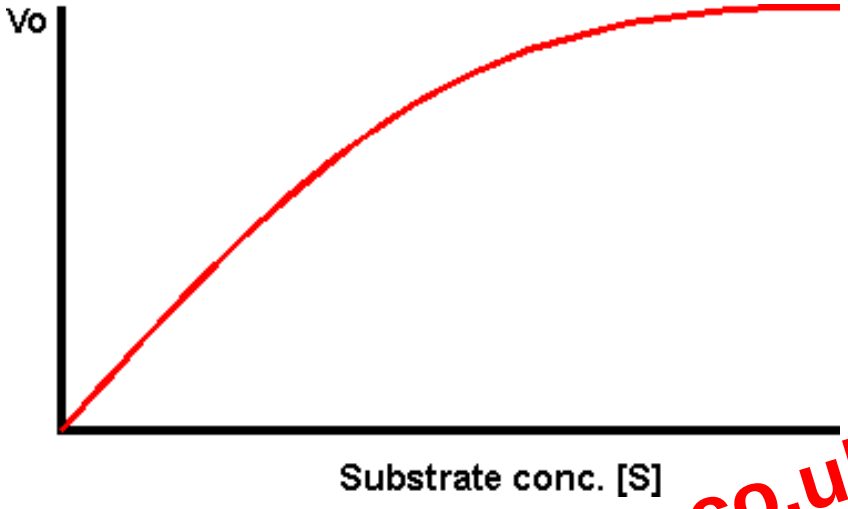
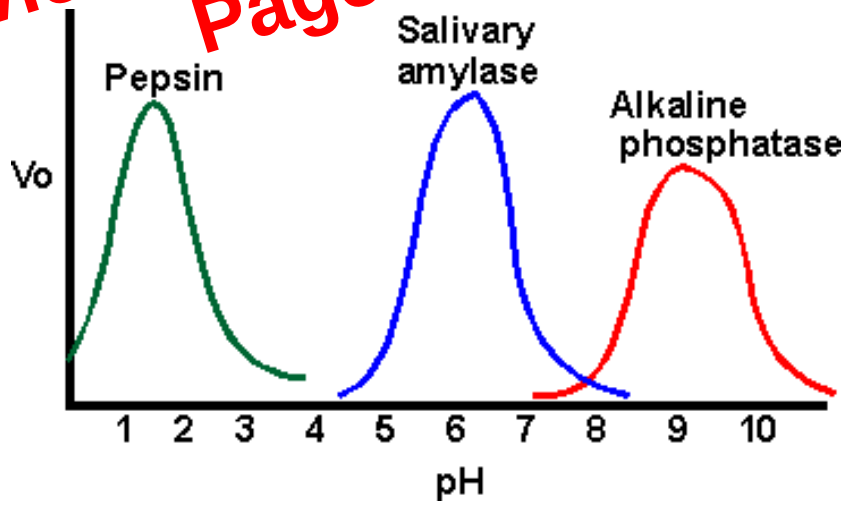
- ✓ Substrate concentration: rate of reaction increases with an increase in substrate concentration. Higher concentration increases the chance of collisions between enzyme and substrate molecules and formation of an enzyme-substrate complex until the active sites of the enzymes are all filled up (saturated). Any extra substrate has to 'wait' until the enzyme-substrate complex has released the products.



- ✓ pH: enzymes function most efficiently over a particular pH range (optimum pH). Changes in pH alter the concentration of H+ ions in the medium. This affects the ionic charge of acidic and basic R groups in amino acids and disrupts the shape of the active site. The enzyme may become denatured.



- ✓ Temperature: enzyme and substrate molecules move more rapidly at higher temperatures. Chances of substrate and enzyme molecules colliding are increased (optimum temperature). If temperature is increased too much, the enzyme will be denatured (secondary and tertiary structures are disrupted).