03. An object O and a screen S are placed 800 mm apart. A
    converging lens is moved between them until a clear image of
    the object is obtained on the screen. The position of the lens is then changed until another clear image is obtained
    on the screen. These two positions L and M of the lens are 400 mm apart.
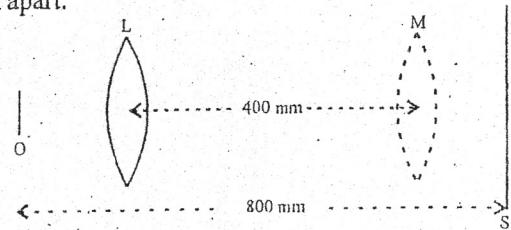
    (a) Suggest a suitable object for this experiment. *(one line)*
    (b) State with reasous which of the positions of the lens gives
        a larger image? *(2 lines)*
    (c) Which of the lens positions gives a brighter image ?
        (one line)
    (d) Calculate the focal length (f_0) of the converging lens.
        (10 lines)

    (e) What is the minimum distance between the object and the screen for this experiment to be possible ?*(one line)*
    (f) You are provided with a diverging lens of focal length (f_d) larger in magnitude than that of the convex lens.
        (i) Draw in the space given below a complete diagram of the arrangement that you would use in order to find
            its focal length using the above method. (You may change the distance between O and S to a new
            value.) (3cm given)
        (ii) What measurements do you take to determine f_d ? *(2 lines)*
        (iii) Write the additional equation that you need to calcutate the focal length of the diverging lens. (Identify all
            the additional symbols that you have used in the equation) *(2 lines)*
    (g) This method cannot be used with diverging lenses having focal lengths less than that of the convex lens.
        Explain this. *(2 lines)*

    P   R