19/9/

Homeostasis.

Hemostasis : blood clotting.

feedback mechanism: thyroid hormones Elaborate / pit. hormones.

homeostasis → maintenance of constant Internal enveronment.

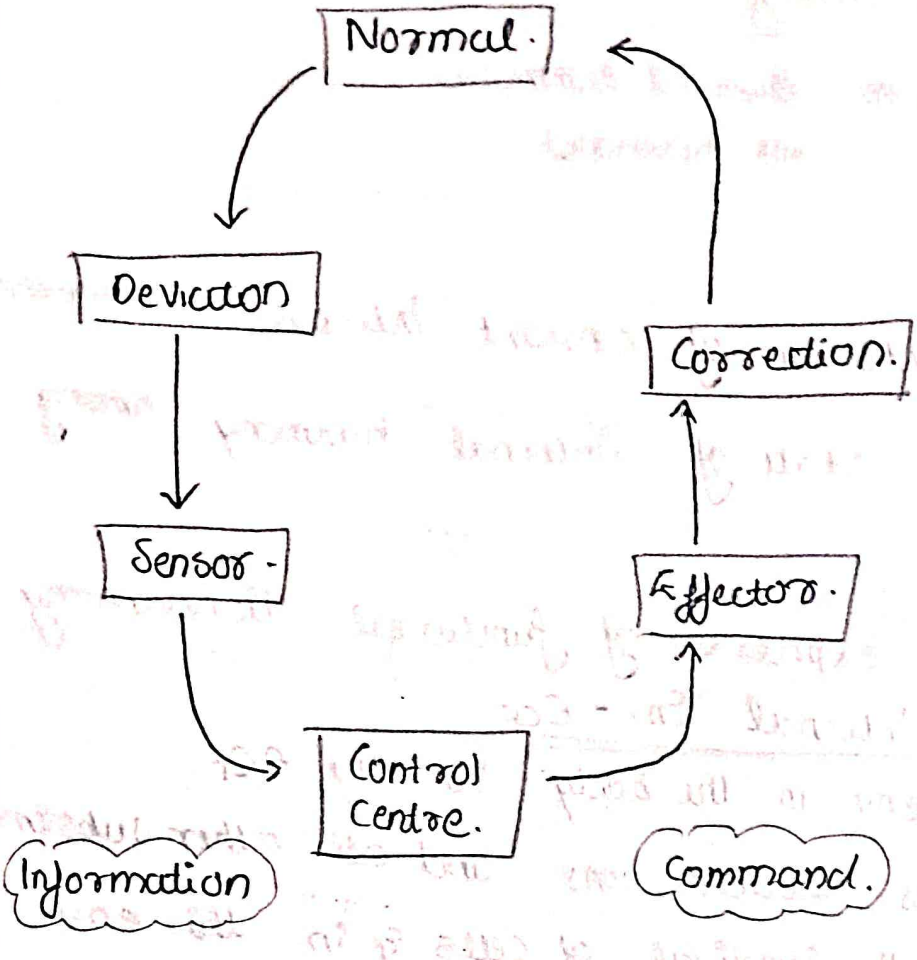
homeostasis is the state of Internal harmony among body system

a disease is an expression of functional disharmony. disrupted homeostasis

Internal Env - ECF.

- The internal env. in the body is the ECF. which contains nutrients, ions and all other substances necessary for the survival of cells & in this env. the cells live.
- It Includes blood, Interstitial fluid + trans cellular fluid ! 21

Components of homeostatic system



* If this correction doesn't occur, it results in disease

Components.

