

3. (a) There are three images. Two are formed by single reflections from each of the mirrors and the third is formed by successive reflections from both mirrors.
- (b) The positions of the images are shown on the two diagrams below. The diagram on the left below shows the image  $I_1$ , formed by reflections from the left-hand mirror. It is the same distance behind the mirror as the object  $O$  is in front, and lies on the line perpendicular to the mirror and through the object. Image  $I_2$  is formed by light that is reflected from both mirrors. We may consider  $I_2$  to be the image of  $I_1$  formed by the right-hand mirror, extended.  $I_2$  is the same distance behind the line of the right-hand mirror as  $I_1$  is in front and it is on the line that is perpendicular to the line of the mirror. The diagram on the right, below, shows image  $I_3$ , formed by reflections from the right-hand mirror. It is the same distance behind the mirror as the object is in front, and lies on the line perpendicular to the mirror and through the object. As the diagram shows, light that is first reflected from the right-hand mirror and then from the left-hand mirror forms an image at  $I_2$ .

