**Hand-out 1**

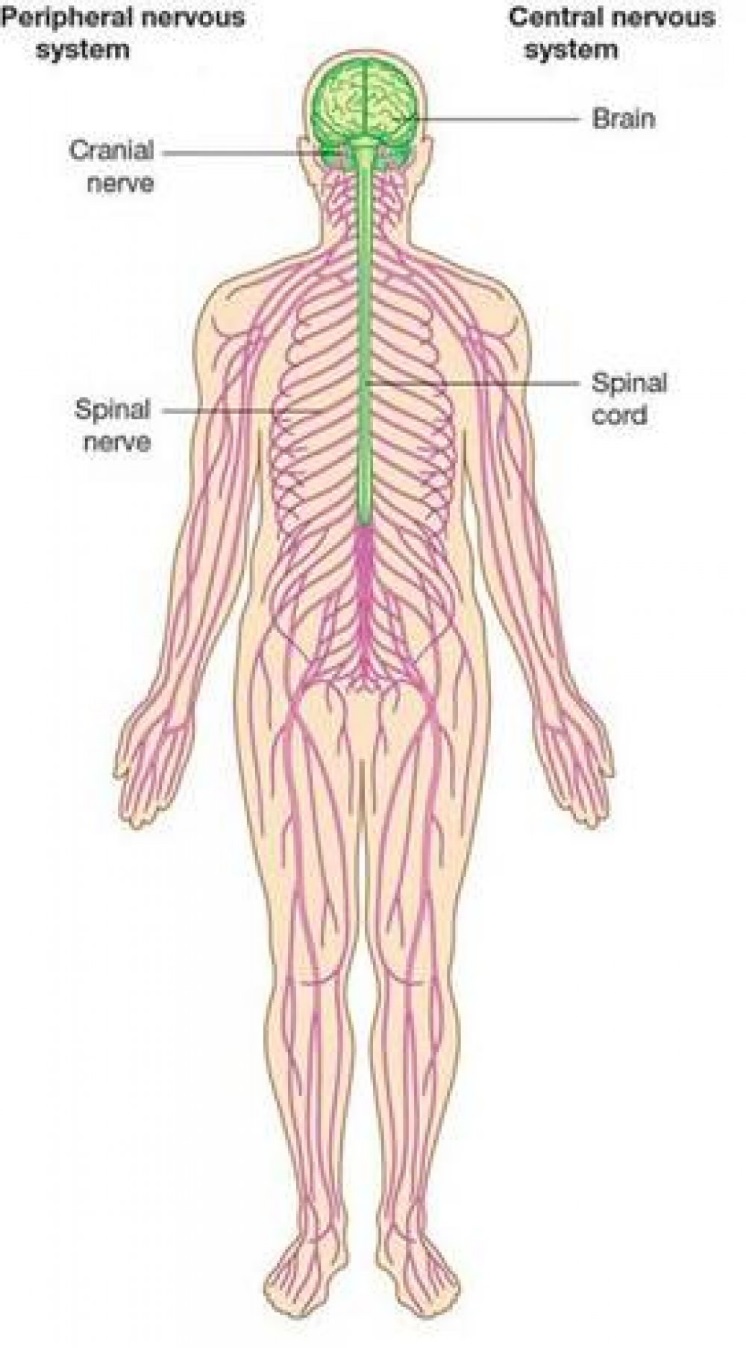
**The Nervous System**

* The nervous system analyses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the **body** and the **external environment**, stores some aspects and makes **decisions** regarding appropriate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and behaviours.
* It makes **motor responses** by initiating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Structural Division of the nervous system**

The nervous system consists of the **brain, spinal cord and peripheral nerves**.

