**B7 COORDINATION AND RESPONSE**

**7.2 – HORMONES**

**1. Define a hormone**

A chemical substance, produced by a gland, carried by the blood, which alters the activity of one or more specific target organs and is then destroyed by the liver.

**2. State the role of the hormone adrenaline in the chemical control of metabolic activity, including increasing the blood glucose concentration and pulse rate.**

* Adrenaline is secretedby adrenal glands located one above each kidney;
* Adrenaline helps us to cope with danger by increasing the heart rate;
* Thus supplying oxygen to brain and muscles more quickly, this increase the rate of metabolic activity and gives more energy for fighting or running away;
* The blood vessels in skin and digestive system contract so that they carry very little blood, as a result we get ‘butterflies in our stomach’, and more blood goes to brain and muscles;
* Adrenaline also causes the liver to release glucose into the blood;
* This provides extra glucose to the muscles, thus more respiration and more energy is released for contraction.

**3. Give examples of situations in which adrenaline secretion increases.**

* Examination;
* Visit to a dentist.

**4. Compare nervous and hormonal control systems.**

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| *Feature* | *Nervous* | *Hormonal (endocrine)* |
| What are they made of | Neurons | Secretory cells |
| Form of transmission | Electrical impulses | Chemical (hormones) |
| Transmission pathway | Nerves | Blood vessels |
| Speed of transmission | Fast | Slow |
| Duration of effect | Short term | Long term |
| Response | Localized | Widespread (although there may be a specific target organ) |