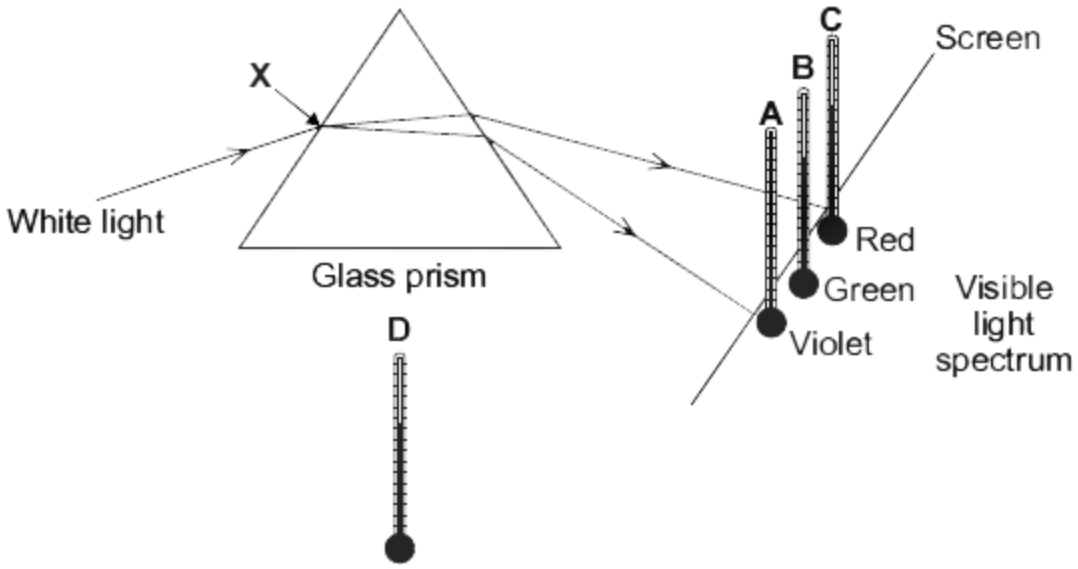
**(1)**

**(Total 6 marks)**

## Q2.

The diagram shows the apparatus that a student used to investigate the heating effect of different wavelengths of light.




(a) (i) The student put thermometer **D** outside of the light spectrum.

Suggest why.

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**(1)**

(ii) The table gives the position and reading of each thermometer 10 minutes after the investigation started.

| Thermometer | Position of thermometer | Temperature in °C |
|---|---|---|
| **A** | in violet light | 21 |
| **B** | in green light | 22 |
| **C** | in red light | 24 |
| **D** | outside the spectrum | 20 |

What should the student conclude from the data in the table?

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**(2)**

(b) A similar investigation completed in 1800 by the scientist Sir William Herschel led to the discovery of infrared radiation.

Suggest how the student could show that the spectrum produced by the glass prism has an infrared region.

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**(2)**

(c) A person emits infrared radiation at a frequency of $3.2 \times 10^{13}$ Hz.

Calculate the wavelength of the infrared radiation that a person emits.

Take the speed of infrared radiation to be $3.0 \times 10^{8}$ m/s.

Show clearly how you work out your answer.

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Wavelength = _____ m

**(2)**

(d) A thermal imaging camera detects infrared radiation. Electronic circuits inside the camera produce a visible image of the object emitting the infrared radiation.

At night, police officers use thermal imaging cameras to track criminals running away from crime scenes.

Thermal imaging cameras work better at night than during the day.

Explain why.

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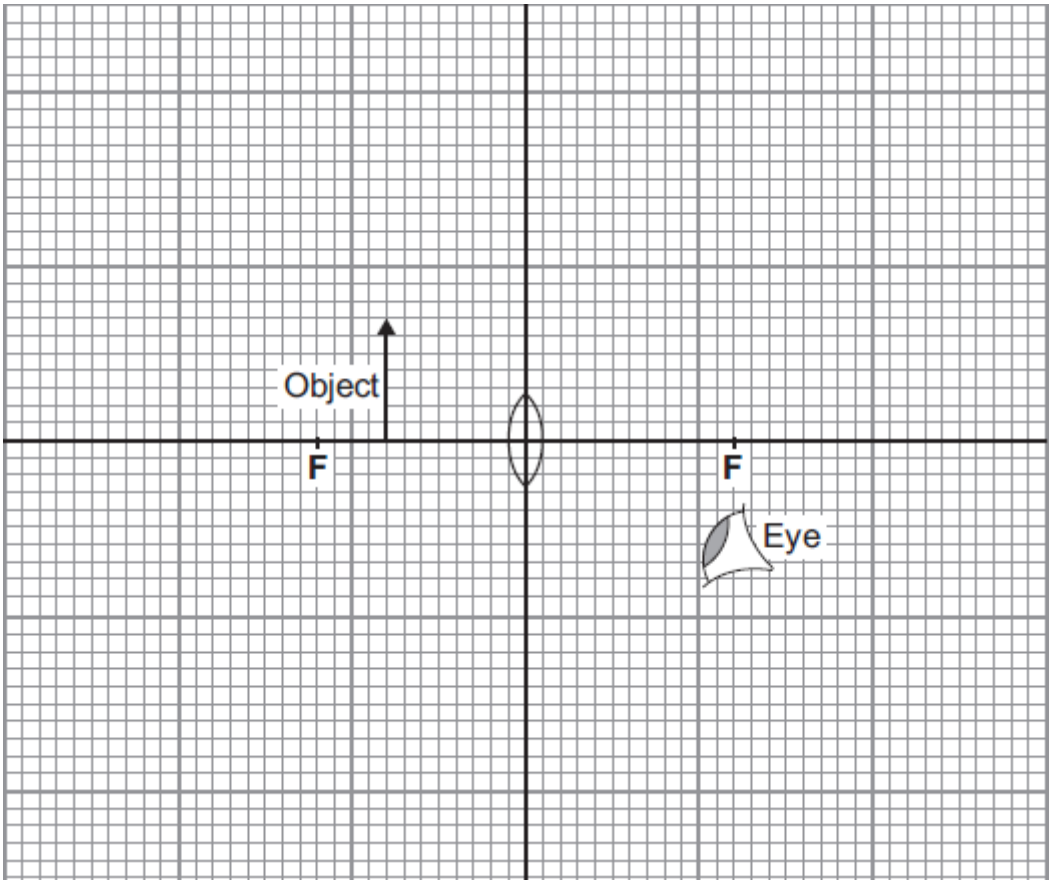
**(2)**

**(Total 9 marks)**

**Q3.**

(a) The diagram shows a converging lens being used as a magnifying glass.

(i) On the diagram, use a ruler to draw two rays from the top of the object which show how and where the image is formed. Represent the image by an arrow drawn at the correct position.




**(3)**

(ii) Use the equation in the box to calculate the magnification produced by the lens.

$$\text{magnification} = \frac{\text{image height}}{\text{object height}}$$

Show clearly how you work out your answer.

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_____

Magnification = _____

**(2)**

(b) A camera also uses a converging lens to form an image.

Describe how the image formed by the lens in a camera is different from the image formed by a lens used as a magnifying glass.

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**(2)**
**(Total 7 marks)**