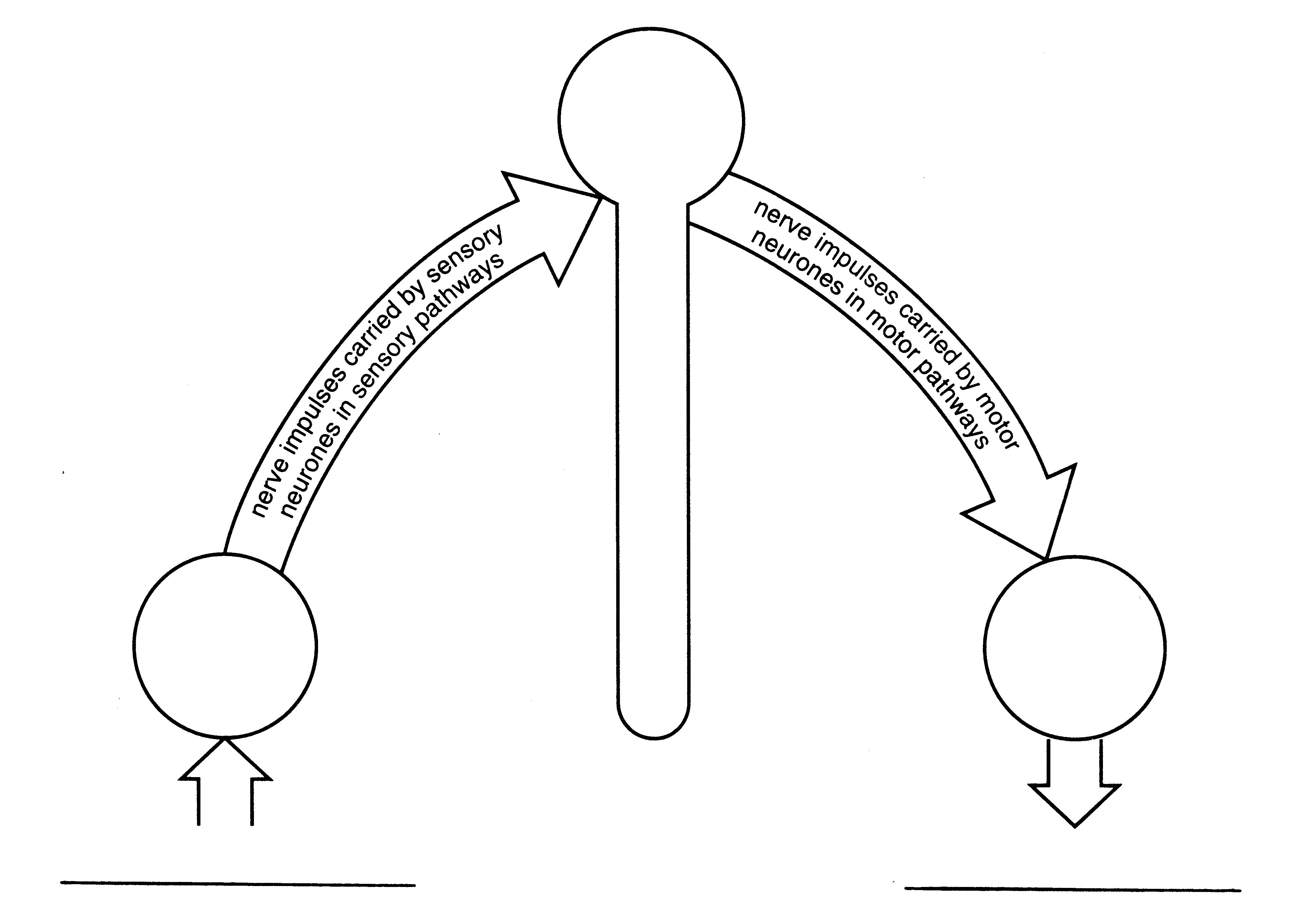
It can be divided into the **central nervous system (CNS)** and the **peripheral nervous system (PNS).**



|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Complete the key to the ***structural division*** of the nervous system: | | | | | | | | | | | | | | | | |
|  | | | | | | **nervous system** | | | | | | |  | | | |
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**Sensory and motor pathways**

Many of the peripheral nerves contain a **sensory pathway** consisting of sensory nerve cells (neurons) and/or a **motor pathway** consisting of motor neurons.



