

SPA MTD

1. Diagram 5 shows a diamond ring.



Diagram 5



Explain why the diamond ring in air sparkles more than under water.

[4 marks]

2. Explain why a person in a dark room looking through a window can clearly see a person outside in the daylight, whereas the person outside cannot see the person inside. [4 marks]



3. A 7.6 cm diameter ball is located 22.0 cm from a convex mirror with a radius of curvature of 60.0 cm. Draw a ray diagram to determine

- (a) The ball's image position  
(b) The ball's image diameter?



4. Ultrasound is the name given to sound waves that have frequencies greater than 20000Hz. It's too high pitched for human hearing, but many animals, such as dogs, cats and bats can hear ultrasound. Diagram 1 shows a photograph of a fetus at 4 months seen via ultrasound. Explain how ultrasound is applied in medicine to produce the medical images of foetus.



Diagram 1