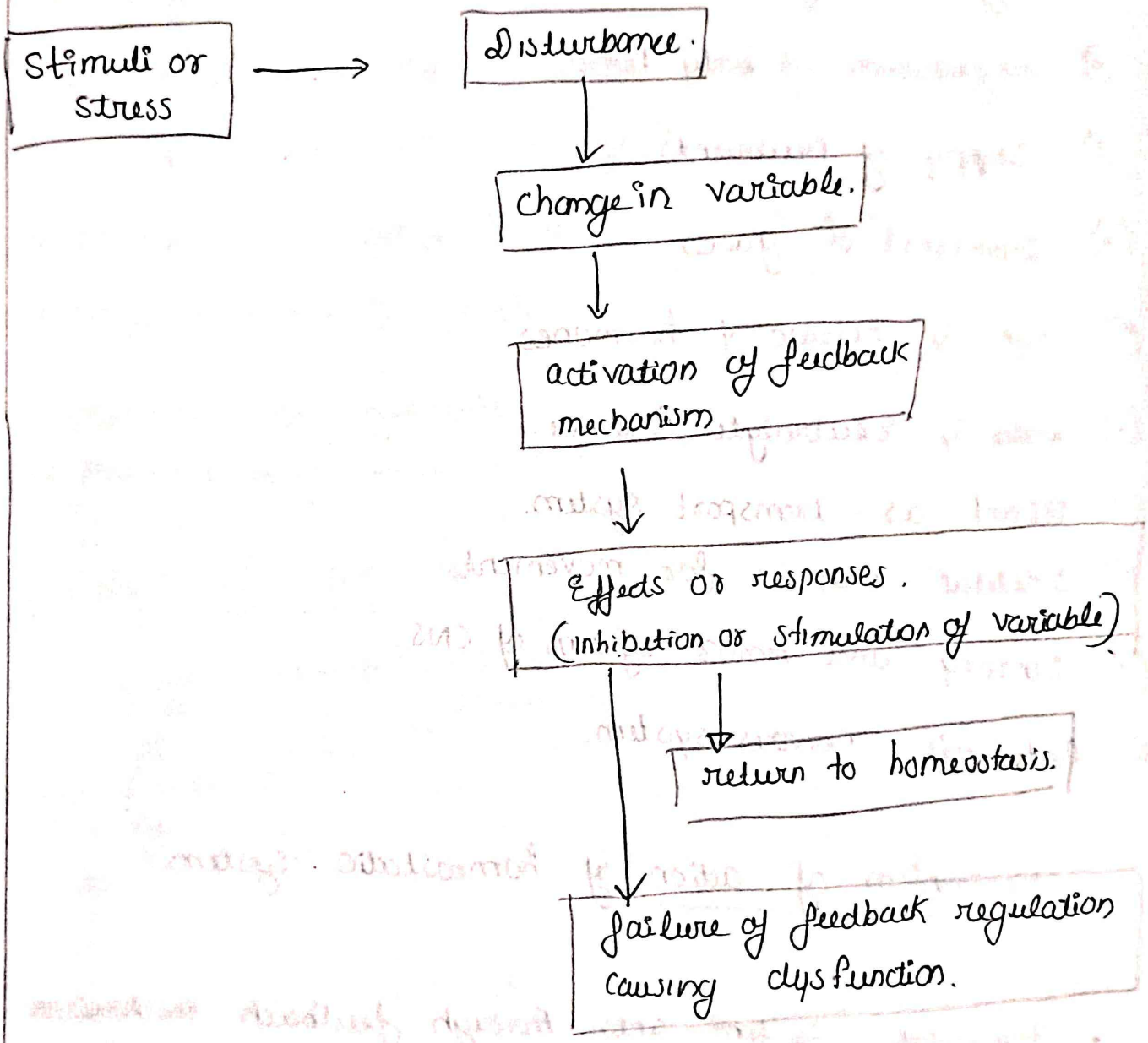
① Detectors or sensors, which recognize deviation.

② Control centre to which the info regarding deviation is transmitted.

③ Effectors which receive info from central control for correcting.

④ The transmission of message - electrical process, chemical process or hormones

Feedback mechanism of homeostatic regulation.



Examples of homeostasis.

(1) regulation of PH
(2) regulation of body temp.
(3) Supply of Nutrients.
(4) transport of gases.
(5) syn. & release of hormones.
(6) water & Electrolyte balance.
(7) Blood as transport system.
(8) skeletal muscles for movement.
(9) sensory and motor system of CNS.
(10) Autonomic nervous system.

Mechanism of action of homeostatic system.

- homeostatic system acts through feedback mechanism
- feedback is a process in which some proportion of output signal of a system is fed (passed) back to input.

Two types.

