**Q1.**

**Figure 1** is a wave front diagram showing light travelling through the air and into a glass block.

**Figure 1**

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(a)     Complete **Figure 1** by drawing wave fronts after they have left the glass block.

**(1)**

(b)     **Figure 2** shows a ray of light incident on a semi-circular glass block.

**Figure 2**

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Complete the ray diagram in **Figure 2**.

•        Draw the ray of light passing through and leaving the glass block.

•        Label the angle of refraction.

**(4)**

(c)     Explain why the light is refracted.

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(d)     A student investigated how different coloured light was refracted by glass.

The student aimed rays of different coloured light at a glass block.

She measured the angle of refraction for each colour.

Give **two** variables that the student should control.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**(2)**

The table shows the student's results.

|  |  |
| --- | --- |
| **Colour of light** | **Angle of refraction in degrees** |
| Red | 27.94 |
| Orange | 27.90 |
| Yellow | 27.82 |
| Green | 27.78 |
| Blue | 27.70 |

(e)     Explain why these results could **not** have been obtained with a normal protractor.

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**(2)**

(f)      What conclusion can be made about the relationship between the wavelength of light and the angle of refraction?

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**(1)**

(g)     Glass does **not** transmit ultraviolet radiation.

Suggest what happens to ultraviolet radiation when it is incident on glass.

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**(1)**

**(Total 13 marks)**