Sheet # _____

LGS GROUP OF COLLEGES
A PROJECT OF LAHORE GRAMMAR SCHOOL

Name: Zymal Tariq Class: Fsc pre medical Roll No. _____

Subject: Chemistry Test No. WT-8 Assignment Date: 21/11/24

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	●	○	○	6	○	○	○	○	11	○	○	○	○	16	○	○	○	○
2	●	○	○	○	7	○	○	○	○	12	○	○	○	○	17	○	○	○	○
3	●	○	○	○	8	○	○	○	○	13	○	○	○	○	18	○	○	○	○
4	●	○	○	○	9	○	○	○	○	14	○	○	○	○	19	○	○	○	○
5	●	○	○	○	10	○	○	○	○	15	○	○	○	○	20	○	○	○	○

Marks Obtained

Subjective Part

(Question #2)

(Short Questions)

(i) Justify

Tollen's test is also called silver mirror test as aldehyde form silver mirror with Tollen's reagent (ammonical silver nitrate solution).

If we add Tollen's reagent to an aldehyde solution in a test tube and warm it, a silver mirror will be formed on the inside of the test tube.

$$AgNO_3 + 3NH_4OH \longrightarrow [Ag(NH_3)_2]OH + NH_4NO_3 + 2H_2O$$

$$R-CHO + 2[Ag(NH_3)_2]OH \longrightarrow R-COONH_4 + 2Ag + 2NH_3 + H_2O$$

(2Ag: silver mirror)

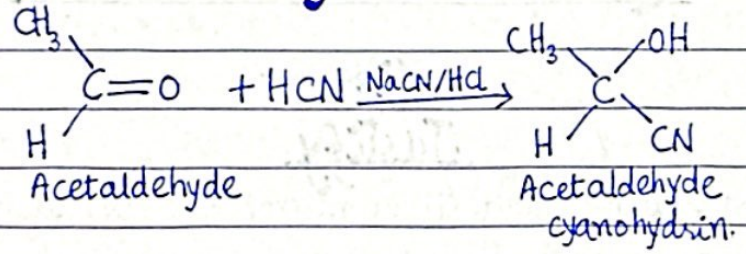
(ii) Use of iodoform test

In the iodoform test, the reaction using iodine and aqueous sodium hydroxide results in the formation of water **insoluble** iodoform which is a yellow solid.

So, in this iodoform test, only acetaldehyde gives off **yellow** colour precipitation while other aldehydes donot.

So, in this way, we can distinguish between acetaldehyde and other aldehydes.

(iii) reaction b/w acetaldehyde & HCN



Acetaldehyde

Acetaldehyde cyanohydrin.

Long Question

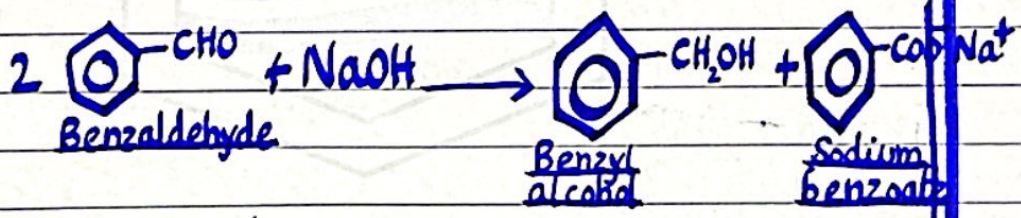
Cannizaro's Reaction

Type of aldehyde:

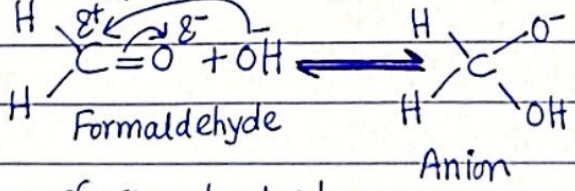
Aldehydes that have no α-hydrogen atoms undergo Cannizaro's reaction.

It is a disproportionation (self oxidation-reduction) reaction. Two molecules of the aldehyde are involved, one molecule being converted into corresponding (alcohol)-reduced product and other into acid in the salt form (oxidation product).

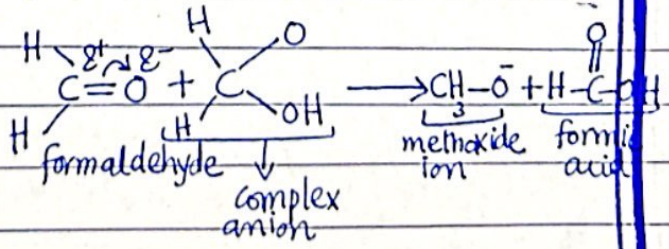
$$2H-\overset{O}{\overset{\|}{C}}-H + NaOH \longrightarrow CH_3OH + H-\overset{O}{\overset{\|}{C}}-O^-Na^+$$



Mechanism: The hydroxide ion acts as a nucleophile. It attacks on the electrophilic carbonyl carbon to form a complex anion.

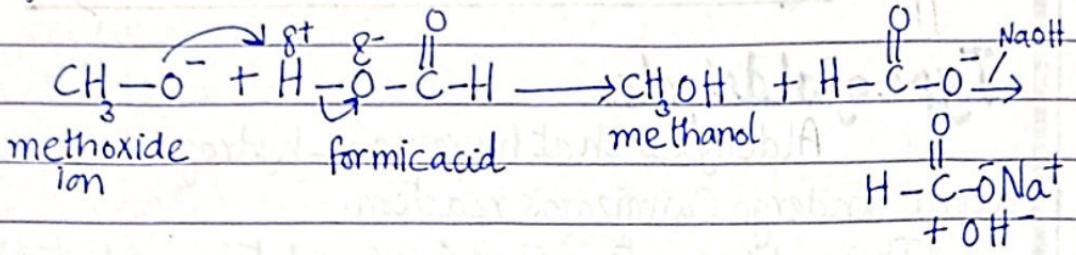


The anion transfers a hydride ion to second molecule of formaldehyde.



→ The presence of -ve charge on oxygen of the anion helps in the loss of hydride ion.

→ The methoxide ion acts as a base and abstracts a proton from formic acid to form methanol and formate ion.



The formate ion in the presence of alkali gives a salt of the acid.