13/7/24

Date :

Chapter no: 6.
Control and co-ordination

* The working together of various organs of a living organism in systematic and control and efficient way to produce proper respon to various stimuli is known as. coordinat

* Nervous system
  - Nervous System
    - CNS
      - Brain
      - Spinal cord
    - PNS
      - cranial nerve and connection of various nerve.
  - Endocrine System
    - Hormones

- action which are controll by brain are not in our hand are called involu movements
  eg: Peristaltic movement, pumping of heart
- actions which are controlled by us are called the volutary action
  eg: Shaking hands, walking, writting, dancing, singing etc.

Date :

- Some action are sudden or radip response or movement to and stimuli detected by any receptor

↓

Effection action

Eg: dialation of pupil

* Reflex arc

- The pathway choosen by the stimuli to reach till spinal cord is called reflex arc.
- the reflex action is involutary by is not controlled by brain

↓

its controlled by Spinal cord.

↓

Reason

↓

it take much time to reach the electric impulse to reach till Brain

* what are receptors

The cell or tissue whic can detect any kind of stimuli are called receptors.

Thermo-receptor — skin
Gustatory-receptor — tongue
Phono-receptor — ear.
Photo-receptor — eye
~~Of~~ olfactory-receptors. — nose

Date :

* How does the electric impulses are send to brain or spinal cord.

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through the help of highly specialised cell which is structural and fuctional unit of our nervous system.

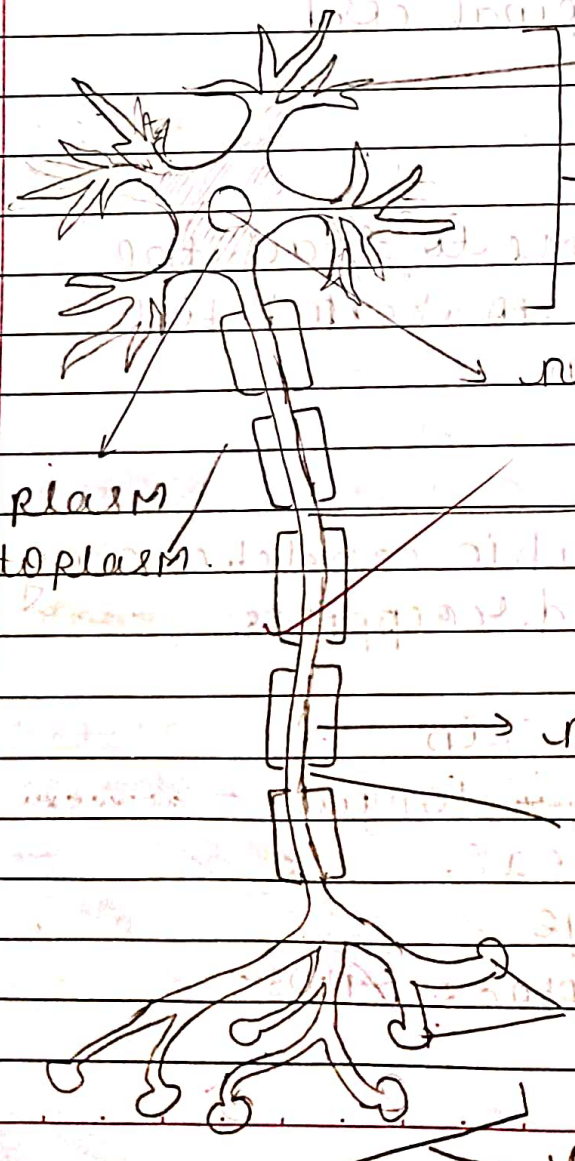
↓

nerve cell

↓

neuron

- Structure of neuron



did you know

The myelin sheat conducts electric more faster and are known as myleinated neuron.