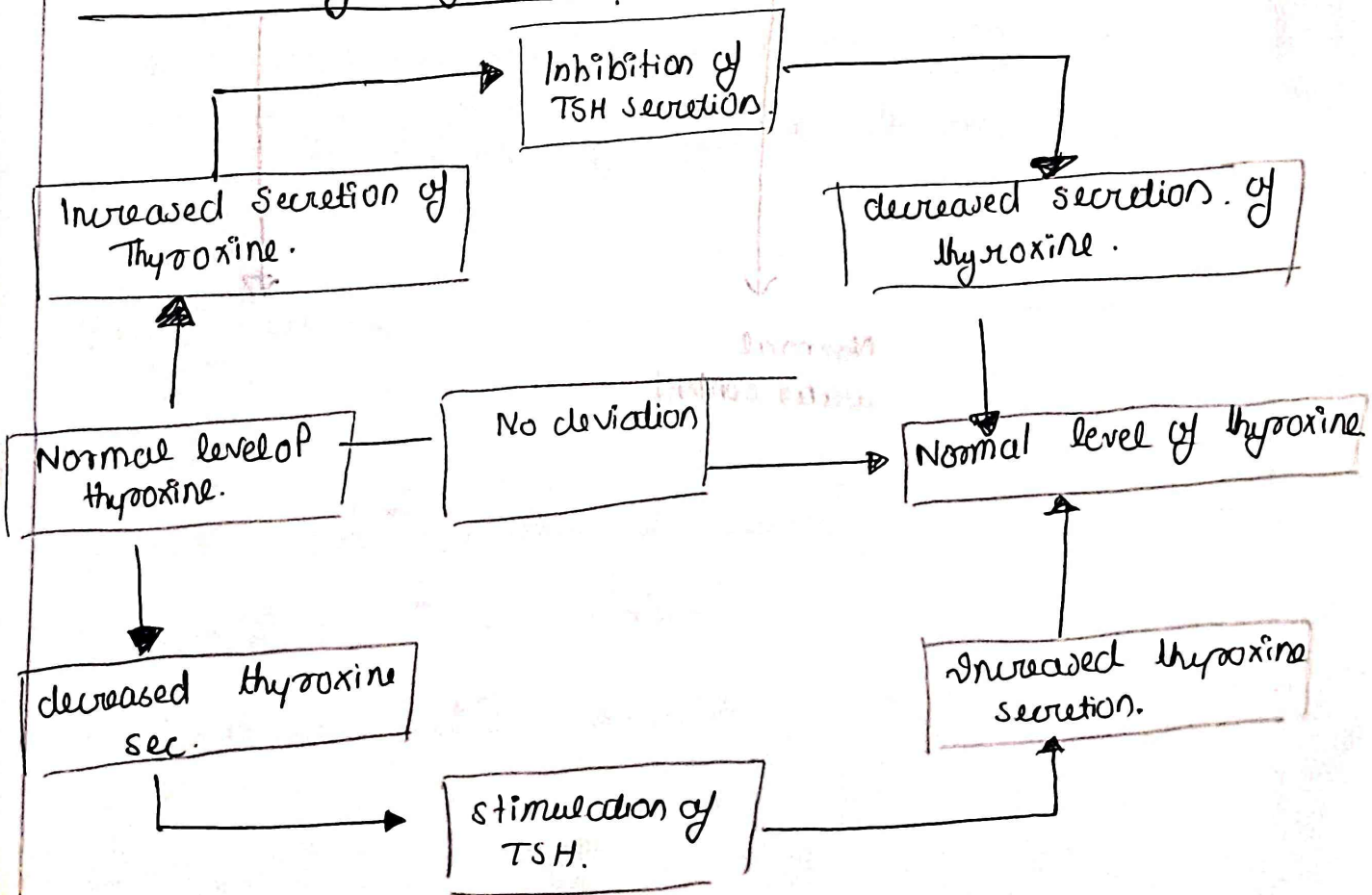
(1) Negative feedback mech. : T_3 T_4
(2) positive feedback mech : LH surge

Negative feedback.

