

# Biology hsc dot points

[Science](#), [Biology](#)



BIOLOGY HSC NOTES MAINTAINING A BALANCE •Identify the role of enzymes in metabolism, describe their chemical composition and use a simple model to describe their specificity on substrates. Enzymes are protein molecules that allow the body to engage in chemical reactions, such as metabolism. Their activities can be catalytic (being able to control the rate of either increasing/decreasing chemical reaction) Enzymes have a specific shape, and this shape must be intact, otherwise the effectiveness of their function will decrease.

The shape may deform due to PH or temperature levels, the metabolic processes can be modified in three main ways by controlling the: Amount of enzymes, Catalytic activity of enzymes and accessibility of substance Metabolism is the total of all chemical reactions in the cell. Three factors that affect enzymes: PH, Substance Concentration and temperature. The substrate is the molecule on which an enzyme acts upon (food), this substrate/reactant fits onto the groove of the active site (the site where the enzymes break down the substance into products).

That is why the shape is so important; the active sites shape must remain un-altered if the enzyme is to function correctly. This fit is known as the “induced fit”, much like a key fits a lock. When the active site breaks down the substance into products, this is known as the catalysis process. •Identify the pH as a way of describing the acidity of a substance PH (Parts per hydrogen) is the measure of acidity, or alkalinity in a liquid. Under 7 = acid (RED) 7 = Neutral (GREEN) Over 7 = Base (BLUE) Our stomach acid has a value of 2, Blood is around 7. . Arterial blood is around 7. 41 while venous blood is 7.

36. Venous blood has a lower Ph due to the lower carbon dioxide levels which influence more acidic levels; likewise Arterial blood has a greater Ph as it receives the depleted cells that have a low level of Oxygen and a high level of Carbon dioxide. Urine is more acidic in the morning (Ph: 6.5 – 7) as it is more concentrated and the kidney filters more so when the body is at rest.

Acids

- Produce  $H^+$  (As  $H_3O^+$ ) ions in water
- Produce a negative ion (-) as well
- Taste sour
- Corrodes metals
- Reacts with bases to form salts and water.

In the human body

- Skin is mildly acidic (Ph = 5.6)
- Urine is acidic
- Stomach acids is very acidic (Ph = 1 – 2) Acidic to eliminate bacteria's
- Blood Ph is about 7
- Saliva Ph is about 7

Ph Indicators are dyes that can be added to an liquid and will change its colour in the presence of an acid or base. It can also be in the form of Litmus paper, or an universal indicator in the form of drops)

- Some dyes are natural such as radish or red cabbage.