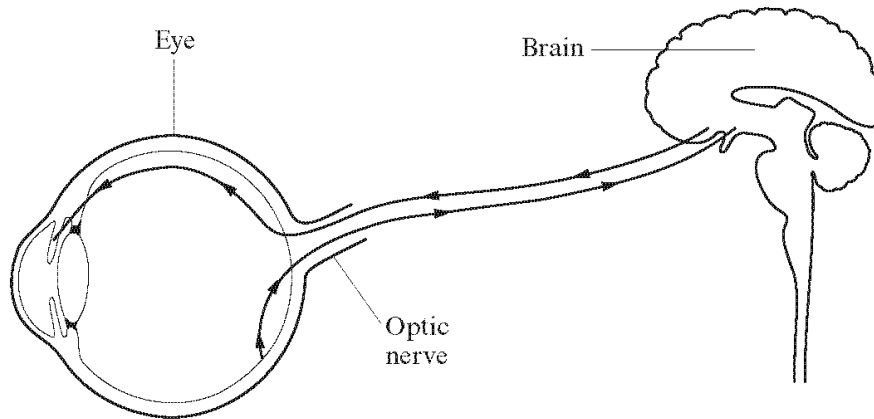


1.

The diagram shows the pathway taken by nerve impulses which help to bring about changes in the diameter of the pupil.



Direction of impulse

(a) On the diagram above, use an arrow to label the motor neurone. [1]

(b) Name [3]

(i) the stimulus which causes a change in the diameter of the pupil,

.....

(ii) the receptor which receives the stimulus,

.....

(iii) the effector which causes the decrease in the diameter of the pupil.

.....

(c) Describe how the decrease in diameter of the pupil demonstrates the three most important features of a reflex action. [3]

.....  
.....  
.....  
.....

7

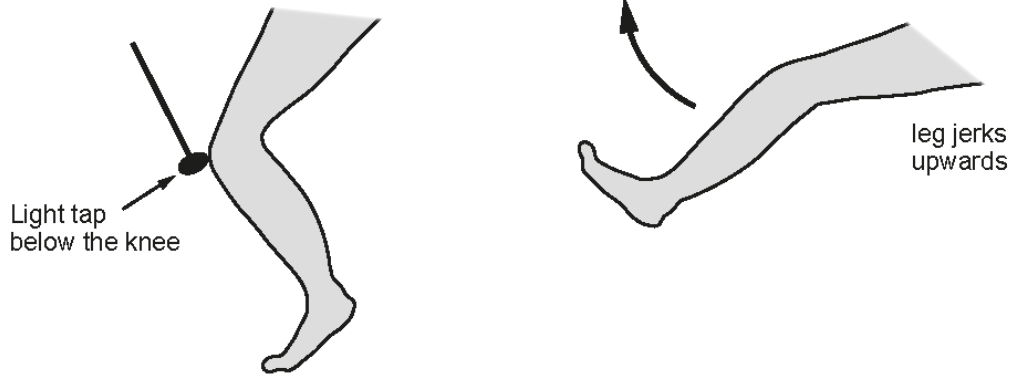
2.

(a) Complete the sentence about the human nervous system. [2]

The central nervous system consists of the ..... and

.....

(b) The diagram below shows the knee jerk response, which is a reflex action.



(i) Apart from being very fast, state **one other** feature of **all** reflex actions. [1]

.....

(ii) Give **one other** reflex action which occurs in the human body and state its purpose. [2]

.....  
.....  
.....

5



4.

(a) In the list below, which two letters represent pathways taken by nerve impulses in reflex actions? [2]

- A motor neurone → brain → sensory neurone
- B sensory neurone → spinal cord → motor neurone
- C sensory neurone → spinal cord → receptor
- D retina → brain → eyelid

Letters ..... and .....

(b) Name an example of each of the two reflex actions given as your answer to (a). [2]

(i) Letter .....

Example .....

(ii) Letter .....

Example .....

4

# Marking Scheme

1.	Question	Marking details	Marks Available
6	(a)	Correct position of label;	1
	(b)	(i) Light;	1
		(ii) Retina;	1
		(iii) Iris (muscle); NOT ciliary muscle	1
	(c)	Speed/ fast / rapid/ quick/ owtte; Protection/ owtte; Automatic/ owtte;	3
		<b>Question 6 total</b>	<b>[7]</b>

2.	Question	Marking details	Marks Available										
3	(a)	<b>Either order</b>  Brain;  Spinal cord; NOT spine	2										
	(b)	(i) Automatic/ involuntary/ without thought;  <i>NOT choose to do it/ protective</i>	1										
	(ii)	<table border="1"> <thead> <tr> <th>Name</th> <th>Purpose</th> </tr> </thead> <tbody> <tr> <td>Blink;</td> <td>protection of eye;</td> </tr> <tr> <td>Pupil diameter change;</td> <td>Regulating/admitting (appropriate level) of light to the eye;</td> </tr> <tr> <td>Withdrawal/ pulling away (in context);</td> <td>prevents damage/ harm to body part;</td> </tr> <tr> <td>Sneezing;</td> <td>Expel/ remove substances from nose</td> </tr> </tbody> </table>	Name	Purpose	Blink;	protection of eye;	Pupil diameter change;	Regulating/admitting (appropriate level) of light to the eye;	Withdrawal/ pulling away (in context);	prevents damage/ harm to body part;	Sneezing;	Expel/ remove substances from nose	2
Name	Purpose												
Blink;	protection of eye;												
Pupil diameter change;	Regulating/admitting (appropriate level) of light to the eye;												
Withdrawal/ pulling away (in context);	prevents damage/ harm to body part;												
Sneezing;	Expel/ remove substances from nose												
		NOT cough/ choke											
		<b>Question 3 Total</b>	<b>[5]</b>										

3.

Question Number			Mark	Answer
FT	HT			
	10	6	QWC	<p>Indicative content</p> <ul style="list-style-type: none"> <li>• rapid involuntary protective response (to a stimulus)</li> <li>• light is the stimulus</li> <li>• retina is the receptor</li> <li>• sensory neurone sends the impulse to the relay neurone (Spinal cord = neutral)</li> <li>• via a synapse</li> <li>• impulse passes along the motor neurone</li> <li>• to the <u>muscle of the eyelid</u> which is the effector</li> </ul> <p><b>5-6 marks</b> The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p><b>3-4 marks</b> The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p><b>1-2 marks</b> The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p><b>0 marks</b> The candidate does not make any attempt or give a relevant answer worthy of credit.</p>
Total Mark		6		

4.	Question	Marking details	Marks Available
6	(a)	(i) B; D;	2
	(b)	(i) B knee jerk/ withdrawal/OWTTE;	1
		(ii) D blinking/opening and closing the eyelid quickly;	1
		<b>Question 6 total</b>	<b>[4]</b>