1. Which of the following parts of the brain is important in transferring information between the two cerebral hemispheres?

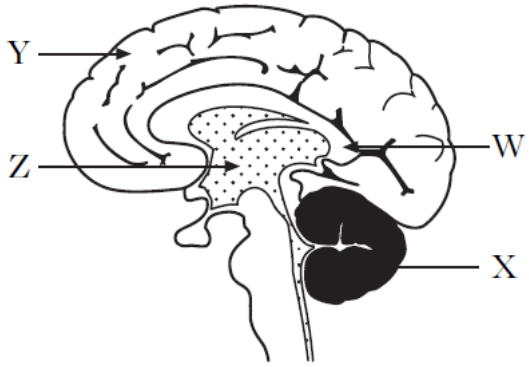
A Hypothalamus

B Corpus callosum

C Cerebellum

D Medulla oblongata

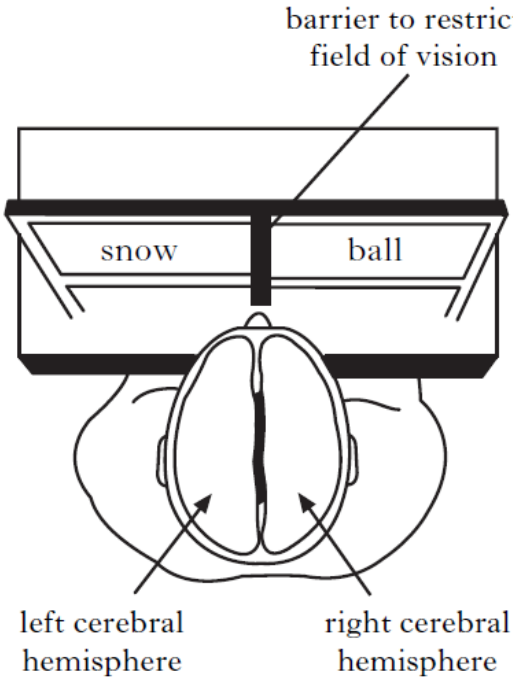
2. The diagram below shows the main parts of the brain as seen in vertical section.



Which line in the table below correctly identifies the functions of two areas of the brain?

	Communication between hemispheres	*Reasoning*
A	W	X
B	X	Y
C	W	Y
D	Z	W

3. The diagram below shows a test on a man who had a damaged corpus callosum. This meant that he could no longer transfer information between his right and left cerebral hemispheres.



Left cerebral hemisphere	*Right cerebral hemisphere*
processes information from right eye	processes information from left eye
controls language production	controls spatial task co-ordination

The man was asked to look straight ahead and then the words "snow" and "ball" were flashed briefly on the screen as shown.

What would the man say that he had just seen?

A Ball

B Snow

C Snowball

D Nothing

4. Which of the following statements is correct?

A The somatic nervous system controls mainly involuntary actions using sensory nerves.

B The somatic nervous system controls mainly voluntary actions using sympathetic nerves.

C The autonomic nervous system controls some involuntary actions using parasympathetic nerves.

D The autonomic nervous system controls some voluntary actions using motor nerves.

5. The somatic nervous system controls the

A skeletal muscles

B heart and blood vessels

C endocrine glands

D muscular wall of the gut.

6. The table below shows the changes in brain volume that have occurred during human evolution.

Time (million years ago)	*Brain volume* (cm^3)
3	500
2	600
1	800
0	1400

By how much has brain volume increased during the last three million years?

A 36%

B 64%

C 180%

D 280%

7. The somatic nervous system controls the

A skeletal muscles

B heart and blood vessels

C pituitary gland

D muscular wall of the gut.

8. The peripheral nervous system contains the

A brain and spinal cord

B brain and somatic system

C spinal cord and autonomic system

D somatic system and autonomic system.