Date : _____

* Types of neuron *

- **Sensory neuron** → Sensory neuron are neuron which carry electric impulse to spinal cord/Brain from sensory organ
- **Motor neuron** → Motor neuron are neuron which carry electric impulse to sensory organ send from Brain of spinal cord.
- **relay neuron.** → The give electric impulse to Brain to spinal cord and are also called inter-neurons.

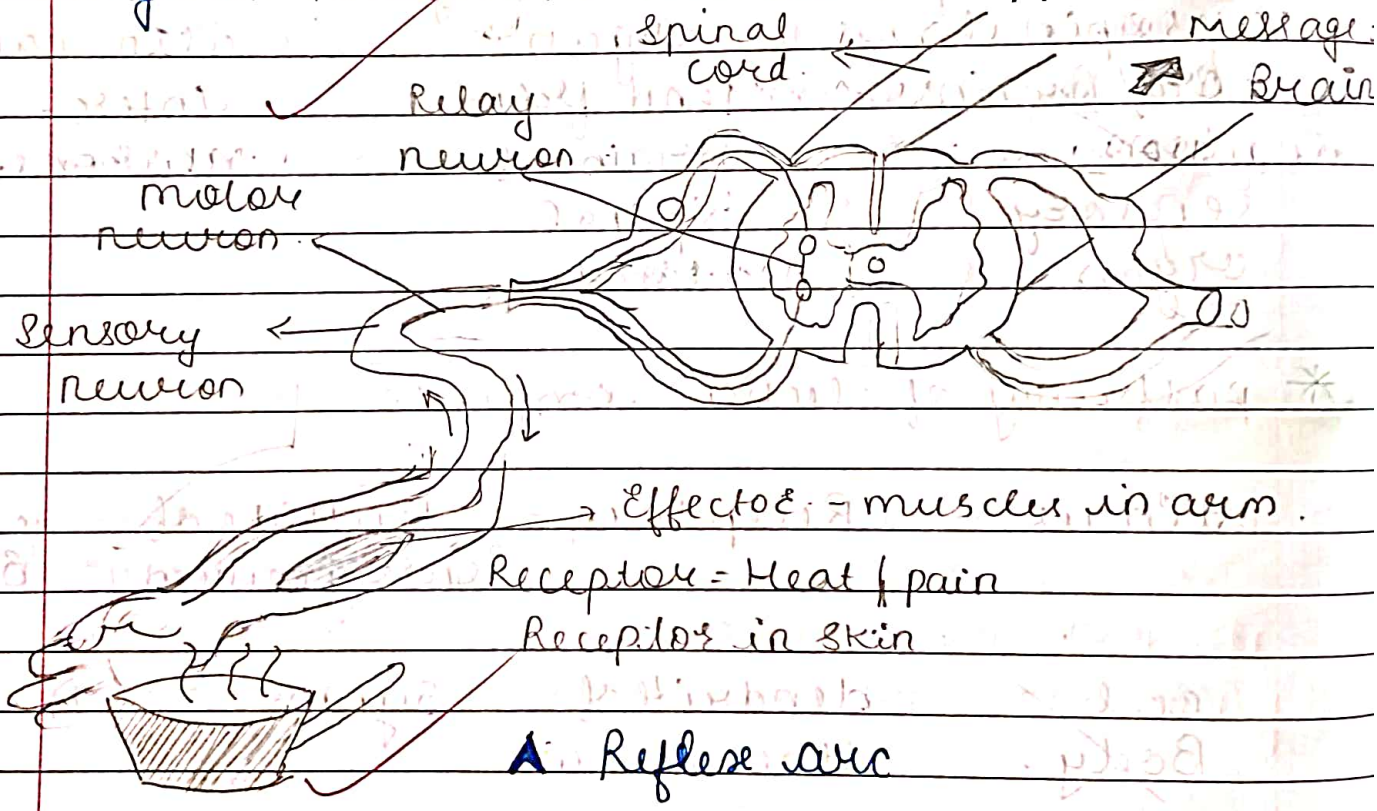
* pathway of electric impulse

Stimus → Receptors → dendrite of Sensory neuron → cell Body → Axon → Synaps → dendrite of other neuron → cell Body. → various neuron → CNS → dendrite of motor neuron → cell Body → Axon → Effectors.

