

Q1 : what is the term that is a cornerstone of physiology ?? and what is it mean ??

A1 : this term is homeostasis , its mean is **standing still**

**** **homeo means similar to**

**** **homeo is different from homo (means blood)**

Q2 : The body's many functions, beginning at the cellular level, operate as to not deviate from a narrow range of internal balance . This state known as ???

A2 : **dynamic equilibrium**

Q3 : what is dynamic equilibrium ??

The body's many functions, beginning at the cellular level, operate as to not deviate from a narrow range of internal balance .

**** it is related to the internal balance , not external .

Q4 :complete :

On the cellular level, homeostasis is observable in the (.....)

A4 : biochemical reactions that take place



Q5 : give 5 factors that is important to regulate to keep homeostasis in internal body and to keep the safe way for biochemical reactions (such as enzyme functions and the formation of waste products) ???

A5 : **pH, temperature, oxygen, ion concentrations, and blood glucose**

Q6 : **give 2 examples of** biochemical reactions that occur in our body in the normal internal environment .

A6 : enzyme functions and the formation of waste products

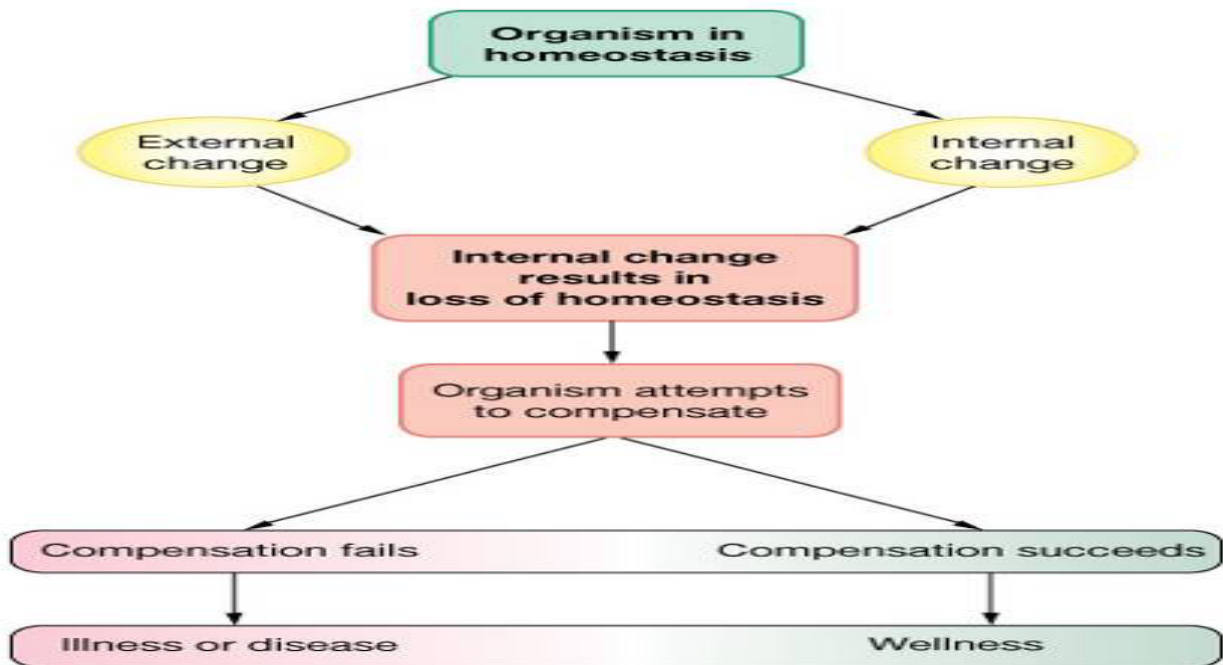
Q7 : explain how cells respond to changes in volume ??

A7 : Cells respond to changes in volume by activating the metabolic transport of molecules necessary to return to back to normal volume .

Q8 : when the volume of cell change , the transfer of molecules must result in what ?? (in both the cases of hyperosmolar or hypoosmolar)

A8 : the transfer of molecules must result in volume regulation as not to disturb the contents of the cell from their maximum

function



Q9 : the ability of an organism to maintain a stable internal conditions in a constantly changing environment . This definition refers to what ??

A9 : regulation

Q10 : what is the types of regulation ??

A10 :



1. Chemical (hormonal) Regulation
2. Nervous Regulation
3. Autoregulation

Q11 : what is the five critical components must work together in a reflex loop ??

A11 : **sensor, setpoint, error detector, controller, and effecto r .**

Q12 : what is the function of sensor in regulated system ?? give example .

A12 : to measure the change in its value , an example of which is blood glucose concentration.

Q13 : we have to variables : regulated variable (sensed) and non regulated variable (controlled) . What is the differences between them ??



A14 :

A regulated (sensed) variable has a sensor within the system to measure the change in its value.

a controlled (non-regulated) variable whose value becomes altered to maintain the regulated variable in the narrow range.

Q15 : give 3 examples of non regulated variable (controlled) ?

A15 : an example of which would be the roles of gluconeogenesis, glycolysis, and glycogenolysis in blood glucose concentration

Q16 : what is the chemical (hormonal) regulation ??

A16 : A regulatory process performed by **hormone** or **active chemical substance** in blood or tissue

Q17 : what is the characteristics of hormonal regulation ??