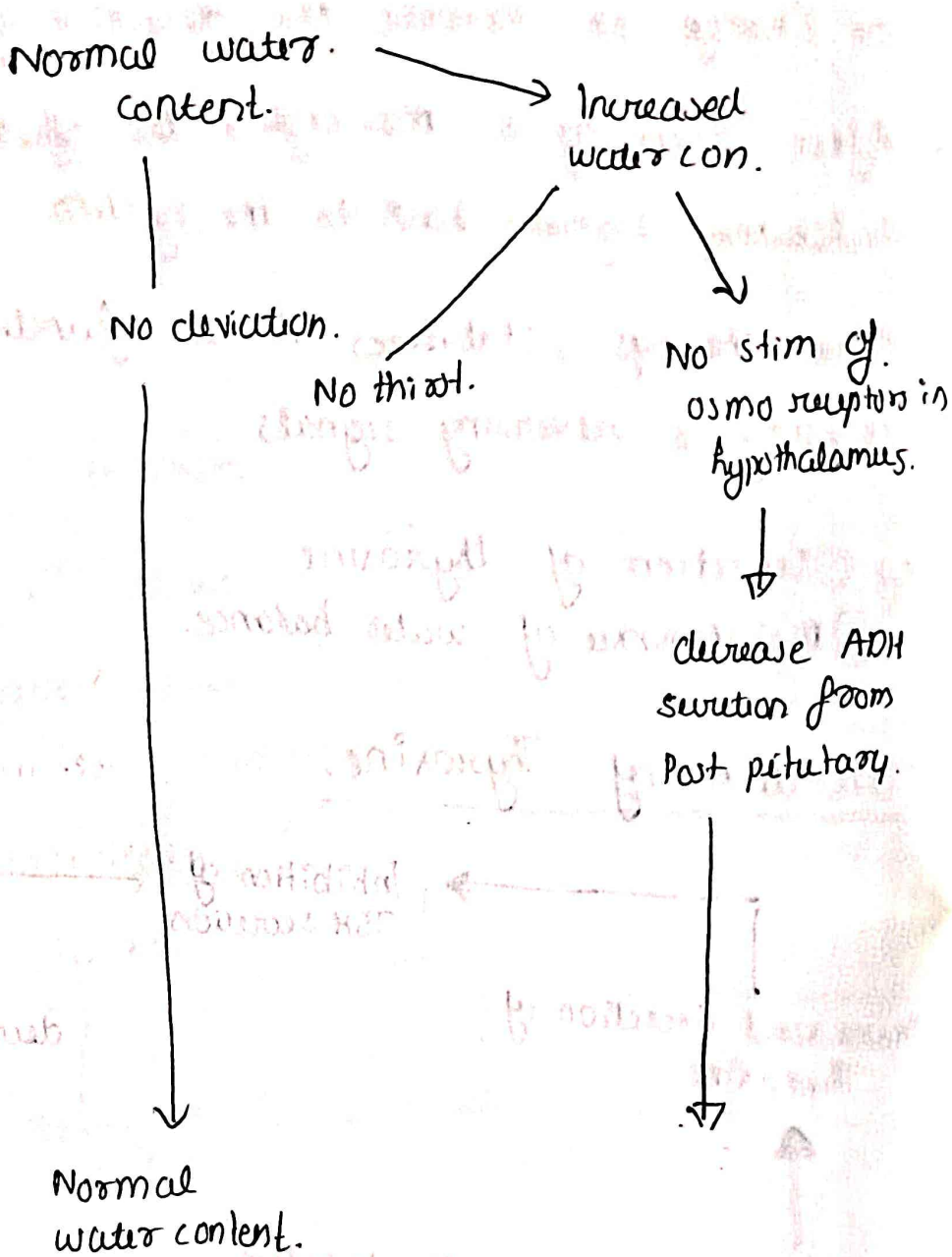
- a particular system reacts in such a way as to stop or change or reverse the direction of change.
- After receiving a message, the effector sends the inhibitory signals back to the system.
- Now the sys, stabilizes it own function either by stopping or reversing signals.

eg: ① Secretion of thyroxine.
② Maintenance of water balance.

Secretion of Thyroxine.



Water Balance.



Positive feed back mechanism. {less common}.

- One in which system reacts in such a way as to amplify (Increase Intensity) the change in same direction.
- less common.
- has own significance, especially in Emergency Condition.

Examples ① Blood clotting.
② Milk ejection ryleex. Milk let down ryleex.
milk is yected from alveoli of mammary gland.
③ Parturition ryleex.
④ Hodgkins Cycle. {during action potential of neurons}.
⑤ activation of digestive Enzymes.

Blood clotting.

3 stages.

(1) prothrombin activator formation.
(2) prothrombin → thrombin
(3). fibrinogen → fibrin

Hypothalamus send Impulse to Post. pituitary.

oxytocin release to blood.

↓

oxytocin reach mammary gland.

↓

contraction of myoepithelial cells

↓

ejection of milk from mamary gland.

* Initiated by nervous factors
* completed by hormonal factors.
* ∴ called as Neuroendocrine reflex.

Gain → Correction by error. → Neural reflex

* Gain - Effectiveness

① plasma PH 7.35 - 7.45

② plasma K^+ 3.5 - 5.0 meq/L.

③ Body temp 97 - 98.8F.

④ CO_2 venous blood 35 - 45 mm of Hg.

⑤ plasma Na^+. 135 - 146 mmol/L

⑥ plasma HCO_3^-. 24 - 32 mmol/L.