Date :

* Significance of Reflex action *.

- it ~~no~~ enable an organism for an immediate response to harmful stimulus
- it reduce the overloading of Brain
- it increases the chances of Survival of organism
- The harm which was cause by the stimulus is stored in brain as an memory so again the mistake will not happen.



A Reflex arc

* Neuro-muscular junction / NMJ *

the junction is a meeting of axonal end meats with the muscular muscle is called neuro-muscular junction

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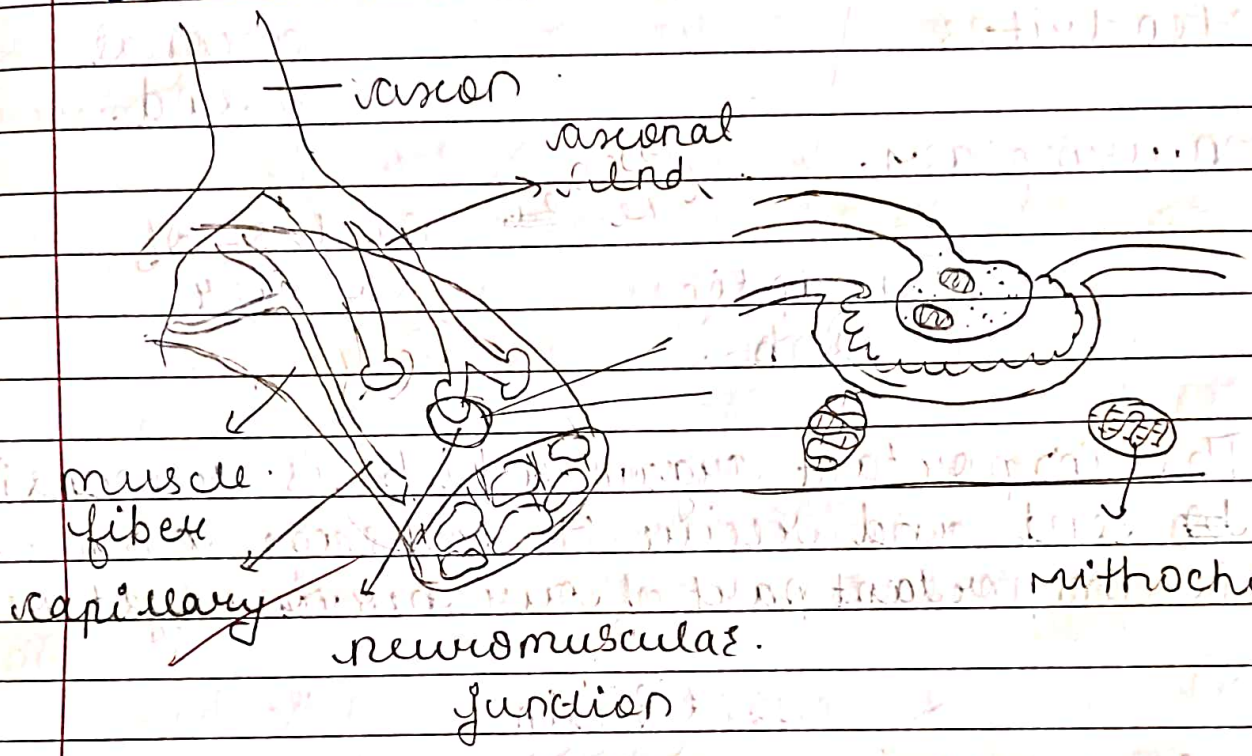
does the axonal end really touches the muscle.

