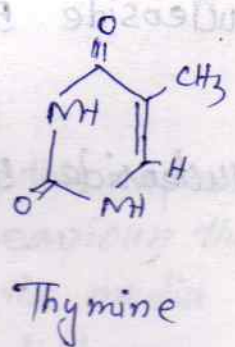
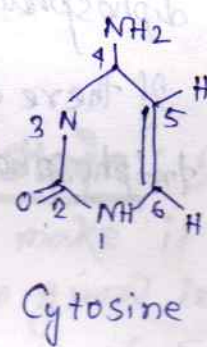
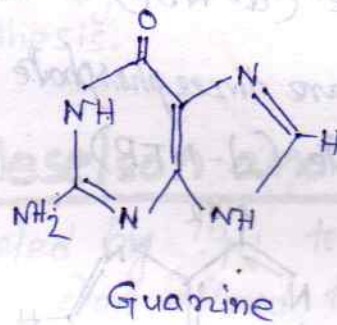
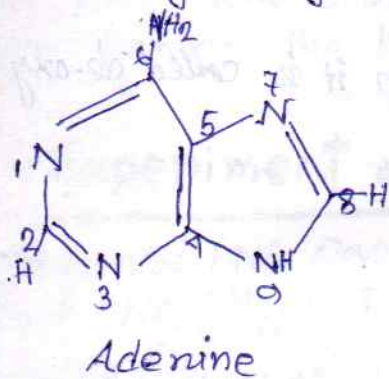


Q. Describe the molecular structure of DNA.

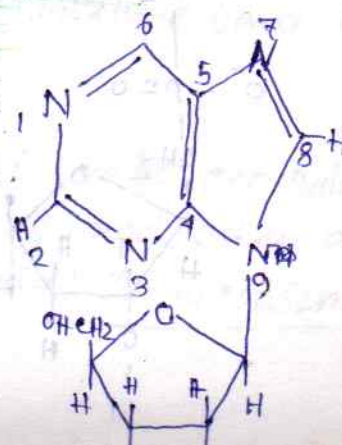
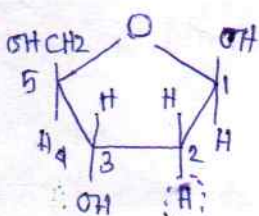
Base: The bases of DNA have C-N ring structure. There are two types of rings structure, there is purines, consist of adenine and guanine. Purines have two carbon nitrogen ring with different side chains. Pyrimidines consist of thymine and cytosine, these have one carbon nitrogen ring with different side chains.



Nucleoside: In RNA the nucleosides have ribose sugar so it is called ribo-nucleoside. In DNA the sugar is de-oxyribose so it is called de-oxy-nucleoside. It is called 'de-oxy' because 2' -OH group in ribose is replaced by H atom. In DNA there are four de-oxy-nucleosides, Purines and pyrimidines are covalently bonded to the sugar. These are -

- i) De-oxy adenosine
- ii) De-oxy guanosine
- iii) De-oxy thymidine
- iv) De-oxy cytosine

In case of purines the sugar is bound with the N₁ position of the base with 1' -OH group of sugar. In case of pyrimidines the N₁ position of the base is bonded with the sugar.

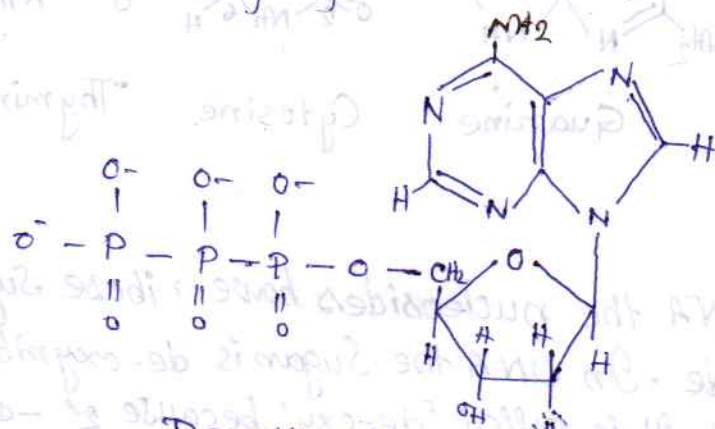


Nucleotides : A nucleotide is a phospho-ester of nucleoside.

The phosphate group joined to the C_5 -OH group of the Sugar. It is known as nucleoside 5'-phosphate or 5'-nucleotide. The prime number denotes the atom of the Sugar to which the phosphate is attached. If de-oxy nucleotide have a single phosphate group then it is called de-oxy nucleoside 5' monophosphate (d-NMP).

If there are two phosphate then it is called de-nucleoside 5' diphosphate (d-NDP).

If there are three phosphate then it is called de-oxy-nucleoside 5' triphosphate (d-NTP).



De-oxy adenosine triphosphate

3' 5' phosphodiester bonds : In DNA different nucleotides are covalently joined to form a long polymer chain. For nucleotide the 5'-OH group of the Sugar is bonded to 3'-carbon of the next Sugar. So it is called 3' 5' phosphodiester bond.

