

Pharmaceutical Chemistry - II

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1.1.1 Chemistry of lipids:-

The lipids are heterogeneous group of compounds including fats, oils, waxes and lipid compound that are related more by the physical than by their chemical properties.

⇒ common properties of lipids:-

(i) Relatively insoluble in water.

(ii) Soluble in non-polar solvent. eg:- Ether, chloroform.

Function of lipids:-

(i) Storage form of energy.

(ii) It is important dietary source because of their high energy value.

(iii) Structure component of biomembrane.

Chemistry of nucleic acid:-

Nucleic acids are the genetic material of living organisms. They carry genetic characters from parent to progeny.

⇒ main constituent of nucleic acid are N₂-base, sugar and phosphate.

⇒ Nucleic acids are two types:-

(a) DNA (b) RNA.

⇒ DNA mainly contain four bases - Adenine, guanine, Cytosine, Thymine.

⇒ In case of RNA Thymine are absent.

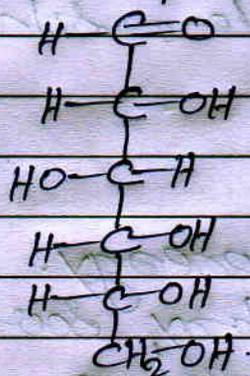
Nishant ①

Q. Ans chemistry of carbohydrates :-

carbohydrates are polyhydroxy compounds having at least 3 carbon atoms and a potentially active carbonyl group which may be an aldehyde and ketose group.

Example :- Glucose, Fructose.

Structure of Glucose :-



There are three types of carbohydrates :-
 (i) monosaccharides, (ii) oligosaccharides, (iii) polysaccharides.

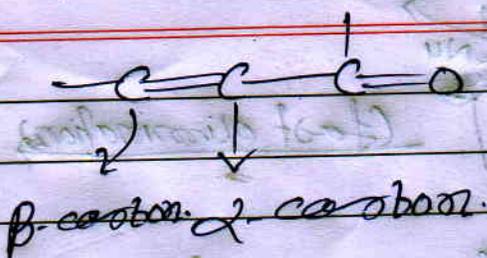
chemistry of protein :-

- proteins are linear copolymers which is built from monomeric unit called amino acid.
- Twenty amino acid commonly found in proteins.
- The amino acid contain many functional groups.

Example :- Alcohol (R-OH)
 phenol (Ph-OH)
 carboxylic acid (R-COOH)
 Amides (R-NH₂)

- ⇒ proteins are built up a large number of α-amino acid molecules inter connected by elimination of water b/w NH₂ and carboxylic acid.

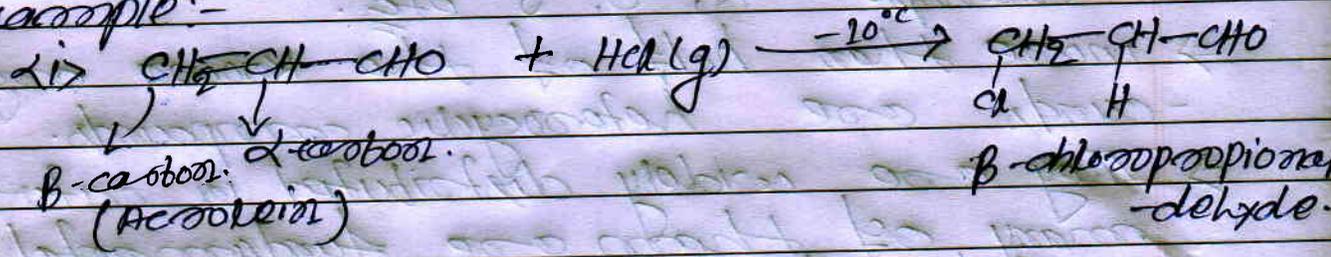
3 Ans



⇒ $\left. \begin{array}{l} \text{---C=O} \\ \text{---COOH} \\ \text{---COOR} \\ \text{---CN} \end{array} \right\}$ All are powerful electron withdrawing group.