Date :

- no There is some gap between it which is called Synaps or synaptic gap
- The axon end have some chemical fluid through which electric impulse are transmitted



A Neuromuscular junction

* functioning of neuron
the electric impuls are recived by dendrit and then it is send to cell body from where it transmits the singnal to axon and then axonal ends the it reaches to. Synaptic knobs which secrets the chemical fluid in order to send the message further

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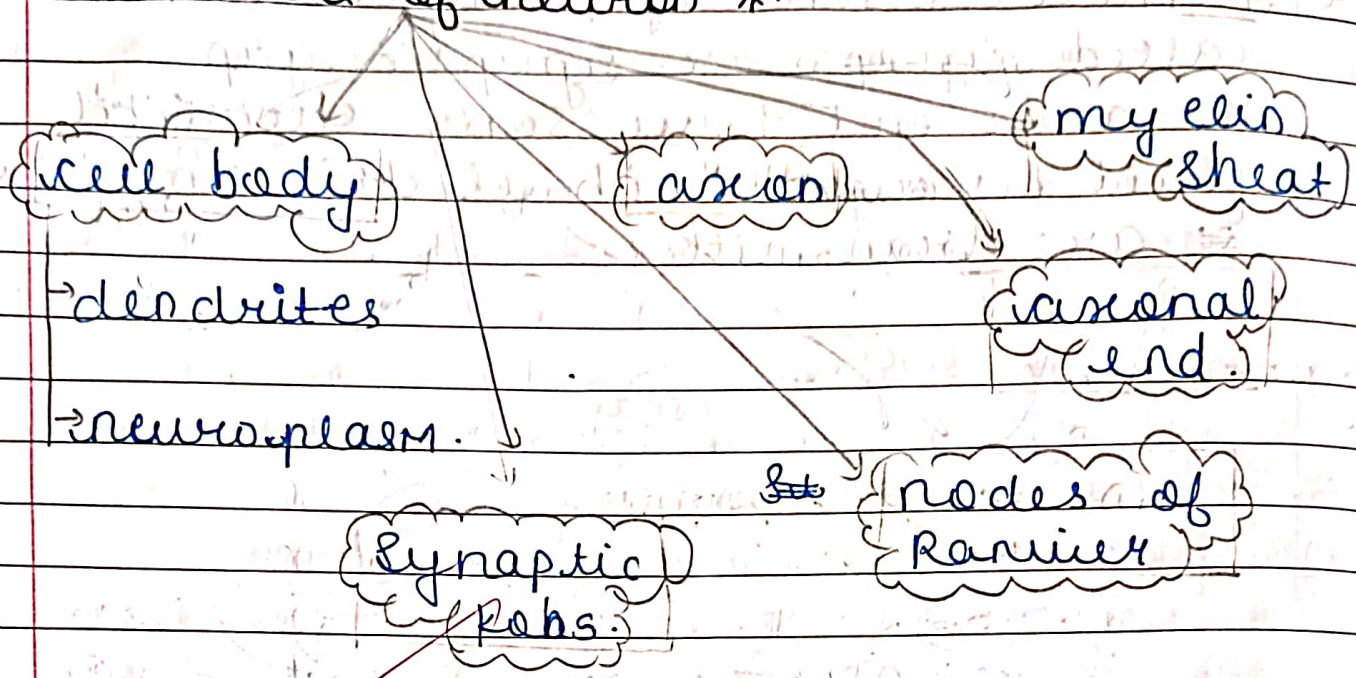
* Structure of neuron *



- The important organ which is responsible to send and recive the message and is important part of our nervous system

↓

Brain

↓

Brain itself is a complex topic

* Human Brain :

- Human brain is complex and delicate organ which is protected by a bony box called skull

- A protective fluid is filled between skull and brain called "cerebra-spinal fluid."

- it is the most important organ of nervous system.