(dangerrrrr)

A17 :

- response slowly



- acts extensively

- lasts for a long time

Q18 : what is the nervous regulation ??

A18 : a process in which body functions are controlled by nerve system

Q19 : what is the pathway of nervous regulation ??

A19 : nerve reflex

Q20 : what is the types of nervous regulation ??

A20 : unconditioned reflex and conditioned reflex

Q21 : give an example of nervous regulation ??

A21 : baroreceptor reflex of arterial blood pressure

Q22 : what is the characteristics of nervous regulation ??

A22 :

- response fast

- acts exactly or locally



- last for a short time

**** the Comparison between nervous and hormonal regulation .

Q23 : what is the autoregulation ??

A23 : A tissue or an organ can directly respond to environmental changes .

**** autoregulation independent of nervous and hormonal control .

Q24 : what is the characteristics of autoregulation ??

A24 :

- Amplitude of the regulation is smaller than other two types.
- Extension of the effects is smaller than other two types.

Q25 : The three regulations have coordinated and acts as one system . what is the name of this system ??

A25 : feedback control system .



Q26 : Output (feedback signal) from controlled organ returns to affect or modify the action of the control system . what is this definition refers to ??

A26 : Feedback

Q27 : Feedback control mechanism consists of two forms . What is this two forms ??

A27 :

- Negative feedback control (Inhibitory)
- Positive feedback control

Q28 : make comparison between negative and positive feedback in : direction If effect , mechanism , examples ??

A28 :

Negative feedback : →

- The feedback signals from controlled system produces effect **opposite** to the action of the control system
(decrease the effect)
- Stimulus triggers response to counteract further change in the same direction.
- blood glucose concentration

Positive feedback

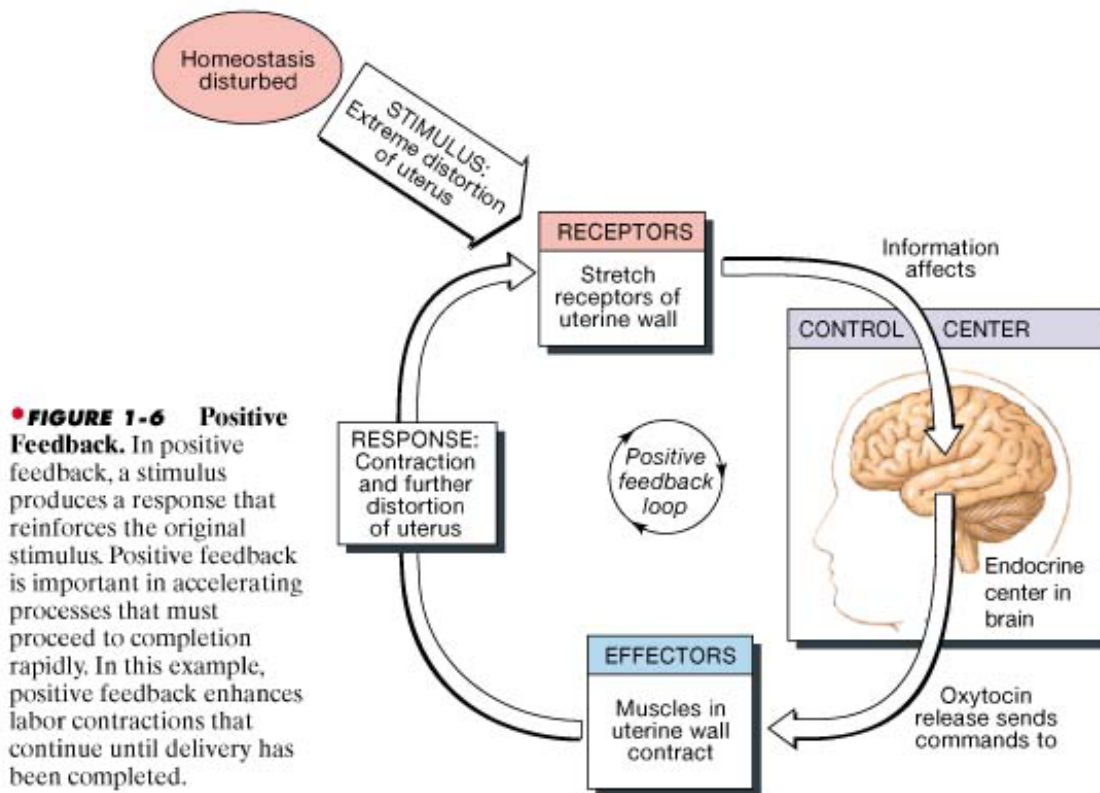
- The feedback signal or output from the controlled system increases the action of the control system

(in the same direction)

-Examples:

- 1) Blood clotting
- 2) Micturition
- 3) Defecation
- 4) Contraction of the uterus during childbirth (parturition)

And this is the mechanism of positive feedback :



Q29 : give 3 examples of diseases that involve both the disturbance of homeostasis, as well as the presence of inflammation ??

A29 : diabetes, hypertension, and atherosclerosis .

Q30 : Homeostasis underlies many, if not all, disease processes
(true / false) ??

A30 : true

***** note :

The set-point must confine itself to a strict range in certain body functions, but it is not necessarily static in others. For example, Fever is an example of how the set-point can increase without necessarily killing the individual. An increase in core body temperature is necessary to fight off an invader, but in the case of hyperthermia, the adaptive function of temperature has failed, and the set-point is unable to return to normal.