⇒ In general, it is observed that addition of unsymmetrical reagent to an α, β -unsaturated carbonyl compound take place in such a way that hydrogen becomes attached to the α -carbon and the negative group becomes attached to β -carbon.

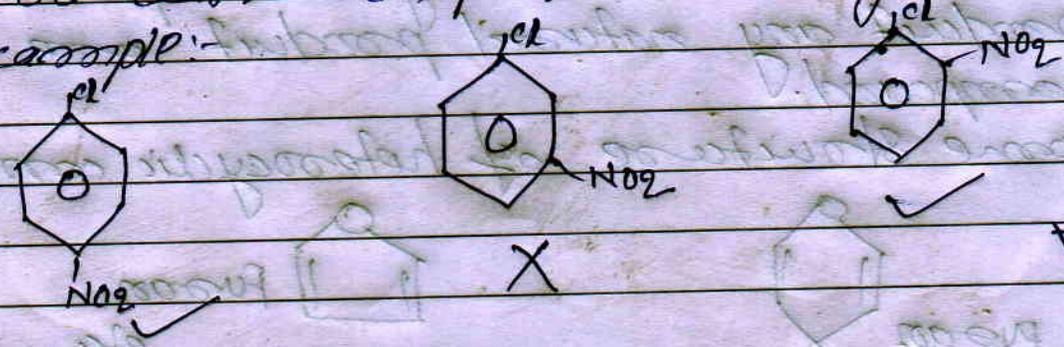
Example:-



4. Ans. Nucleophilic aromatic substitution reaction:-

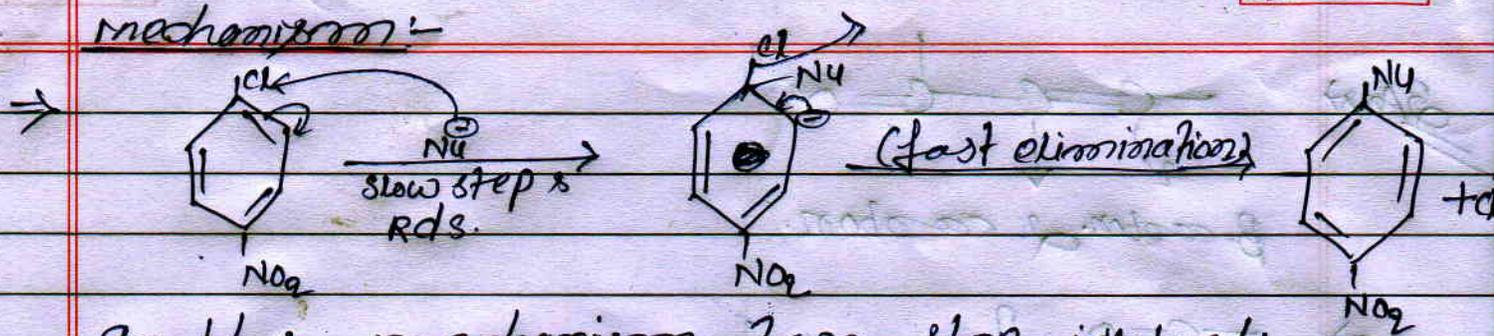
⇒ Acylhalide will undergo nucleophilic substitution reaction provided strong deactivator is linked with phenyl ring at position ortho and para with respect to halogen.

Example:-



Answer

Mechanism:-



In this mechanism two steps involved:-

- i) Attacking of nucleophile reagent upon the ring to form a carbanion.
- ii) Expulsion of halide ion from this carbanion to yield the product.

Ex. 1.1.1: Heterocyclic compound:-

Heterocyclic compound are those where one or more atoms of rings are hetero atom.

Example:- N, O, S etc.

- ⇒ more than half of the known organic compounds are heterocyclic compounds.
- ⇒ They are widely distributed in nature and many of them are fundamental processes of life.
- ⇒ Example:-
 - i) Nucleic acid bases containing pyrimidine and purine.
 - ii) Haemoglobin and chlorophyll containing porphyrin ring.
 - iii) All most all the drugs and pharmaceutical product and natural product are hetero compound.

Some structure of heterocyclic compound:-