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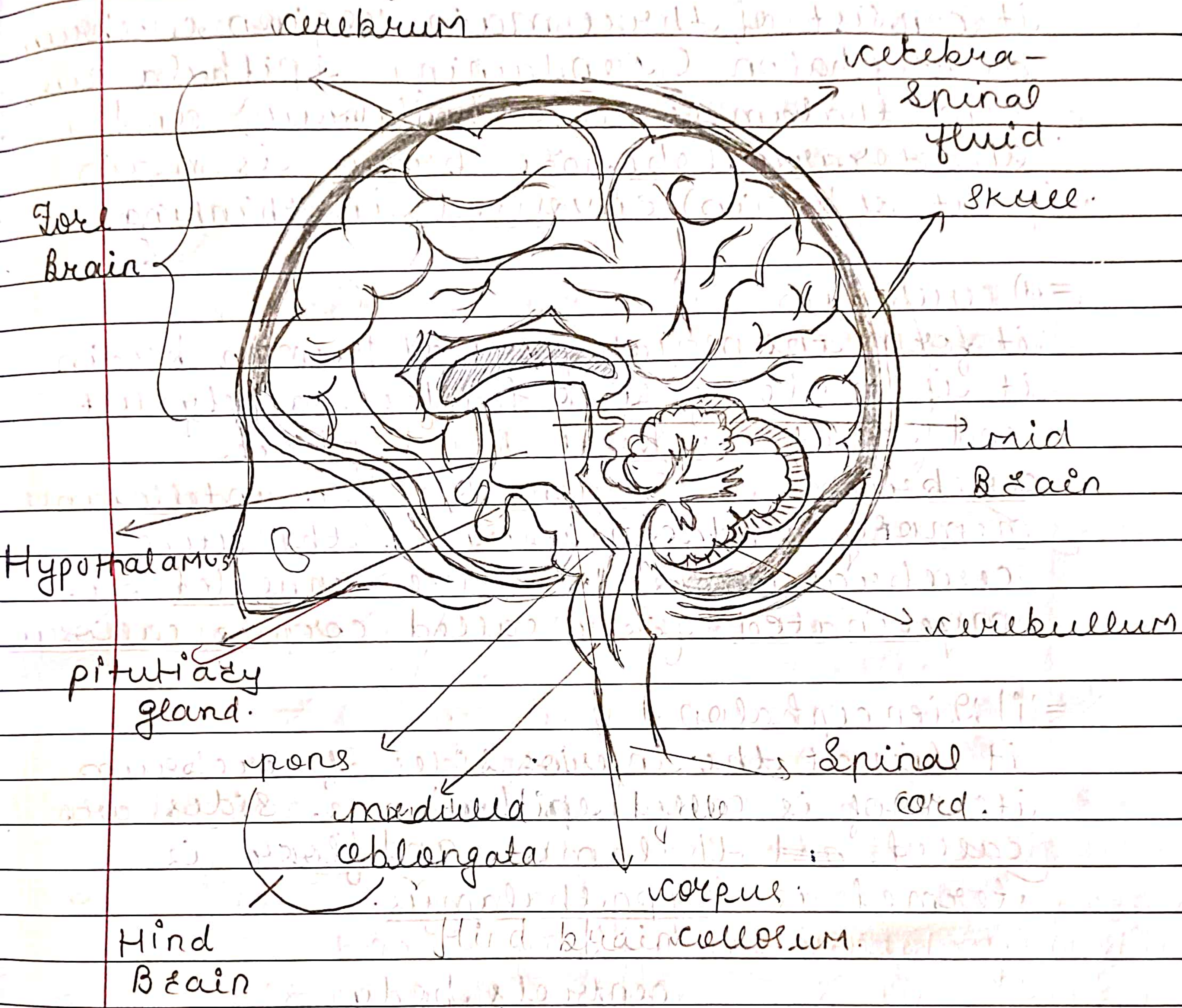
* Structure of Human Brain :



Human

Brain.