9. The function of the corpus callosum is to

A transfer information from a sensory nerve to a motor nerve

B control balance and coordination

C transfer information from one hemisphere to the other

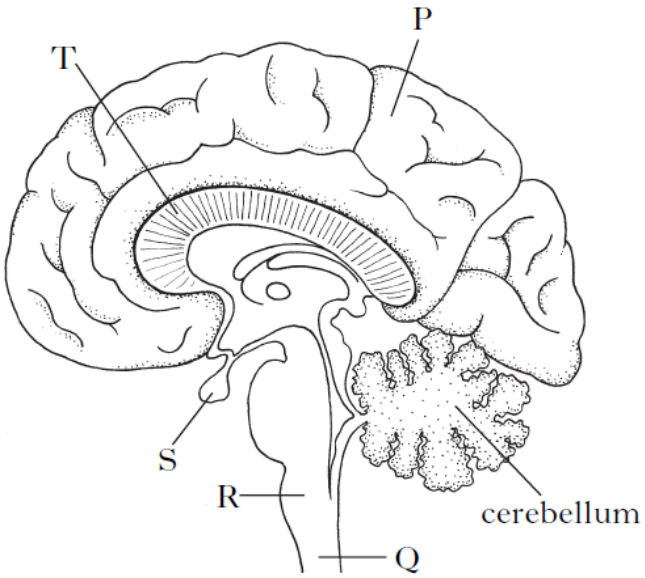
D control all sensory activities.

10. In which of the following is part of the autonomic nervous system correctly linked to the response it causes?

	Part of the autonomic nervous system	*Response*
A	sympathetic	acceleration of heart beat
B	sympathetic	vasodilation of skin arterioles
C	parasympathetic	secretion of sweat
D	parasympathetic	vasodilation of coronary blood vessels

11.

The diagram shows a section through part of the central nervous system.



(*a*) The table contains information about three parts of the central nervous system. Complete the table to identify the parts and their functions.

Label	*Name*	*Function*
		Controls voluntary actions
T		Links left and right side of brain
	Spinal cord	

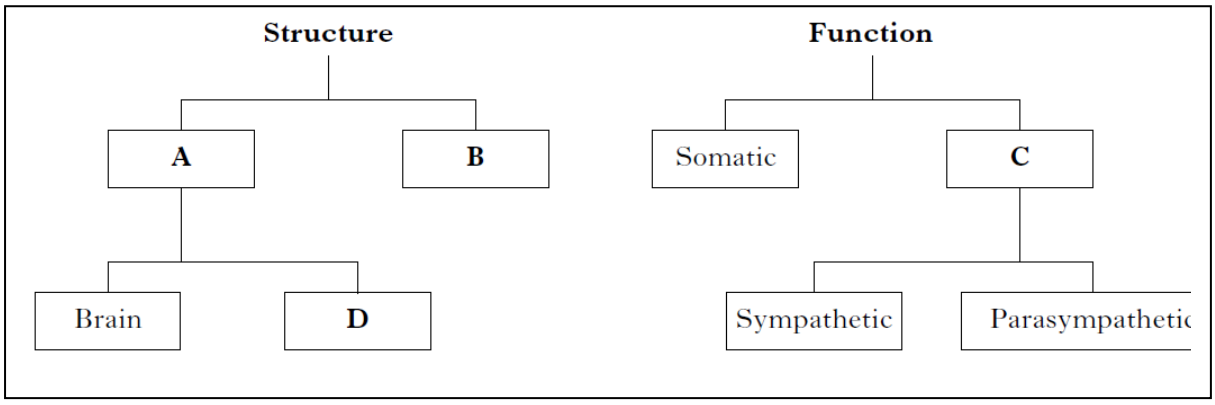
3

(*b*) Complete the following sentences by underlining one option from each pair of options shown in **bold**.

The parasympathetic nervous system is part of the **autonomic** / **somatic** nervous system which originates in the **medulla** / **cerebellum**.

Parasympathetic nerves **speed up** / **slow down** heart rate. **1**

12.



The diagrams below show two possible ways of classifying the nervous system.

(*a*) (i) Identify A to D.

A _____

B _____

C _____

D _____ **2**

(ii) Describe **one** function of the somatic nervous system.

_____

_____

_____ **1**

(*b*) The brain contains two cerebral hemispheres.

(i) Name the structure which links these two hemispheres.

_____ **1**

(ii) The surfaces of the hemispheres are heavily folded to provide a large surface area.

