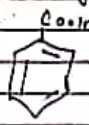


Properties of Benzoic acid.

TOPIC: BENZOIC ACID

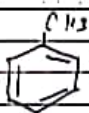
Molecular formula of Benzoic acid is C_6H_5COOH .

Its structural formula is represented as

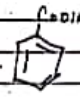


Benzoic acid. It is prepared as (i) Oxidation of TOLUENE

with acidic $KMnO_4$ gives rise to Benzoic acid.



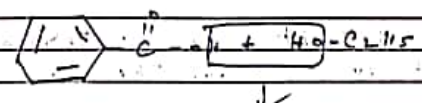
Acidic $KMnO_4$



BENZOIC ACID

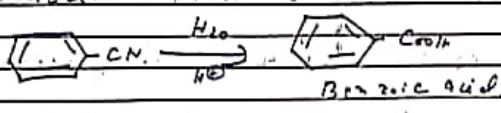
(a) Benzoic acid on reaction with $CaCl_2$ in presence of H_2SO_4 gives rise to Ca^{++}

BENZOATE which is lactate.



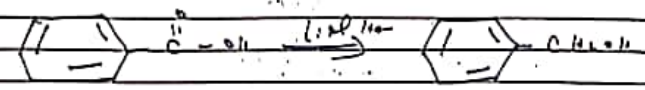
Ethyl benzoate.

(ii) Phenyl cyanide on hydrolysis produces Benzoic acid.



(b) Benzoic acid on reduction reaction with $LiAlH_4$ gives rise to Benzyl alcohol.

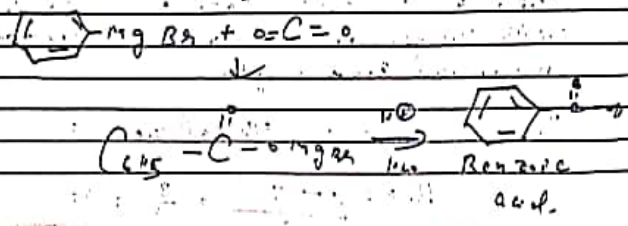
During this reaction $LiAlH_4$ which is selective reagent for reduction of Carboxyl group converts Benzoic acid into Benzyl alcohol.



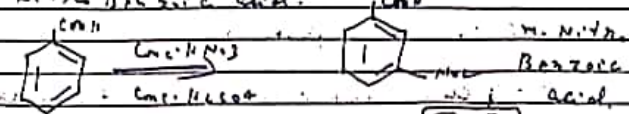
Benzoic acid.

Benzyl alcohol.

(iii) Phenyl Magnesium Bromide on reaction with CO_2 produces an addition product. Addition product on hydrolysis gives acid.



(c) Benzoic acid on nitration gives rise to m. nitro benzoic acid.



m. nitro Benzoic acid.

Alanta Officer

C.CHY CHEMISTRY

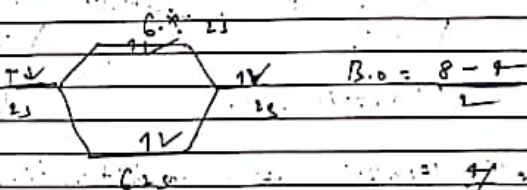
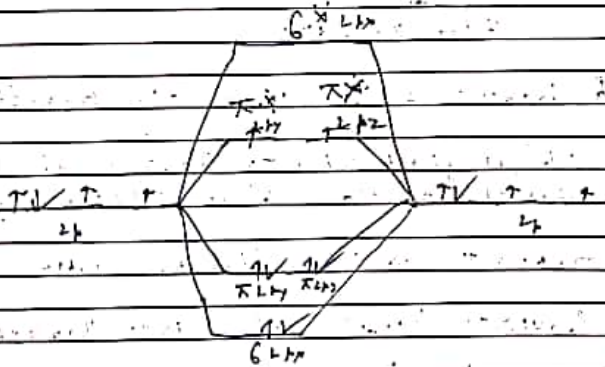
B. M. A College Bahari Dargahga
C. CHAUDHARY, CHEMISTRY

TOPIC :- CHEMICAL BONDING

M.O. Diagram of O_2 Molecule. Atomic no. of Oxygen is 8, its electronic configuration is

written as $1s^2 2s^2 2p^4$. Since outermost orbit has got six electrons therefore its

Valence electron are six. Two molecule there are two oxygen atoms, therefore total v.e. = 12



Since in M.O. diagram of O_2

Molecular unpaired electrons are present

and we know that unpaired electrons is responsible for PARAMAGNETIC PROPERTY

therefore O_2 is paramagnetic. Valence

bond theory of O_2 molecule fails to explain the paramagnetic behaviour of O_2

molecule but M.O. diagram explains paramagnetic property of O_2 molecule.

Bond order value of O_2^+

In O_2^+ no. of valence electrons is 11

$$B.O = \frac{8 - 3}{2} = \frac{5}{2} = 2.5$$

Numerical value shows that Bond order

Value of O_2 molecule is 2 whereas for O_2^+ it is 2.5. Higher the bond order greater

is Bond energy value, accordingly O_2^+

has Bond energy value $625 kJ/mol$ and

its bond length is comparatively less than O_2 molecule and that is 112 pm. Bond length of O_2 is 121 pm. Bond energy of O_2 is $495 kJ/mol$. Thus we see that statistical data correlates with M.O. diagram inference in context of Bond energy and Bond length.

Bond order of O_2^+ Total v.e. = 13

$$B.O = \frac{8 - 5}{2} = \frac{3}{2} = 1.5$$

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