Oxford Cambridge and RSA

GCSE Biology B (Twenty First Century Science)

J257/03 Breadth in Biology (Higher)

Question Set 28

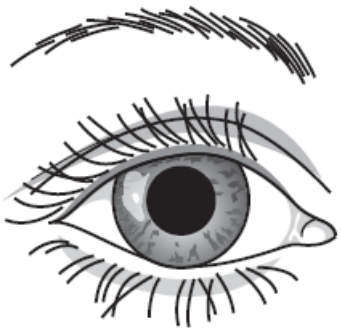
1 Iritis is a condition where the iris of the eye inflames. It usually affects only one eye.

The iris can no longer contract to change the size of the pupil.

(a) Describe an experiment a doctor could perform to determine if a patient has iritis. **[3]**

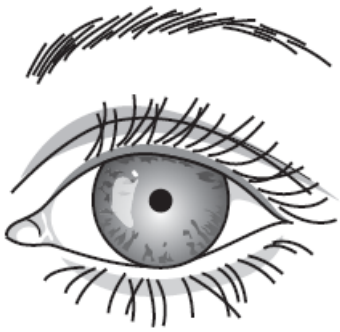
In the bright room, turn off the light to make the room dark. If the pupil size increases, the eye does not suffer from iritis. If the pupil fails to enlarge, the eye is suffering iritis.

(b) **Fig. 9.1** and **Fig. 9.2** show the pupil size of an eye without iritis and an eye with iritis.



Eye **without** iritis

Fig. 9.1



Eye **with** iritis

Fig. 9.2

Calculate the percentage decrease in pupil diameter of the two pupils.

0.9cm ⟶ 0.3cm

$\frac{0.9-0.3}{0.9} \times 100 = \frac{0.6}{0.9} \times 100 = 66.6\%$

Percentage decrease = 66.7 % **[3]**

(c) The optic nerve sends electrical impulses from the retina of the eye to the neurons in the brain.

Explain how nerve cells are adapted to transmit electrical impulses. **[3]**

The axons are insulated by a fatty myelin sheath to increase the speed of impulse. At one end of the neuron, it has many dendrites allowing it to receive impulses from many neurones. At the other end, there are many axon terminals so many synapses can be formed.

Total Marks for Question Set 28: 9