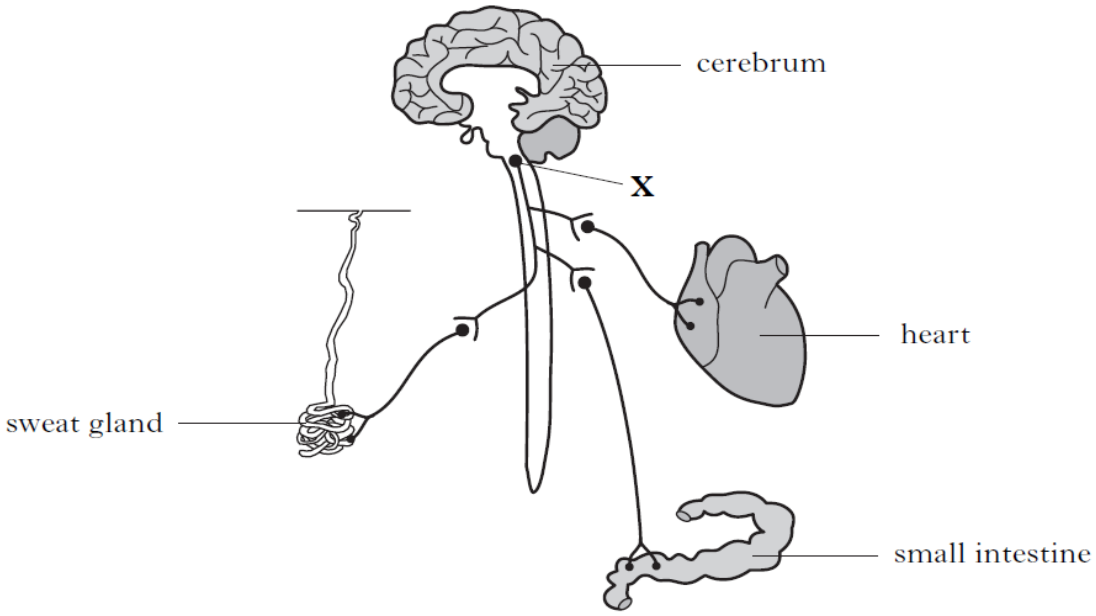
Explain the significance of this feature.

_____

_____

_____ **1**

(*c*) The diagram below shows some of the nerve connections between the brain and three parts of the body.



(i) Identify the part of the brain labelled **X**.

_____ **1**

(ii) The sympathetic and parasympathetic systems are often described as antagonistic to one another.

Explain the meaning of *antagonistic*.

_____

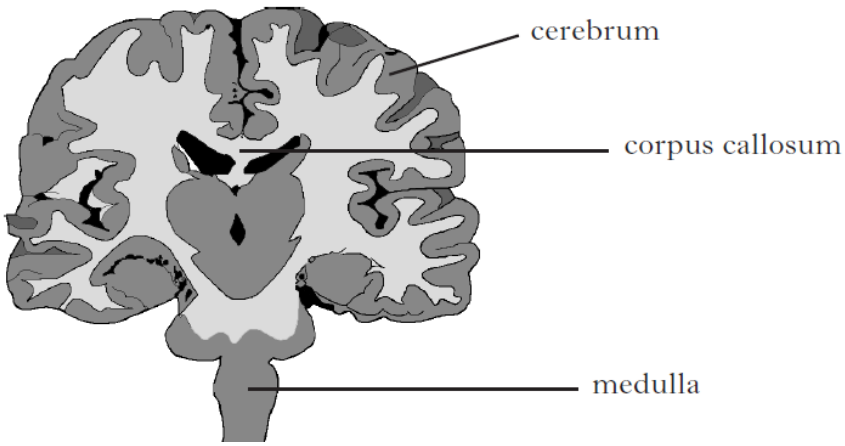
_____ **1**

(iii) Complete the table to show the effect of sympathetic stimulation on the heart, sweat glands and small intestine.

Part of body	*Sympathetic effect*
Heart	
Sweat glands	
Small intestine	

2

13. The image below shows a vertical section through a human brain.



(*a*) Explain how the maximum number of interconnections between neurones is achieved within the cerebrum.

_____

_____

_____ **2**

(*b*) What is the function of the corpus callosum?

_____

_____ **1**

(*c*) (i) Which division of the nervous system is linked to the medulla?

