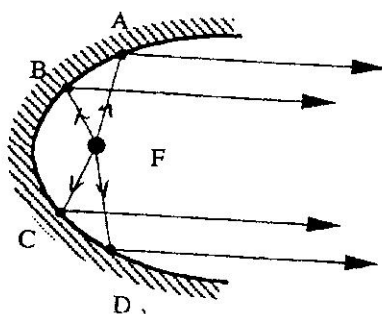
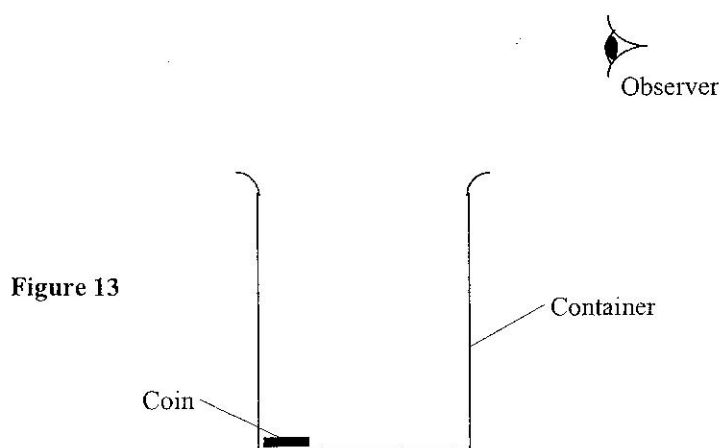


Expected Response



Question 24

Figure 13 shows a coin placed in a large empty container. An observer looking into the container from the position shown is unable to see the coin.



Sketch two rays from a point on the coin to show how the observer is able to see the image of the coin after the container is filled with water. (2 marks)

Candidates were expected to draw ray diagrams showing the apparent depth of a coin placed at the bottom of the beaker as a result of refraction. Rays coming from a point on the object get refracted at the water/air boundary towards the eye. The apparent position of the coin is obtained by producing these rays backward.

Weakness

- The concept of refraction was not understood in this situation despite the fact that this is a common experience.
- Candidates failed to distinguish real rays and virtual rays when drawing (the latter should be represented by broken lines whilst the former should be in continuous lines).
- Some candidates tried to locate the image using single ray instead of two rays.