**Functional division of the nervous system**

The nervous system can also be divided with reference to ***functions*** as well as structurally.

|  |  |  |
| --- | --- | --- |
| **Part of nervous system** | **Structure** | **Function** |
|  | Brain |  |
|  | Sends nerve impulses to and from the body and links the brain to the PNS. |
| **Peripheral nervous system (PNS)** |  |  |

**Peripheral nervous system (PNS)**

The overall function of the PNS can be split into two functional parts:

**PNS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Complete this diagram showing the ***functional divisions*** of the nervous system: | | | | | | | | | | | | |
|  | |  | | **Peripheral Nervous System** | | | | |  | | | |
|  | |  | | | |  | | | | | | |
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**Somatic nervous system (SNS)**

* The somatic nervous system (which includes spinal nerves) controls the body’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* This involves \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ pathways as outlined on the flow diagram on the second page.
* The somatic nervous system is responsible for bringing about certain involuntary reflex actions (e.g. limb withdrawal) but most of the control that it exerts is over **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **movements** of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

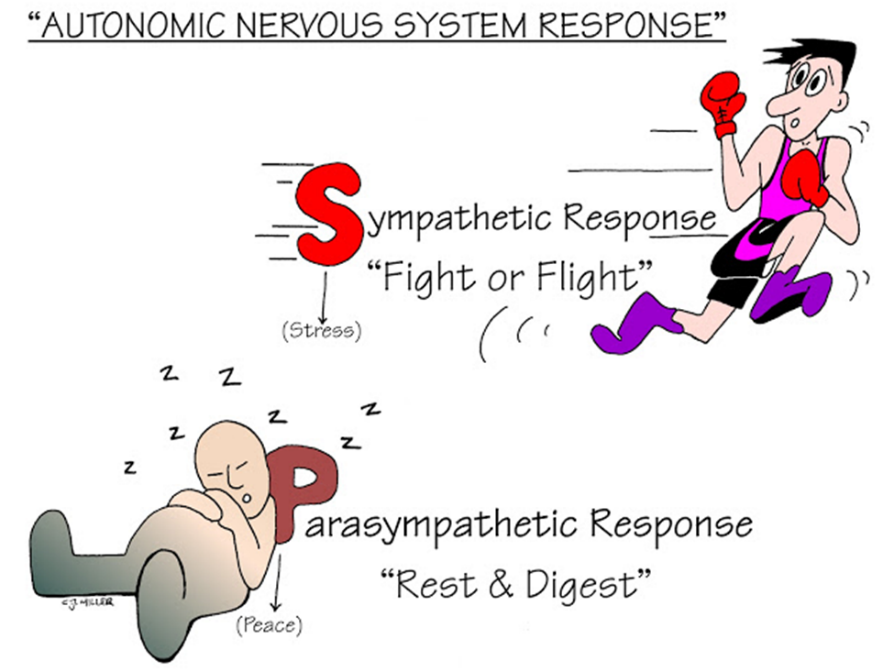
**Autonomic nervous system (ANS)**

* The autonomic nervous system normally works \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ without the person’s **conscious control**.
* It controls functions that bring about a **steady internal state** within the body, thereby playing its part in the process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

These functions include regulating:

* The ANS is composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ systems that work to regulate these processes.
* The **sympathetic** and **parasympathetic systems** are described as being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because they have **opposite effects** on the same body structures.
* The autonomic nervous system originates in the \_\_\_\_\_\_\_\_\_\_\_ of the brain.

**Sympathetic and Parasympathetic Systems**: Antagonistic in Action

****

|  |  |  |
| --- | --- | --- |
| **Organ/Tissue** | **Sympathetic** | **Parasympathetic** |
|  | Rate and force of contractions increases |  |
| **Lungs** |  | Smooth muscle in bronchiole wall contracts |
|  | Rate of peristalsis and intestinal secretions decreases |  |

**Summary: Nervous System**

Brain and Spinal cord

**Somatic**

**Nervous System (SNS)**

* Mostly **voluntary**
* Controls:

**\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Regulates internal structures and organs e.g. heart, lungs etc.

# Sympathetic System

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e.g.

increases heart rate

**Parasympathetic system**

Calms the body down returning it to its ‘normal’ state

e.g. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Finished? Test Yourself…**

* Collect a white board and pen.

- Try the questions on page 212 of your textbook – **without notes!**