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Date :

— Fore brain
it consist of three main region cerebrum diencephalon (containing epithalamus hypothalamus and thalamus) and olfactorary lobe. fore brain is main part of brain envolved in thinking

=a) cerebrum
it form the major part of human brain it is made of two halfes namely left and right cerebral hemisphere.
cerebrum is responsible for. intellegance memory and consiousness. the two cerebral hemisphere are connected by. myelinated feber called corpus callosu

=ii) Diencephalon.
it lies at the inferior sides of cerebrum its roof is called epithalamus. sides are called. ~~and~~ thalamus and floor is termed as hypothalamus.

↓

controls body temprature, urge of eating, drinking etc

— Mid brain
it provide connection between spinal cord and rest of the brain it consist of three part
a) cerebellum:

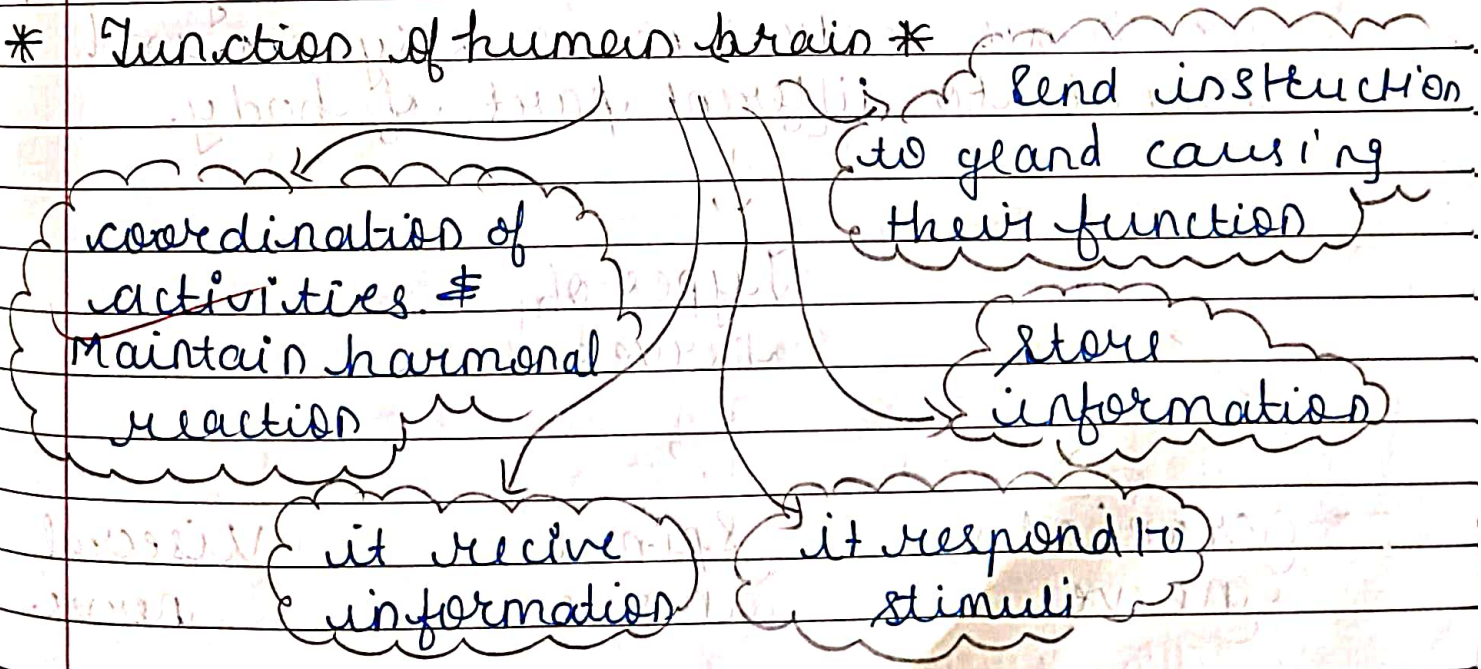
Date :

it central and co-ordinate different muscular action it is responsible for precision of voluntary action it maintain posture and equilibrium of the body during various activities such as. walking drinking, catching, riding etc.

