1 Figure 8 shows a diagram of the human eye.

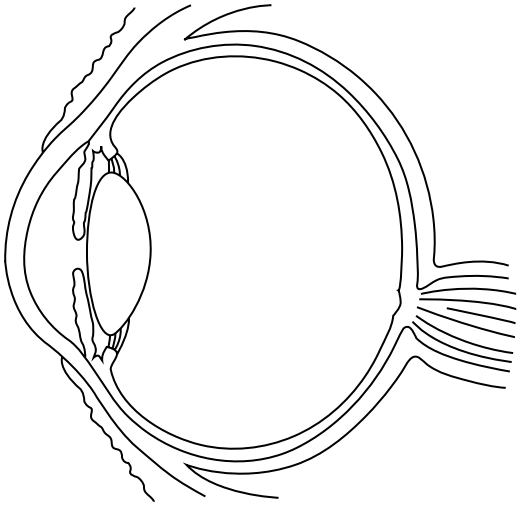


Figure 8

(a) (i) Which structure of the eye contains the light receptor cells?

(1)

- ☒ **A** iris
- ☒ **B** lens
- ☒ **C** cornea
- ☒ **D** retina

(ii) The optic nerve transfers electrical signals from the eye to the central nervous system.

(1)

The optic nerve is a

- ☒ **A** relay neurone
- ☒ **B** motor neurone
- ☒ **C** sensory neurone
- ☒ **D** reflex neurone

(iii) Name the region of the central nervous system responsible for vision.

(1)

.....

.....

(b) Macular degeneration is a defect of the eye that occurs when some cells of the retina begin to break down.

Embryonic stem cell therapy has been used to improve the vision of some patients with macular degeneration.

Explain how embryonic stem cells could be used to treat macular degeneration.

(2)

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(c) Some research has shown that increased use of computers and other digital media can affect eyesight and reaction times.

A scientist wanted to test if prolonged use of a computer affected reaction time.

The scientist tested the reaction times of 10 people under the same environmental conditions.

These people then used a computer for three hours.

The scientist tested their reaction time again.

Give **three** ways that the scientist could improve this method to determine if prolonged use of a computer affects reaction time.

(3)

1 .....

.....

2 .....

.....

3 .....

.....

(d) Figure 9 shows the reaction times of five people.

person	1	2	3	4	5
reaction time/seconds	0.258	0.685	0.236	0.246	0.268

Figure 9

(i) Calculate the mean reaction time in milliseconds.

(2)

..... ms

(ii) Give the name of the mathematical term which is used to describe the reaction time value of person 1.

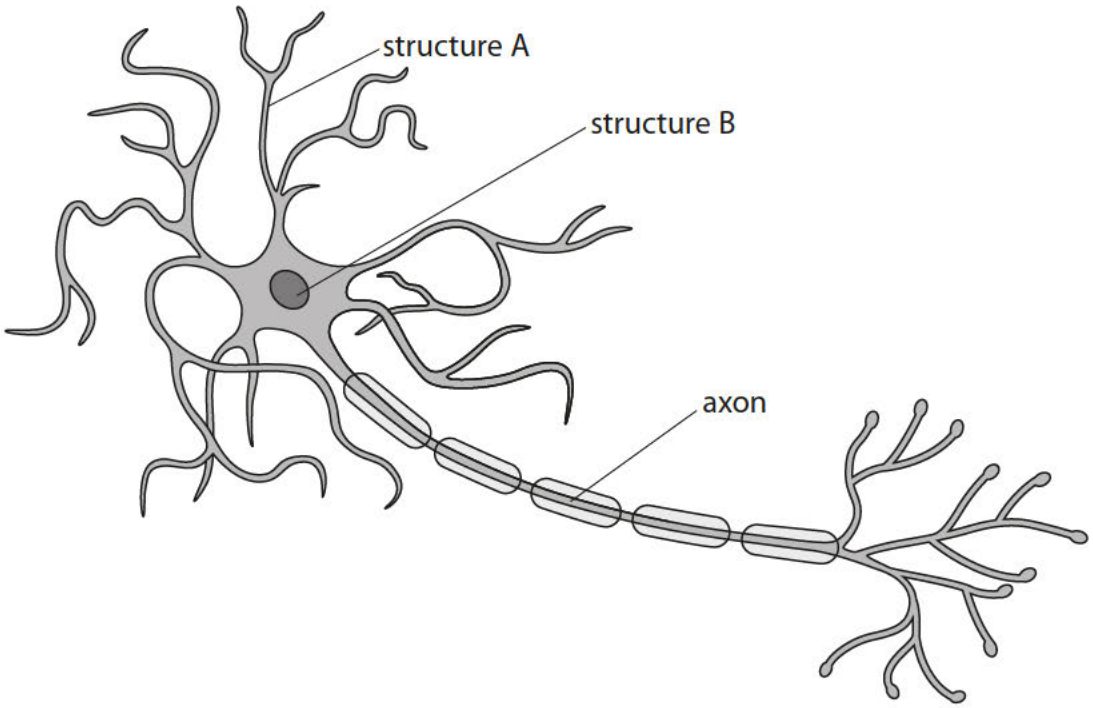
(1)

.....

.....

(Total for Question 1 = 11 marks)

2 Neurones form part of the nervous system.



(a) (i) Name structures A and B.

(2)

structure A .....

structure B .....

(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

The axon carries information along the neurone as

(1)

☒ **A** chemical messages

☒ **B** electrical impulses

☒ **C** neurotransmitters

☒ **D** hormonal responses

(iii) Describe the role of the myelin sheath surrounding the axon.

(2)

.....

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.....

.....

.....

(iv) There is a gap between neurones.

State the name for this gap between neurones.

(1)

.....

(b) Humans have reflexes.

Describe the route of an impulse through a reflex arc.

(4)

(Total for Question 2 = 10 marks)