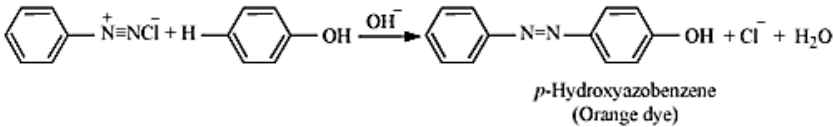


CHEMICAL TEST

<p>1 OH-group [alcohol, phenol and carboxylic acid] (i) Na -metal : evolves H₂ gas with. (ii) Lucas test: (anhydrous ZnCl₂ / fConcentrated HCl) 3° → Formation of turbidity → immediate 2° → Formation of turbidity within 5 minutes. 1° → No turbidity appears –</p>	<p>5 Carboxylic acid With NaHCO₃ gives brisk effervescence of CO₂</p> <div style="background-color: #e0e0e0; padding: 5px; text-align: center;"> $R-COOH + NaHCO_3 \longrightarrow R-COO^-Na^+ + H_2O + CO_2$ </div>
<p>Phenolic group [i] Phenol gives violet colour with alc. FeCl₃ [ii] Phenol gives white precipitate with Br₂ water</p>	<p>6 Amines [1^o only] Carbyl amine test - all 1° amines when heated with CHCl₃ and alc. KOH form isocyanides (Foul smelling odour)</p>
<p>3 Carbonyl groups [both aldehyde And ketone] 2,4 – DNPH (Brady’s reagent) → Red ppt (c)</p>	<p>7 Aniline Diazo test - aniline is reacted with NaNO₂ and HCl then with Phenol to give orange colour or 2-naphthol to give red colour</p> <div style="text-align: center; margin: 10px 0;">  <p style="text-align: center; margin-top: 5px;"><i>p</i>-Hydroxyazobenzene (Orange dye)</p> </div>
<p>4 Aldehydes only Fehling soln (i) aldehyde gives Red ppt of Cu₂O with (ii) Silver mirror (Ag) with Tollen’s Reagent</p> $RCHO + 2 Ag(NH_3)_2^+ + 3 OH^- \xrightarrow{\text{heat}} RCOO^- + Ag + 4 NH_3 + 2 H_2O$ $R-CHO + 2Cu^{2+} + 5OH^- \longrightarrow RCOO^- + Cu_2O + 3H_2O$ <p style="text-align: center; margin-top: 5px;">red-brown ppt</p>	<p>8 The Iodoform Test Methyl ketones, Acetaldehyde and α-Methyl secondary alcohols undergo the iodoform reaction and give yellow crystalline precipitate confirms the presence of a methyl secondary alcohol or a methyl ketone or acetaldehyde</p> $RCH(CH_3)OH + 6 OH^- + 4 I_2 \longrightarrow CHI_3 + RCOO^- + 5 I^- + 5 H_2O$ $RCOCH_3 + 4 OH^- + 3 I_2 \longrightarrow CHI_3 + RCOO^- + 3 I^- + 3 H_2O$

CHEMICAL TESTS

Pair	Reagent used for reaction	observations
Allyl chloride and vinyl chloride	Aqueous AgNO ₃	White ppt with Allyl chloride
Chlorobenzene and benzyl chloride	Aqueous AgNO ₃	White ppt with benzyl chloride
Chloroform and carbon tetra chloride	Isocynide test [1 ⁰ amine + NaOH] or carbylamine test	Foul smell of R-NC with Chloroform
Methyl alcohol and ethyl alcohol	Iodoform test[NaOH+I ₂]	Yellow ppt with ethyl alcohol
Ethyl alcohol and n-propyl alcohol	Iodoform test[NaOH+I ₂]	Yellow ppt with ethyl alcohol
n-Propyl alcohol and iso-propyl alcohol	Iodoform test[NaOH+I ₂]	Yellow ppt with iso-propyl alcohol
Butane-1-oland Butane-2-ol	Iodoform test[NaOH+I ₂]	Yellow ppt with Butane-2-ol
Formaldehyde and acetaldehyde	Iodoform test[NaOH+I ₂]	Yellow ppt with acetaldehyde
Pentane -3-one and pentane-2-one	Iodoform test[NaOH+I ₂]	Yellow ppt with pentane-2-one
Acetophenone and benzophenone	Iodoform test[NaOH+I ₂] or NaOI	Yellow ppt with Acetophenone
1 ⁰ alcohol and 3 ⁰ alcohol	Lucas test [conc-HCl+ ZnCl ₂]	White turbidity with 3 ⁰ alcohol
An alcohol and a phenol	Neutral FeCl ₃	Violet colour with phenol
Phenol and acetic acid [carboxylic acid]	Sodium bicarbonate	Effervescence of CO ₂ with acetic acid
Propanal and Propanone	Tollen's test or Fehling's test	Silver mirror with Propanal or red ppt with FT
Phenol and Benzoic acid	Neutral FeCl ₃	Violet colour with phenol
Benzoic acid and Ethyl benzoate	Sodium bicarbonate	Effervescence of CO ₂ with acetic acid
Benzaldehyde and Acetophenone	Tollen's test or Fehling's test	Silver mirror with Benzaldehyde

Ethanal and Propanal	Iodoform test[NaOH+I₂] or NaOI	Yellow ppt with ethanol
Methylamine and dimethylamine	carbylamine test.	foul-smelling isocyanides with Methylamine
Secondary and tertiary amines	Hinsberg's reagent[]	product that is insoluble in an alkali.with Secondary amines
Ethylamine and aniline	azo-dye test [(i)(NaNO₂ + dil.HCl) ii(alkaline solution of 2-naphthol)]	A dye of red color is obtained with aromatic amines [[aniline]]
Aniline and benzylamine	Di azo-dye test	A dye of red color is obtained with aromatic amines[aniline]
Aniline and N-methylaniline.	Carbylamine test	foul-smelling isocyanides with Aniline
Phenol and aniline	Carbylamine test	foul-smelling isocyanides with Aniline

DAV CENTENARY PUBLIC SCHOOL, PASCHIM ENCLAVE, NEW DELHI-110087