b) pons:
it lie above the medulla and is responsible for respiration it relays between different parts of brain

c) medulla oblongata:
it is found continiously with spinal cord. it control involuntary action such as breathing, blood pressure. and regulates reflex responses like salivation and. vometing

* Function of humen brain *



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* Spinal cord.
it is a long tubular bundle of nervous tissue arising from medulla oblongata it function primarily in the transmission of neural signals between brain and rest of body.

= protection of human brain and Spinal cord Brain is very delicate organ and is important for carray out various important function for sustainance of life and is protected by bony box call "Skull" or cranium.
where Spinal cord is protected by "Back bone" (it consists of total 32 vertebral columns)

* Peripheral Nervous system *
it consist the nerve that directly enter or leave central nervous system and connect to different part of body.

↓

Types of nerves.

- Cranial nerve
- Spinal nerves
- Visceral nerve

Date :

- cranial nerves are the nerves which emerge from brain and spred throughout the head.

- Spinal nerves are the nerves which arise from Spinal cord and spred throughout the body

- Visceral nerves are specialised nerves arised from spinal cord and are connected to the internal organs.

* CO-ORDINATION IN PLANTS *

plants do not have nervous system or muscle tissue like animal however they still show movement and response. They use chemical means to convey information from one cell to another

↓

movement in plant

- immidiate response to stimuli
- movement due to growth.

Date :

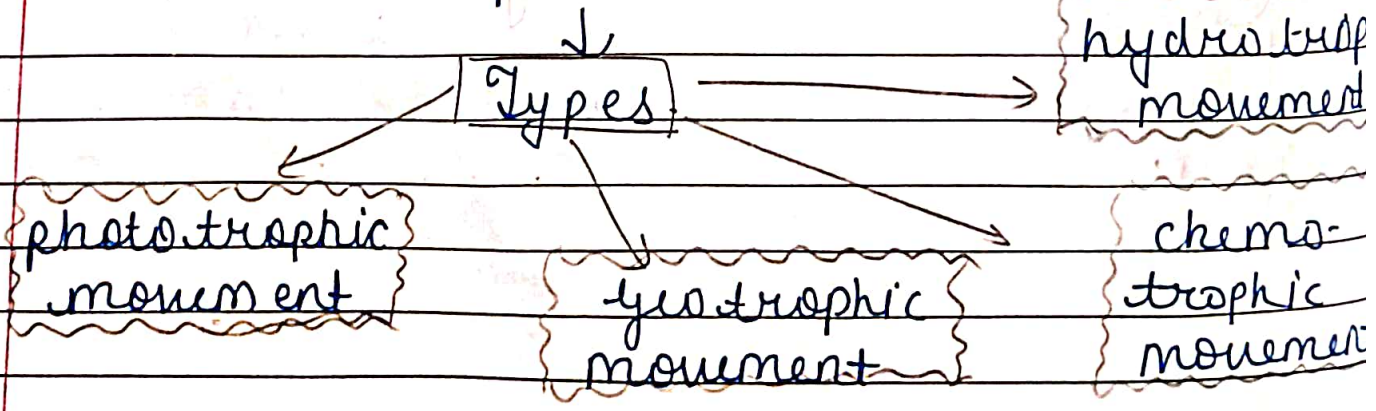
* Imidiate response to stimuli *
it does not involve any growth, sensitiv
plants give immidiate response to the
stimulus.

i) plants use electrochemical ~~chemi~~
mean to convey the information
from cell to cell However there are
no specialised tissue for conductio
of infomation

ii) plant cell change their shape by
changing the amount of water in
them this happens due to swelling
or shrinking of cell.

