preview from Notesale.co.uk preview page THE NERVOUS SYSTEM

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

 Organization of nervous tissue with in the body enables rapid communication between different parts of the body.



Neurons are actively involved in conducting herve impulses. The strength of the intervention

- The strength of the impulse is maintained throughout the length of the neuron.
- Some neurons initiate nerve impulses while others act as relay stations where impulses are passed on and sometimes redirected.

- The axon (nerve fibre) is a single long process that extends from the cell body.
 Axons are found deep in the called the single for the single for the called the single for the single for the called the single for the single for
 - Axons are found deep in the brain and in groups called, *tracts*, at the periphery of the spinal cord.
 - The portion of the axon closest to the cell body plus the part of the cell body where axon is joined is known as the *initial segment or* trigger zone.
 - The initial segment is where in most neurons, the electric signals are generated that then propagate away from the cell body along the axon

- Sensory receptors
 Specialized endings of sensory neurones respend to apperent stimuli inside and outside the body.
- Somatic, cutaneous or common senses.
- These originate in the skin.
- They are pain, touch, heat and cold.
- Sensory nerve endings in the skin are fine branching filaments without myelin sheath.

Special serves of 136 These are sight, hearing, smell, touch and

taste.

Autonomic afferent nerves

 These originate in internal organs, glands and tissues, e.g. baroreceptors, chemoreceptors, and are associated with reflex regulation of involuntary activity and visceral pain.

 Their action is short lived as immediately they have stimulated the post synaptic neuron or effector organ, such as a muscle fiber, they are either inactivated by enzymes or taken back into the synaptic knob.



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 The endings of autonomic nerves supplying smooth muscle and glands branch near their effector structure and release a neurotransmitter which stimulates or depresses the activity of the structure.

• The contrainer Yous system consists of the brain and the spinal cord.



Functions of the cerebrum There are 9 maint varieties of activities associated with the cerebral cortex;

 Mental activities involved in memory, intelligence, sense of responsibility, thinking, reasoning, moral sense and learning are attributed to the *higher centres.* The frontal area.⁶ The second Anteriorly from the premotor area to include the remainder of the frontal lobe.

 It is a large area and it is more highly developed in humans than in other animals.

The taste area.or Mis is thought to lie just above the lateral sulcus in the deep layers of the sensory area.

 This is the area where impulses from special nerve endings in taste buds in the tongue and in the lining of the cheeks, palate and pharynx are perceived as taste.

- Hypothalamus
 The hypothalamus is composed of a number of groups of nerve cells.
- It is situated below and in front of the thalamus, immediately above the pituitary gland.
- The hypothalamus is linked to the posterior lobe of the pituitary gland by nerve fibers and to the anterior lobe by a complex system of blood vessels.

- ✓ Body tempeoature of 136
 ✓ Ernotional reactions, e.g. pleasure, fear, rage.
- Sexual behavior including mating and child rearing.
- \checkmark Biological clocks or circadian rhythms, e.g. sleeping and waking cycles, body temperature and secretion of some hormones.

- Except for the granial nerves, the spinal cord is the nervous tissue link between the brain and the rest of the body.
 - Nerves conveying impulses from the brain to various organs and tissues descend through the spinal cord.

- At appropriate tevel they leave the cord and pass to the structure they supply.
- Similarly, sensory nerves from organs and tissues enter and pass upwards in the spinal cord to the brain.

- These nervel mysles have 2 destinations:
 By a three feurone system the impulses reach the sensory area of the opposite hemisphere of the cerebrum.
- By 2 neurone system the nerve impulses reach the *cerebellar hemisphere on the same side*.

A reflex action is antimmediate motor response to sensory stimulus.

 Many connector and motor neurones may be stimulated by afferent impulses from a small area of skin, e.g. the pain impulses initiated by touching a very hot surface with the finger are transmitted to the spinal cord by sensory nerves.

- By tapping the tendon just below the knee when it is bent, the sensory nerve endings in the tendon and in the thigh muscles are stretched.
- This initiates a nerve impulse which passes into the spinal cord to the cell body of the lower motor neurone in the anterior column of grey matter on the same side.