## Nucleotides and nucleic acids

- > Nucleic acids are one of the major carbon-based groups
- ➤ There are three major examples of nucleic acids:
  - $\circ$  ATP  $\Rightarrow$  adenosine triphosphate
  - $\circ$  DNA  $\Rightarrow$  deoxyribonucleic acids
  - $\circ$  RNA  $\Rightarrow$  ribonucleic acid
- > Both DNA and RNA are *polymers* of nucleotides
  - They are made up of more than one nucleotides
    - Linked together by condensation
- > Individual nucleotides are referred to as *monomers* and always consist of three major part:
  - One phosphate group
  - One 5-carbon monosaccharide => *pentose*
  - A single nitrogenous base
- > Chemical bonds occur at specific locations in order to produce a functional unit
  - A from Notesale.co.uk W from 1 of 2 Page 1 of 2 • All the bonds within the nucleotides are *covalent bonds*
- ➤ The five nitrogenous bases are:
  - 1. Cytosine, C
  - 2. Guanine, G
  - 3. Adenine, A
  - 4. Thyme Urasil, U

## Strands

- > RNA is composed of a single strand of nucleotides
- > DNA consists of two separate strands of nucleotides connected to one another by weak hydrogen bonds
  - One some combinations are possible
    - A with T
    - C with G
  - These are said to be *complementary base pairs* 
    - A double-ring base connects to a single-ring base
      - No double-ring base connects to another nor a single-ring connects to another