* Movement due to growth
Movement in plants due to growth is
carried by specialized cell called
"Meristematic tissue" (which can divide

Trophic movements
it is precisely defined as the condition
when stimulus has particular movem
of plant occurs in direction of stimu
is called Trophic movement



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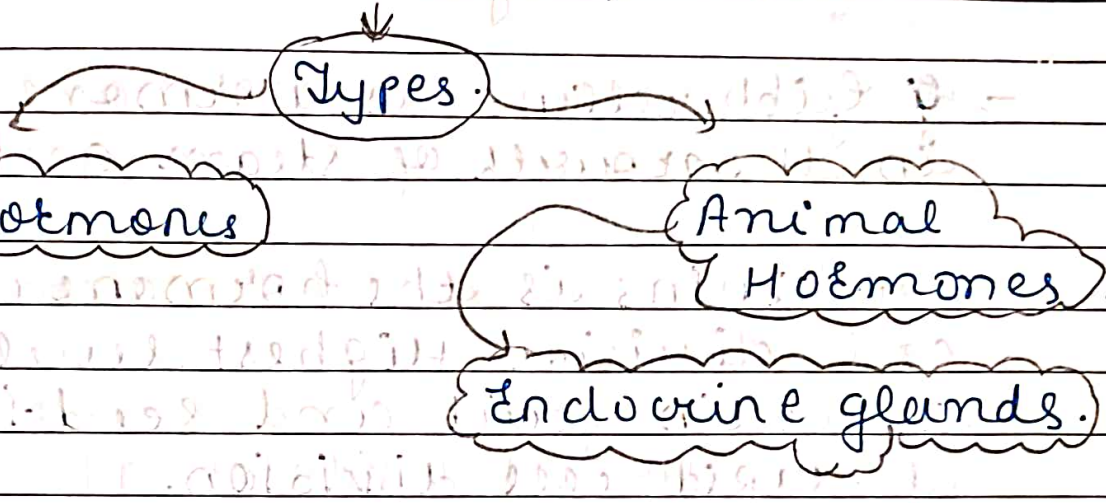
* HORMONES *

- Hormones are released by the stimulated cell and diffuse all around original cell.
- Their processing and transmittance is slower than electric impulse



* Hormones in plants :

Hormones are chemical substances naturally produced in plants They are capable of regulating their important processes.

There are 4 major ~~for~~ hormones.

i) Auxin
ii) ~~Gibberellins~~
iii) Cytokinins
iv) Abscisic acid.

- ~~Gibberellins are hormone which promote cell division Highest concentration of~~

Date :

- Auxin usually synthesised in the tip of shoots it help them to grow longer when light is comming from side of the plant they show bending toward it this is because the auxin diffuses toward shady side

- Gibberellins is hormone which help in the growth of steam and flower.

- cytokinins is the hormone which promo cell division Highest level of cytokinin occur in fruit and seed - i.e, area of rapid cell division.

- abscisic acid is growth inhibitor it is responsible for wilting of leaves.

* Animal Hormone *

The chemical compound or hormones are secreted in small amount by endocrine glands. These are provided directly in Blood. They are carried to specific organ with the help of circulatory system.

* Endocrine gland:

Endocrine gland is ductless glands and secrets hormone inside the Human Body.

Date :

* Major hormones and their function :-

•) Adrenalin :
it is secreted by adrenal gland it works in stress situation it target organ is heart which beat faster to supply more oxygen to muscles

•) Thyroxine :
it is secreted by thyroid glands it regulate carbohydrate, protine and fat metabolism in body iodine is essential for its synthesis its deficiency leads to goitre.

•) Growth hormone.
it is secreted by pituitary glands.
regulate growth and development in body.

•) Testaterone and oestrogen.
This hormone are secreted by testis in male and ovaries in female which is associated with puberty

•) Insulin :
it is produced by pancreas and helps in regulating blood sugar level it deficiency cause diabities.