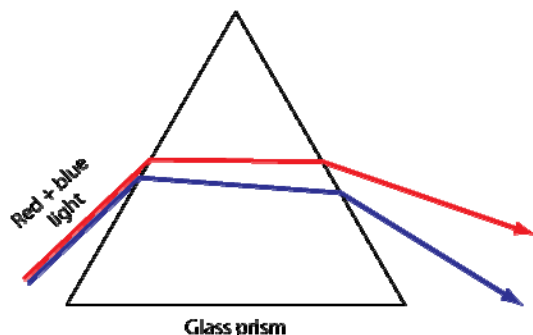


Mark scheme for Extension Worksheet – Option G, Worksheet 1

- 1 See diagram.



[2]

- 2 Short wavelengths scatter the most, i.e. blue/violet.

[1]

- 3 The colour of the sky is determined by the colour that scatters the most; and that is blue.

[2]

- 4 As we look at the setting Sun we observe light that is travelling through large distances in the atmosphere; and so along this long path most of the blue light has been scattered away leaving red as the dominant colour reaching us.

[2]

- 5 The laser light is coherent; and monochromatic.

[2]

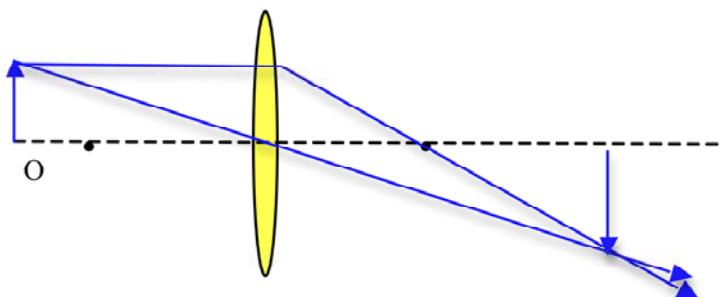
- 6 Coherence means that two sources have a constant phase difference between them.

[1]

- 7 Population inversion means that the number of electrons in an excited level is greater than that in the ground state.

[1]

- 8 a See diagram.

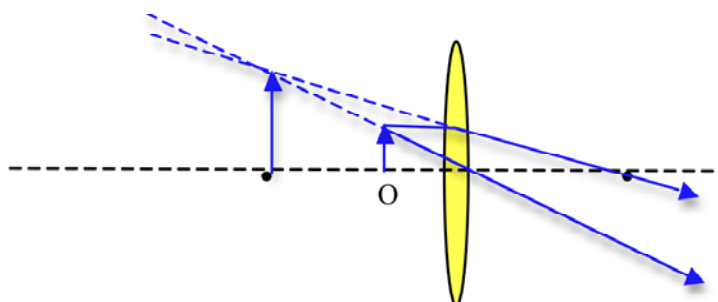


[3]

- b It is real; as the image is formed by actual rays.

[2]

9 a See diagram.

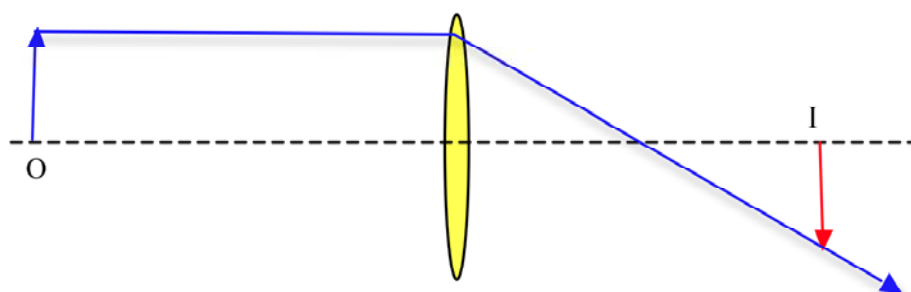


[3]

b It is virtual; as it is formed by extensions of rays.

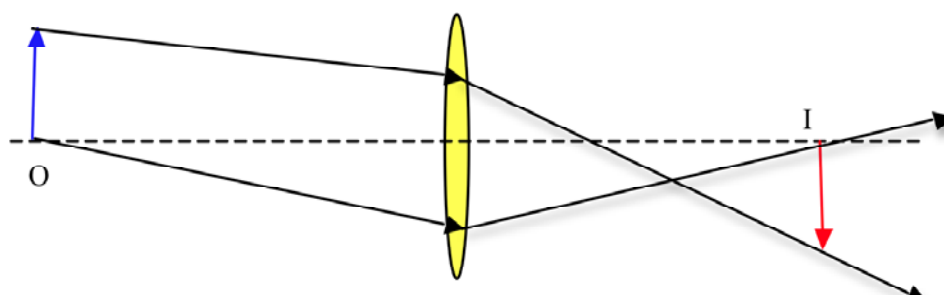
[2]

10 See diagram. The focal point is where the particular ray drawn intersects the principal axis; the other focal point is at the same distance on the other side of the lens;



[2]

11 See diagram. [1] for each ray.



[2]