_____ **1**

(ii) Describe how this division of the nervous system controls heart rate.

_____

_____ **1**

14. Split brain patients cannot transfer information between their left and right cerebral hemispheres because the band of nerve fibres connecting these areas of the brain has been cut.

(*a*) Name the band of fibres which connects the two hemispheres.

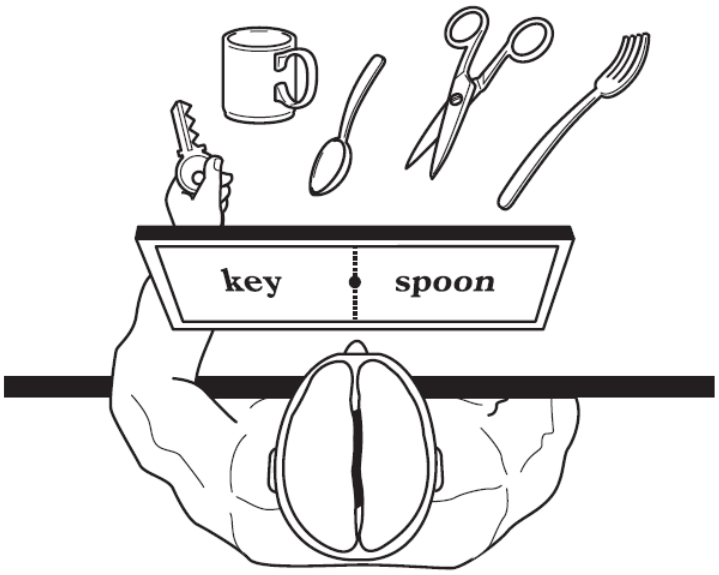
_____ **1**

(*b*) Some of the functions of each hemisphere are described in the table below. These functions are unaffected in split brain patients.

Left cerebral hemisphere	*Right cerebral hemisphere*
processes information from right eye	processes information from left eye
controls language production	controls movements of left hand

The diagram below shows an experiment on a split brain patient.

The patient was asked to stare at a spot in the centre of a screen and the words "key" and "spoon" were flashed briefly onto the screen in the positions shown.



(i) The patient was then told to use his left hand to pick up the objects he saw named on the screen.

Explain why the patient picked up the key but not the spoon.

_____

_____

_____

_____ **2**

(ii) The patient was then asked to say what he saw written on the screen.

Predict what he would have said and give a reason for your answer.

Prediction _____ **1**

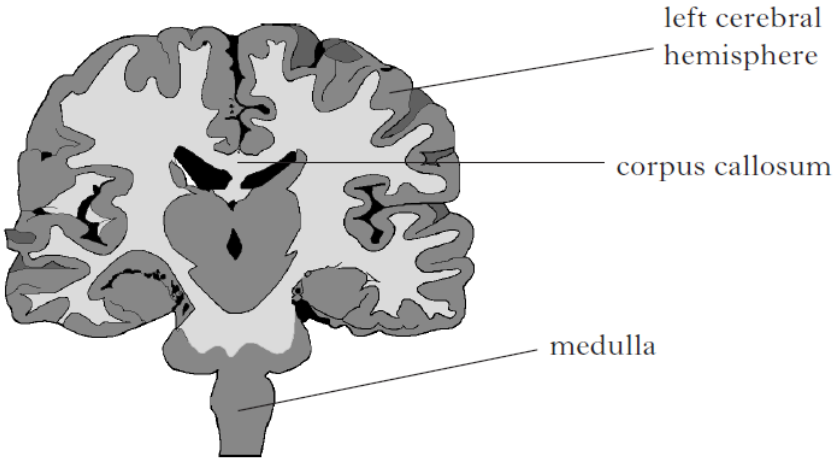
Reason _____

_____

_____ **1**

15.

The image below shows a vertical section through a human brain.



(*a*) State the function of the motor area in the left cerebral hemisphere.

_____

_____ **1**

(*b*) What is the function of the corpus callosum?

_____

_____ **1**

(*c*) (i) Which division of the nervous system is linked to the medulla?

_____ **1**

(ii) Describe how this division of the nervous system controls heart rate.

_____

_____

_____ **1**

16.

Describe the structure and function of the autonomic nervous system. 7